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Note

Accuracy or Efficiency: Has *Grain Processing* Made a Difference?

George David Kidd*

Since the Federal Circuit's adoption of *Panduit's* causation standard¹ for establishing entitlement to lost profits damages in patent litigation, application of its noninfringing alternatives prong has lacked consistency.² The court's decision in *Grain Processing Corp. v. American Maize-Products Co.*, however, created an additional contribution to the *Panduit* standard, thereby raising the evidentiary bar while significantly altering the noninfringing-alternative inquiry.³ *Grain Processing* has given the infringer a potentially powerful defensive mechanism in an area in which patentees are generally favored,⁴ even

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1. See *infra* notes 71–73 and accompanying text.

2. See, e.g., *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1578 (Fed. Cir. 1989) (“[T]he presence or absence of acceptable noninfringing alternatives does not matter.”).

3. *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350–51 (Fed. Cir. 1999).

4. Jerry A. Hausman et al., *Patent Damages and Real Options: How Judicial Characterization of Noninfringing Alternatives Reduces Incentives to Innovate*, 22 BERKELEY TECH. L.J. 825, 826 (2007) (“[A]n infringer could claim that it would have continued to sell a noninfringing product that it had actually been selling and that this product would have captured some of the infringing sales. This argument would tend to limit the patent holder's lost sales. However, the infringer could not claim that it would have developed and introduced some new noninfringing product in the but-for world and that this product would have captured some of the infringing sales. *Grain Processing* eased this restriction, allowing an infringer to claim that it would have offered a noninfringing product that, although not actually sold in the marketplace, was technically feasible at the time and could have been made commercially available relatively quickly.”).

when some infringement may be socially desirable.⁵ *Grain Processing* allows for the potential avoidance of lost profit damages, so long as the alleged infringer shows that it had the necessary equipment, know-how, and experience to produce an acceptable, noninfringing substitute during the alleged infringement period.⁶

The *Grain Processing* decision, however, raises some debate.⁷ As a judicially interjected gloss on damages, the added ability to limit damage awards to a reasonable royalty could have been too drastic.⁸ A closer look demonstrates a precarious policy balance. On the one hand, increases in patent litigation⁹

5. David Fagundes, *Efficient Copyright Infringement*, 98 IOWA L. REV. 1791 (2012); cf. Charles Duhigg & Steve Lohr, *The Patent, Used as a Sword*, N.Y. TIMES, Oct. 8, 2012, at A1 (“[S]ome patents are so broad that they allow patent holders to claim sweeping ownership of seemingly unrelated products built by others. Often, companies are sued for violating patents they never knew existed or never dreamed might apply to their creations, at a cost shouldered by consumers in the form of higher prices and fewer choices.”); Matthew Yglesias, *Why Should We Stop Online Piracy?*, SLATE.COM (Jan. 18, 2012, 2:17 PM), http://www.slate.com/articles/business/small_business/2012/01/sopa_stopping_online_piracy_would_be_a_social_and_economic_disaster.html (examining, in the context of illegal downloading, the idea that violating intellectual property law could aid in reducing economic deadweight loss).

6. *Grain Processing*, 185 F.3d at 1354 (“[T]he [district] court found that American Maize had all of the necessary equipment, know-how, and experience to use Process IV to make Lo-Dex 10 . . .”). The Federal Circuit went on to hold that “the district court did not err in considering an alternative not on the market during the period of infringement, nor did it clearly err in determining that the alternative was available, acceptable, and precluded any lost profits.” *Id.* at 1356.

7. See Alexander I. Poltorak & Paul J. Lerner, *Grain, Grain, Go Away*, INTEL. PROP. WORLDWIDE, <http://www.generalpatent.com/files/Grain.pdf> (last visited Oct. 20, 2013) (“The test of noninfringing substitutes has never been as clear as it might. The definition of ‘substitute’ and ‘available’ are both subject to debate. In fact, this test ‘accounts for more appellate litigation . . . than any other aspect of patent damages law,’ according to Paul M. Janicke in a 1993 American University Law Review article.”).

8. *Id.* (arguing that the *Grain Processing* standard lacks clarity and, taken to its logical conclusion, limits the value of patents to a reasonable royalty while additionally reducing the likelihood that a defendant will settle); see also Mark Chretien, *The Question of Availability: Grain Processing Corp. v. American Maize-Products Co.*, 38 HOUS. L. REV. 1489, 1505 (2002) (explaining that, although *Grain Processing* strays from legal precedent, the case emphasizes the “creation of a realistic hypothetical marketplace for the purpose of damage calculations”).

9. See PRICEWATERHOUSECOOPERS, 2012 PATENT LITIGATION STUDY 6 (2012), available at http://www.pwc.com/en_US/us/forensic-services/

might justify implementing an additional hurdle to potential damage awards in order to further incentivize innovation. Added rigor provided by *Grain Processing* may deter frivolous and expensive litigation that might be asserted by patentees to keep new innovators out of the market.¹⁰ But on the other hand, if a market participant does unlawfully infringe, it is certainly reasonable to believe that the infringer should pay appropriate damages for the encroachment on another's intellectual property. *Grain Processing's* lost-profit-limiting defense against a patentee's claim of entitlement to lost profits damages may serve to deter potentially useful innovation by increasing costs shouldered by patentees in defending their patent rights.¹¹

This Note analyzes six Federal Circuit cases appealing lost profits determinations, decided both before and after *Grain Processing*, and attempts to discern the impacts that *Grain Processing* has had on patentees' entitlements to lost profits. This Note is organized in four parts. Part I provides the historical and substantive context necessary to understand the *Grain Processing* decision and examines important statutory changes, especially their subsequent interpretation, both before and after *Grain Processing*. Part II summarizes three pre-, as well as three post-*Grain Processing* cases. Parts III and IV dissect and analyze the holdings in these cases and evaluate *Grain Processing's* impact on patent damages.

I. BACKGROUND

The general structure of patent infringement litigation can be broken down into two steps: (1) claim construction; and (2) a

publications/assets/2012-patent-litigation-study.pdf (finding a dramatic rise in patent actions filed in 2011 over 2010).

10. See Duhigg & Lohr, *supra* note 5, at A1 ("One consequence of [patent litigation] . . . is that patent disputes are suffocating the culture of start-ups that has long fueled job growth and technological innovation.")

11. Hausman et al., *supra* note 4, at 826–27 ("By providing potential infringers with increased option value if they use the patented technology, *Grain Processing* reduces the deterrent effect of litigation and therefore encourages infringement. Consequently, it reduces the returns to research and development, and so also the incentives to innovate."); see also James J. Anton & Dennis A. Yao, *Finding "Lost" Profits: An Equilibrium Analysis of Patent Infringement Damages*, 23 J.L. ECON. & ORG. 186, 188 (2007) ("[B]asing damages on lost profits reduces the incentive to innovate relative to the benchmark case (no infringement).").

comparison between the allegedly infringing product and patent claim language as interpreted in the claim construction step.¹² First, as a matter of law, the court construes the “scope and meaning” of each patent claim in order to define the protection granted by the patent.¹³ Next, a fact finder compares each claim to the allegedly infringing product to determine whether that product has “infringed” by exceeding claim limitations protected by the patent-in-suit.¹⁴ During this second step, a fact finder may also determine the amount of damages owed in the event the patent was violated.¹⁵

A patentee’s entitlement to, and amount of, patent damages is firmly rooted in normative considerations, which generally seek to further societal good.¹⁶ An exclusive right for a patentee to make, use, and sell an invented article is meant to incentivize useful innovation.¹⁷ But this time-limited monopoly right, of malevolent repute,¹⁸ may also be generally associated with “raising prices of commodities” and “hurt of

12. ALAN L. DURHAM, *PATENT LAW ESSENTIALS: A CONCISE GUIDE* 142 (2d ed. 2004); Shawn Kolitch, *Patent Claim Construction: The Neglected Preamble*, OR. INTELL. PROP. NEWSL., Summer 2007, at 10, available at http://www.khpatent.com/files/9492SJK_Patent_Claim_Construction.pdf.

13. DURHAM, *supra* note 12, at 142; Kolitch, *supra* note 12, at 10.

14. DURHAM, *supra* note 12, at 142–43; Kolitch, *supra* note 12, at 10.

15. DURHAM, *supra* note 12, at 181–82 (“When a court, with or without a jury, finds a patent both valid and infringed, then it must decide what remedies to grant the patentee . . . [A] remedy available to a patentee is an award of money damages to compensate for past infringement.”). *But see infra* note 54 and accompanying text (discussing how the process may differ if the trial is bifurcated).

16. THE FEDERALIST NO. 43, at 217 (James Madison) (Garry Willis ed., 1982) (“The utility of this power will scarcely be questioned. The copy right of authors has been solemnly adjudged in Great Britain to be a right at common law. The right to useful inventions, seems with equal reason to belong to the inventors. The public good fully coincides in both cases, with the claims of individuals.”).

17. *Bauer & Cie v. O’Donnell*, 229 U.S. 1, 10 (1913) (explaining that patent laws confer the right to exclude others from making, using, selling, or offering for sale a patented invention in the United States for the term of the patent). The Patent Act “was passed for the purpose of encouraging useful invention and promoting new and useful improvements by the protection and stimulation thereby given to inventive genius . . .” *Id.*

18. *See* Sheldon Richman, *Patents Stifle Prosperity*, PROJECT TO RESTORE AM. (Oct. 18, 2012), <http://www.theprojecttorestoreamerica.com/Essay/191/Patents-Stifle-Prosperity> (“Intellectual ‘property’ throttles the competitive process by bestowing monopoly power on big corporate players, creating artificial scarcities at the expense of consumers and independent entrepreneurs.”).

trade.”¹⁹ Insofar as the Constitution gives the power to the people to decide the delicate balance between the innovative good and the monopoly bad,²⁰ the U.S. patent law system nonetheless vigorously defends against an infringer’s encroachment on a patentee’s patent rights.²¹

Over the past two-hundred years, patent law damages have largely been left to judicial determination.²² As a stern admonition against an alleged infringer, reprimand in the form of compensatory damages may be derived through a court’s or a jury’s interpretation of expert calculation of the damages necessary to compensate for infringement.²³ Because the system is concerned with compensation to the patent holder, patentees have used their patent rights as a weapon, by threatening litigation against other market players, to broaden market penetration and to acquire new licensees.²⁴ The threat

19. Statute of Monopolies, 1624, 21 Jac., c. 3, § 6 (Eng.).

20. U.S. CONST. art. I, § 8, cl. 8 (“The Congress shall have Power . . . [to] promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”).

21. See S. Chesterfield Oppenheim, *A New Approach to Evaluation of the American Patent System*, 33 J. PAT. OFF. SOC’Y 555, 555 (1951) (“The exclusiveness of patent rights is regarded as a short-term public welfare monopoly which promotes the competitive economy of which the Patent System is itself a vital part.”).

22. Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTEL. PROP. L.J. 1, 7 (2001) (“Because no version of the Patent Act has ever specified exactly how to calculate the compensatory or restitutionary damages called for in the statutory text, the task of formulating workable standards has always rested with the courts.”); see *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1164 (Fed. Cir. 1991) (discussing that the amount of damages is a finding of fact subject to the “clearly erroneous” standard of review, while “subsidiary decisions underlying a damage theory are discretionary with the court, such as, the choice of an accounting method for determining profit margin” and are reviewed under the abuse of discretion standard).

23. DURHAM, *supra* note 12, at 181–82 (“[One] remedy available to a patentee is an award of money damages to compensate for past infringement. While injunctions are a matter within the discretion of the judge, the calculation of damages is a question for the jury.”); *id.* at 182 n.60 (“This is assuming that the case was tried to a jury. If the parties waived their right to a jury trial, the judge would determine all issues of fact, including the amount of damages.”); see *infra* notes 53–55 and accompanying text.

24. See Duhigg & Lohr, *supra* note 5, at A1 (discussing a situation where sudden business decisions utilized patents as a way to exclude other market players in the voice recognition industry resulting in the investment of “millions of dollars . . . set aside for research and development . . . [being]

of, or actual, patent litigation and the potential for material damages may stymie innovation by erecting an additional barrier to market entry of an alleged infringer.²⁵ More recent debate has centered on the results of demanding a greater degree of accuracy in damage determinations through more extensive litigation,²⁶ rather than stressing more efficient and less costly means.

With infringement enforcement mechanisms left in the hands of market participants, those who benefit from constraining competitor activity in, or entry into, a marketplace are given the tools necessary to threaten or force broad, comprehensive litigation.²⁷ In an atmosphere of “patent floggings” of entering market participants accused of alleged infringement, the courts have furnished these alleged infringers with protection against damages in excess of a reasonable royalty, namely through the *Grain Processing* decision.²⁸ An extensive battle over the more precise factors from *Grain Processing* might benefit society by increasing the

redirected to lawyers and court fees”). Though perhaps not impacted by *Grain Processing* since they do not commercialize inventions, non-practicing entities, or “patent trolls,” also could be said to use patent rights as a weapon. Ahmed J. Davis & Karolina Jesien, *The Balance of Power in Patent Law: Moving Towards Effectiveness in Addressing Patent Troll Concerns*, 22 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 835, 836 (2012) (“A patent troll is an entity that focuses solely on capitalizing on patent portfolios. The troll purchases or otherwise obtains patents from other companies for the purposes of licensing and enforcing them, rather than practicing any inventions covered by those patents.”).

25. ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 2 (2004) (“[T]he risk of being sued, and demands by patent holders for royalty payments to avoid being sued, are seen increasingly as major costs of bringing new products and processes to market. Thus, the patent system—intended to foster and protect innovation—is generating waste and uncertainty that hinders and threatens the innovative process.”); see, e.g., Steve Lohr, *Widening Scrutiny of Google’s Smartphone Patents*, N.Y. TIMES, Oct. 10, 2012, at B1 (describing a Federal Trade Commission investigation into Google’s licensing practices with regards to its patents on standard-essential technology for smartphones).

26. See Daniel A. Crane, *Ease Over Accuracy in Assessing Patent Settlements*, 88 MINN. L. REV. 698 (2004) (providing some current debate on the accuracy-ease tradeoff, where a patentee might simply pay the infringer to leave the market rather than deal with the cost and hassle of patent litigation).

27. See, e.g., Duhigg & Lohr, *supra* note 5, at A1.

28. *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350–51 (Fed. Cir. 1999).

accuracy and fairness of the damages determination. But, the reality may be that increased accuracy and cost in calculating damages provided by more extensive litigation could lead to a systemic loss by deterring useful litigation and wasting limited resources best used for innovation.²⁹ Whether the shield of *Grain Processing* provides ample protection for defendants as a well-adapted tool, or merely prolongs litigation and wastes valuable resources, may reveal whether the courts have gone too far, or not far enough, in injecting additional rigor into the patent system.

A. BRIEF HISTORY

Law concerned with the allocation and degree of protection afforded to a patentee has historically endeavored to walk the fine line between monopoly rights and adequate patent protection.³⁰ The result of this balancing has exerted a controlling grasp on the language and construction of today's patent law system. From 1870 to 1946, patent law allowed recovery for the greater of "profits" made by the infringer or "damages" sustained by the patentee caused by infringement.³¹

29. Hausman et al., *supra* note 4, at 852 ("Under *Grain Processing*, courts permit an infringer to claim that in the but-for world it would have adopted an existing noninfringing technology despite the fact that the infringer had never done so. This free option transfers economic value to the infringer and transfers economic value away from the patent holder. Thus, it decreases the economic incentives to innovate, which is one of the primary goals of the U.S. patent system."); Herbert Hovenkamp, Mark D. Janis & Mark A. Lemley, *Balancing Ease and Accuracy in Assessing Pharmaceutical Exclusion Payments*, 88 MINN. L. REV. 712, 712 (2003) ("[L]aw must often choose between simple rules that are prone to error and more complex rules that are more accurate but harder to administer."); see RICHARD A. EPSTEIN, *SIMPLE RULES FOR A COMPLEX WORLD* 29–36 (1995) (proposing that a return to simple legal rules would have efficiency- and cost-related benefits).

30. See, e.g., Ramon A. Klitzke, *Patents and Monopolization: The Role of Patents Under Section Two of the Sherman Act*, 68 MARQ. L. REV. 557, 560–62 (1985) ("The owner of the patent has the right to exclude others from making, using or selling the patented invention Thus, there is power to exclude competition Consequently, it is necessary to forge a compromise between the conflicting policies of rewarding the inventor for the voluntary public disclosure of the invention while protecting the public from untoward intrusions into the domain of a free and open competitive market in which all competitors can participate without unreasonable restraints." (footnote omitted)).

31. Act of Feb. 18, 1922, ch. 58, sec. 6, § 4921, 42 Stat. 389, 392 ("[U]pon a decree being rendered in any such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the

The distinction between the two methods may only be a remnant of the law-equity court system, because courts of law only allowed damages while courts of equity only allowed disgorgement of profit.³² Justification for profit recovery during this period relied upon “word-play and fiction . . . characteriz[ing] such infringer’s profits as ‘unjust enrichment’ or ‘constructive trust,’ then in effect order[ing] ‘restitution’ thereof, and then denominat[ing] the result as ‘damages.’”³³ As a result, courts would characterize either method of recovery as remedial.³⁴ Profit recovery, however, could have historically played a punitive role, at least in part.³⁵ Once a patentee’s rights were violated, retribution would be handed out by judicial sanction with the infringer’s profit as the amount due the patentee.³⁶ Thus, historically, the patent system embraced a variety of ways a patentee could opt to enforce its right to exclude others.³⁷

The statutory precursor to the damage provisions of the Patent Act of 1952 came into effect in 1946.³⁸ The damages

defendant, the damages the complainant has sustained thereby”); Blair & Cotter, *supra* note 22, at 6; DONALD S. CHISUM ET AL., PRINCIPLES OF PATENT LAW 1286 (3d ed. 2004); see *Duplate Corp. v. Triplex Safety Glass Co.*, 298 U.S. 448, 451 (1936) (“In patent nomenclature what the infringer makes is ‘profits,’ what the owner of the patent loses by such infringement is ‘damages.’” (quoting *Diamond Stone-Sawing Mach. Co. v. Brown*, 166 F. 306, 306 (2d Cir. 1908))).

32. See CHISUM ET AL., *supra* note 31, at 1285.

33. *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 243 F. Supp. 500, 528 (S.D.N.Y. 1965).

34. *Id.* at 539.

35. See *Spindelfabrik Suessen-Schurr v. Schubert & Salzer Maschinenfabrik Aktiengesellschaft*, 903 F.2d 1568, 1578 (Fed. Cir. 1990) (examining disgorgement of profit from “[j]udicial sanctions in civil contempt proceedings . . . [as] employed for either or both of two purposes: to coerce the defendant into compliance with the court’s order, and to compensate the complainant for losses sustained” (quoting *United States v. United Mine Workers of Am.*, 330 U.S. 258, 303–04 (1947))). Compare DOUG RENDLEMAN, COMPLEX LITIGATION: INJUNCTIONS, STRUCTURAL REMEDIES, AND CONTEMPT 865–66 (2010) (examining whether disgorgement of profits in a contempt proceeding is actually a penalty/fine for criminal contempt), with *Leman v. Krentler-Arnold Hinge Last Co.*, 284 U.S. 448, 453–57 (1932) (describing profit disgorgement as full compensation in a contempt proceeding as remedial, not penal, in nature).

36. See *Spindelfabrik*, 903 F.2d at 1578–80.

37. See CHISUM ET AL., *supra* note 31, at 1285–86.

38. Act of Aug. 1, 1946, ch. 726, 60 Stat. 778; Blair & Cotter, *supra* note 22, at 6.

portion of the 1946 act advanced to roughly its present form and revised the historic “damages or profits” language.³⁹ After passage, the Supreme Court effectively interpreted away Congress’s omission of profit recovery as divesting courts of authority to order “restitutionary relief.”⁴⁰ Under the 1946 Act, only “general damages” in the form of “due compensation” were recoverable.⁴¹ The purpose of the change was to restrict compensation to the value of the loss rather than the value of the infringer’s gain.⁴² By eliminating profit recovery, Congress sought to ensure that the patentee would receive full compensation for “any damages” he suffered as a result of the infringement.⁴³ The patentee could not, as a matter of common law, recover prejudgment interest.⁴⁴ Accordingly, the damages

39. *Compare* Act of Feb. 18, 1922, ch. 58, sec. 8, § 4921, 42 Stat. 389, 392 (“[T]he complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby . . .”), *with* Act of Aug. 1, 1946, ch. 726, 60 Stat. 778 (“[T]he complainant shall be entitled to recover general damages which shall be due compensation . . .”).

40. CHISUM ET AL., *supra* note 31, at 1286 (“In 1946, Congress again changed the law in a way that was later interpreted by the Supreme Court to eliminate effectively the patentee’s right to obtain the infringer’s profits.”); *see* Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 505–07 (1964); Blair & Cotter, *supra* note 22, at 6–7.

41. Act of August 1, 1946, ch. 726, 60 Stat. 778 (“[U]pon a judgment being rendered in any case for an infringement the complainant shall be entitled to recover general damages which shall be due compensation for making, using, or selling the invention . . .”).

42. Aro, 377 U.S. at 505–06 (“The object of the bill is to make the basis of recovery in patent-infringement suits general damages, that is, any damages the complainant can prove, not less than a reasonable royalty, together with interest from the time infringement occurred, rather than profits and damages.’ There can be no doubt that the amendment succeeded in effectuating this purpose; it is clear that under the present statute only damages are recoverable.” (citations omitted) (quoting H.R. REP. NO. 79-1587, at 1–2 (1946); S. REP. NO. 79-1503, at 2 (1946) (remarks of Senator Pepper))); *see also* Caprice L. Roberts, *The Case for Restitution and Unjust Enrichment Remedies in Patent Law*, 14 LEWIS & CLARK L. REV. 653, 668 (2010) (“Justice Brennan categorically declares the ‘clear’ congressional purpose was to eliminate recovery stemming from the infringer’s profits.”).

43. *See* H.R. REP. NO. 79-1587, at 1 (1946) (“The object of the bill is to make the basis of recovery in patent-infringement suits general damages, that is, any damages the complainant can prove . . .”); S. REP. NO. 79-1503, at 2 (1946).

44. *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 651 (1983) (“Prior to 1946 the provision of the patent laws concerning a plaintiff’s recovery in an infringement action contained no reference to interest. The award of interest in patent cases was governed by the common law standard enunciated in

regime moved toward "award[ing] the claimant damages adequate to compensate for the infringement."⁴⁵

The 1952 revisions to the Patent Act were adopted for the purpose of clarifying the overall presentation and readability of statutory structure.⁴⁶ The 1946 rule, which granted the patentee compensatory damages upon proof of infringement, was readopted.⁴⁷ The Supreme Court has since clarified the standard as the amount the patentee would have made "had the infringer not infringed."⁴⁸ Further, the Supreme Court, in *General Motors Corp. v. Devex Corp.*, allowed recovery of prejudgment interest as a part of compensatory damages, which was not previously allowed under the 1946 common-law standard.⁴⁹

B. BROADER POLICY IMPLICATIONS

While much has changed throughout U.S. patent law history, systemic patent law goals have remained the same. The goals of compensation to aggrieved patentees and deterrence of infringement continue to underlie present legal determinations.⁵⁰ These twin aims, however, are based upon the assumption that they increase, rather than decrease,

several decisions of this Court." (footnote omitted)); *see, e.g.*, *Duplate Corp. v. Triplex Safety Glass Co.*, 298 U.S. 448, 459 (1936) (discussing the common law standard denying prejudgment interest).

45. *Gen. Motors*, 461 U.S. at 655 (quoting 35 U.S.C. § 284); *see also* *Ric-Wil Co. v. E. B. Kaiser Co.*, 179 F.2d 401, 407 (7th Cir. 1950).

46. H.R. REP. NO. 82-1923, at 10, 29 (1952).

47. *See* Act of Aug. 1, 1946, ch. 726, 60 Stat. 778 (1946) ("[T]he court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer . . .").

48. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964).

49. *Gen. Motors*, 461 U.S. at 653 ("We have little doubt that § 284 does not incorporate the *Duplate* standard. Under that standard, which evolved as a matter of federal common law, prejudgment interest could not be awarded where damages were unliquidated, absent bad faith or other exceptional circumstances. By contrast, § 284 gives a court general authority to fix interest and costs. On the face of § 284, a court's authority to award interest is not restricted to exceptional circumstances . . .").

50. *CHISUM ET AL.*, *supra* note 31, at 1284 ("One infringement-remedy goal is to compensate for past infringement The other . . . is to prevent future infringement.").

societal good,⁵¹ even though allowance for some forms of lesser punishment for infringement may potentially lead to more and rapid innovative gains. In this way, the degree of punishment experienced or avoided by an infringer can be seen as one of the ingredients of innovation. So, in a Darwinian marketplace, factors that affect participants, such as needs for adequate market returns or an enhanced learning-curve advantage over competitors, coexist with concerns about patent infringement, and altogether they provide incentives to innovate.⁵²

C. DAMAGE REMEDIES

1. Use of Jury, Bifurcation, and Damages Experts

During the course of litigation, a patentee often relies upon specialized experts to assess infringement damages allegedly caused by the infringer.⁵³ Because arguments over damages are necessary only after a jury decides whether or not a patent is infringed, trials are sometimes bifurcated.⁵⁴ In this way, a trial is initially conducted to determine the existence of the alleged infringer's liability, and if liability against the infringer is found, a further proceeding addresses damages.⁵⁵ Separating a trial into two parts may help focus issues and may avoid

51. See Herbert Hovenkamp, *Response: Notice and Patent Remedies*, 88 TEX. L. REV. 221, 221–30 (2011) (providing an in-depth discussion of the tradeoffs between the patent system's two goals of compensation and deterrence).

52. Deborah Platt Majoras, Chairman, FTC, Competition Policy, Patent Law, and Innovation: Welcoming Remarks for the Patent Reform Conference (June 9, 2005), available at <http://www.ftc.gov/speeches/majoras/050609compolicy.pdf>.

53. See Edward G. Poplawski, *Selection and Use of Experts in Patent Cases*, 27 AIPLA Q.J. 1, 5 (1999) (“The damages phase of a patent lawsuit involves testimony on the amount and methodology of computing damages, and, if lost profits are sought, the appropriateness of awarding damages. Generally, there are four categories of damages experts: (1) accounting experts; (2) patent licensing experts; (3) industry experts; and (4) economists.”).

54. DURHAM, *supra* note 12, at 178 (“One common practice is to hold separate trials on liability and damages. If the infringer is not found liable, there is no need to proceed with the damages phase.”); see Kathleen B. Shields, *The Bifurcation Divide*, LAW360 (Nov. 18, 2009), available at <http://www.choate.com/uploads/113/doc/Shields,%20Lee%20-%20Law360%20-%20The%20Bifurcation%20Divide.pdf> (discussing some of the costs and benefits of bifurcation and the varying views of its usage in patent trials).

55. Shields, *supra* note 54.

confusion of the jury, as well as save unnecessary effort.⁵⁶ In many patent infringement cases, however, trials are not bifurcated for purported reasons of cost and efficiency.⁵⁷ In these cases, the same jury makes both liability and damages determinations in the same trial.⁵⁸ Litigants may decide to retain damages experts far in advance of trial to assess complex damages issues.⁵⁹ Accordingly, experts calculate damages under the presumption of infringement by the defendant.⁶⁰

2. *Georgia-Pacific* Defines Reasonable Royalty Damages

If infringement of a patent-in-suit is ultimately found against an alleged infringer, the patentee is entitled to no less than a reasonable royalty as compensation.⁶¹ A royalty is a payment made to the patent holder by a licensee in exchange for the right to make, use, sell, or import the patented article.⁶²

56. *Id.*

57. *E.g.*, *In re Seagate Tech.*, 497 F.3d 1360, 1369 (Fed. Cir. 2007) (referring to bifurcation as “too onerous to be regularly employed”); *Trading Techs. Int’l, Inc. v. eSpeed, Inc.*, 431 F. Supp. 2d 834, 836–37 (N.D. Ill. 2006) (“Although the ultimate decision to bifurcate is within our discretion, because we are expected to act to secure the just, speedy, and inexpensive determination of every action, bifurcation remains the exception, not the rule. Patent cases are no exception to this rule. The party seeking separate trials has the burden of showing that judicial economy would be served and the balance of potential prejudice weighs in favor of bifurcation.” (internal quotation marks and citations omitted)).

58. *See* DURHAM, *supra* note 12, at 181–82.

59. *See, e.g.*, JOHN O. MIRICK & KENNETH C. PICKERING, MASSACHUSETTS EXPERT WITNESSES 2-2 to 2-3 (2d ed. 2010); Poplawski, *supra* note 53, at 17 (“As most patent cases do not reach the damage phase of trial, because of settlement, damages experts are not ordinarily retained at the initial stages of the litigation. Therefore, many litigants conclude that early use of damages experts amounts to considerable unnecessary expense. Nevertheless, where the damages issues are complex or the potential damages are relatively high, trial counsel would do well to retain damages experts at an earlier stage in the litigation.”).

60. Poplawski, *supra* note 53, at 17.

61. 35 U.S.C. § 284 (2006 & Supp. V 2011) (“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”).

62. DURHAM, *supra* note 12, at 47 (“A licensor retains ownership of the patent but grants the licensee the right to practice the claimed invention, usually in exchange for some sort of royalty.”); *see* Philip Mendes, *To License a Patent—Or to Assign It: Factors Influencing Choice*, WORLD INTELL. PROP.

In the normal course of business, such royalties result from the willing negotiations between a licensee and a patent holder of the patented article.⁶³ Once the parties have instead sought resolution through litigation, however, discussions are far removed from “willing” negotiations that exist in the normal course of business.⁶⁴ In determining what constitutes a “reasonable royalty” for the purpose of damage remedy, the court in *Georgia-Pacific Corp. v. U.S. Plywood Corp.* enumerated fifteen factors,⁶⁵ which have since been used by

ORG., http://www.wipo.int/sme/en/documents/license_assign_patent.htm#author (last visited Oct. 12, 2013).

63. *Cf.* DURHAM, *supra* note 12, at 183 (“A reasonable royalty is the amount that the infringer would have paid the patentee if, instead of infringing the patent, it had negotiated a license.”).

64. *Cf.* *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (“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.”).

65. *Id.* The court enumerated the following factors:

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 conveyed sales.
7. The duration of the patent and 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 for working out similar results.
10. The nature of the patented invention; the

courts to construct a “hypothetical negotiation” between the parties to litigation.⁶⁶ A reasonable royalty is viewed as the statutory minimum amount necessary to compensate the patentee for the defendant’s infringement, once liability is found.⁶⁷

3. The *Panduit* Test and Entitlement to Lost Profits

To avoid what some view as less-than-adequate compensation under *Georgia-Pacific*’s reasonable-royalty calculation,⁶⁸ plaintiffs may seek to assess their entitlement to

character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention. 11. 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.

66. See DURHAM, *supra* note 12, at 184.

67. 35 U.S.C. § 284 (2006 & Supp. V 2011) (“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”).

68. See generally *Patent Damages Primer: Damages Under the Patent Statute*, FISH & RICHARDSON, <http://www.fr.com/primer/> (last visited Feb. 1, 2013) (“A danger in the ‘willing licensor-willing licensee’ approach, particularly for the infringer, is taking the name too literally and building a damages defense around a very low actual royalty rate the parties might have negotiated in the real world. Reasonable royalty damages can be different from any pre-infringement, real-world royalty the parties would have actually negotiated. Indeed, the Federal Circuit has routinely affirmed ‘reasonable

lost profits.⁶⁹ These are profits the patentee would have made without the defendant's alleged infringement.⁷⁰ In *Panduit Corp. v. Stahlin Bros.*, the Court of Appeals for the Sixth Circuit articulated a fundamental framework providing four factors that govern the determination of a plaintiff's entitlement to recover lost profits due to infringement.⁷¹ This is "the most widely used test for determining lost-profits damages," and is employed by the Federal Circuit as an "acceptable method of determining profits."⁷² In short, *Panduit* describes a four-step test to determine how events would have transpired in a relevant marketplace "but for" the defendant's alleged infringement.⁷³

4. *Grain Processing* Is Critical to *Panduit* Analysis

The *Panduit* factors are applied in damages assessments to determine whether, without the infringer's actions in the relevant market, the patentee could have captured the sales and profits made by the infringer.⁷⁴ *Panduit* requires that the

royalty' awards in excess of what the parties would have actually agreed to as a result of licensing negotiations prior to infringement.").

69. See Mark A. Lemley, *Distinguishing Lost Profits from Reasonable Royalties*, 51 WM. & MARY L. REV. 655, 661 (2009) ("[I]t is not only possible but common that lost profits will exceed the defendant's gains from infringement. The idea that patent damages tend to be greater in lost profits cases than in reasonable royalty cases makes sense for policy purposes, so long as the reasonable royalty awards go to patentees who are not in fact selling products in the market." (footnote omitted)).

70. See ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT 417 (2d ed. 1991) ("Lost profits may be in the form of diverted sales, eroded prices, or increased expenses."); Hausman et al., *supra* note 4, at 827 ("A patent holder can lose profits to an infringer in several ways. By far the most important source of lost profits is the sales that the patent holder lost to the infringer. Absent the infringement (often termed the "but-for" world), the patent holder would have made some or all of the sales that the infringer made. The damages associated with these lost sales are the incremental profits that the patent holder would have made on the sales." (footnotes omitted)).

71. *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.* 575 F.2d 1152 (6th Cir. 1978); Hausman et al., *supra* note 4, at 833 ("In attempting to ascertain whether to award lost profits, American courts often refer to the '*Panduit* factors,' all of which must be satisfied for an award of lost profits . . .").

72. Chretien, *supra* note 8, at 1495–96.

73. *Id.*

74. *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1577 (Fed. Cir. 1989) ("To get lost profits as actual damages, the patent owner must demonstrate that there was a reasonable probability that, but for the

plaintiff prove (1) demand for the patented product; (2) absence of acceptable noninfringing substitutes; (3) the plaintiff's capabilities to manufacture and market; and thus exploit market demand; and (4) the amount of the profit the plaintiff would have earned "but for" the infringement.⁷⁵

In many cases, the plaintiff may readily qualify under several of the *Panduit* factors. The first *Panduit* factor, demand for the patented product, is established by examining the existing and forecasted product sales enjoyed by the patent holder or its licensees.⁷⁶ As a practical matter, a patent holder's established relationship with its licensee, or as a current participant in the relevant market, make this determination of patented product sales readily amenable to economic analysis.⁷⁷ Similarly, the plaintiff may be aided by ease of access to the information necessary to show the marketing and manufacturing capabilities required under the third *Panduit* factor.⁷⁸ Calculation of the profits lost "but-for" infringement, the fourth factor, logically flows from establishing proof of the "demand" and "supply" factors,⁷⁹ and requires an "estimation of

infringement, it would have made the infringer's sales [W]e have accepted [*Panduit*] as a nonexclusive standard for determining lost profits."

75. *Panduit*, 575 F.2d at 1156.

76. *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1330 (Fed. Cir. 2009) ("[T]he first *Panduit* factor simply asks whether demand existed for the patented product, i.e., a product that is covered by the patent in suit' or that 'directly competes with the infringing device.'" (internal quotation marks omitted)); see also *Bros. Inc. v. W.E. Grace Mfg. Co.*, 320 F.2d 594, 598 (5th Cir. 1963) ("The substantial sales made prove a demand.").

77. See MICHAEL C. KEELEY, ESTIMATING DAMAGES IN PATENT INFRINGEMENT CASES: AN ECONOMIC PERSPECTIVE 3–4 (1999), available at <http://www.cornerstone.com/getattachment/d578b7e4-be8d-4b0a-9cd5-a79d1081b866/Estimating-Damages-in-Patent-Infringement-Cases.aspx>.

78. Cf. *Blair & Cotter*, *supra* note 22, at 17–18 ("To satisfy the third factor, capacity to exploit the demand for the patented product, the patent owner may need to present evidence of such things as excess manufacturing capacity, ability to obtain financing, and ability to market additional units of the product. Disputes most frequently center, however, on application of the second factor" (footnote omitted)).

79. See KEELEY, *supra* note 77, at 5 ("[T]he fourth *Panduit* factor requires economic analysis of the incremental costs the firm would have incurred in meeting [additional] demand. This relates to the third *Panduit* factor, 'manufacturing and marketing capacity.'). Of course, the first *Panduit* factor would also aid in this incremental cost analysis by determining what the demand is for the particular product.

the patent holder's incremental profit on the additional sales."⁸⁰

In contrast to these three factors, the remaining *Panduit* factor, involving absence of acceptable noninfringing substitutes, remains a substantial hurdle to the plaintiff's claim for lost profits.⁸¹ Generally, the plaintiff must show that during the period of infringement, or the "accounting period," the plaintiff's customers purchased the defendant's product specifically because of the advantages bestowed upon that product by the allegedly infringed patent.⁸² Put differently, without the patented advantages, customers would not have purchased the allegedly infringing product at the price or terms offered. Complicating proof of the second factor, competing products are generally not "perfect substitutes" in the marketplace, which leaves open disputes pertaining to the degree of substitutability.⁸³ Also, the difficulty of proving the absence of acceptable noninfringing substitutes has been made more challenging by the addition of criteria from *Grain Processing*, upon which the alleged infringer can rely.⁸⁴

D. GRAIN PROCESSING

1. Procedural History

On appeal from the Northern District of Indiana, the United States Court of Appeals for the Federal Circuit in *Grain Processing Corp. v. American Maize-Products Co.* issued a panel decision in 1999 to deny lost profits damages to the

80. Hausman et al., *supra* note 4, at 834.

81. See KEELEY, *supra* note 77, at 4 (providing an example of calculating the "degree of substitution" of a product and the uncertainty and difficulty some demand-and-supply-side factors may cause in the calculation of *Panduit's* second "absence of noninfringing alternatives" element); Blair & Cotter, *supra* note 22, at 18–20.

82. *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1373 (Fed. Cir. 1991) ("Thus, to prove that there are no acceptable noninfringing substitutes, the patent owner must 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.").

83. See KEELEY, *supra* note 77, at 5.

84. *Micro Chem., Inc. v. Lextron, Inc.* 318 F.3d 1119, 1123 (Fed. Cir. 2003) (discussing the additional criteria under *Grain Processing* of equipment, know-how, and experience in order to show availability of a non-infringing alternative); Chretien, *supra* note 8, at 1505.

patentee following a complex procedural history.⁸⁵ The court ruled that the defendant proved that a noninfringing substitute was available even though the substitute was not, in fact, on the market or actually for sale during the period of alleged infringement.⁸⁶ Furthermore, the court held that the patentee failed to show lost profits under a required reconstruction of the market as it would have developed “but for” the defendant’s alleged infringement.⁸⁷ The court opined that even though the defendant’s substitute was not perfect, it was an “acceptable” substitute, thus satisfying *Panduit*, because the differences between the patented product and its substitute were “irrelevant to consumers.”⁸⁸

2. The Legal Contribution of *Grain Processing*

Grain Processing has substantially altered modern lost profits analysis. Prior analysis was conducted to determine whether infringement of a particular patented article caused the patentee to lose customers,⁸⁹ and to quantify the sort of sales the patentee would have made absent the infringement.⁹⁰ In *Grain Processing*, however, the Federal Circuit examined the value of the patentee’s exclusionary right in a “but for” marketplace, which is described as a “hypothetical world”

85. See *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341 (Fed. Cir. 1999) (affirming the district court’s second decision denying lost profits to Grain Processing Corporation); *Grain Processing Corp. v. Am. Maize-Prods. Co.*, Nos. 95-1506, 95-1507, 1997 U.S. App. LEXIS 9918 (Fed. Cir. Feb. 20, 1997) (vacating the district court’s decision in an unpublished opinion); *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 979 F. Supp. 1233 (N.D. Ind. 1997) (reaffirming its previous decision to deny lost profits to Grain Processing Corporation on the same non-infringing substitutes grounds); *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 893 F. Supp. 1386 (N.D. Ind. 1995) (holding that Grain Processing Corporation could not prove lost profits damages because of the availability of non-infringing substitutes).

86. *Grain Processing*, 185 F.3d at 1356 (“Thus, with proper economic proof of availability, as American Maize provided the district court in this case, an acceptable substitute not on the market during the infringement may nonetheless become part of the lost profits calculus and therefore limit or preclude those damages.”).

87. *Id.* at 1355.

88. *Id.* at 1348 (discussing the conclusions of the district court, which the Federal Circuit affirmed).

89. ALAN L. DURHAM, *PATENT LAW ESSENTIALS: A CONCISE GUIDE* 162 n.57 (1999) (“Earlier cases had focused on whether *customer demand* for the entire item could be attributed to the patented component or feature.”).

90. CHISUM ET AL., *supra* note 31, at 1287.

absent the alleged infringement.⁹¹ As a result, the inquiry was supplemented with an additional determination that sought to assess “alternative actions the infringer foreseeably would have undertaken had he not infringed.”⁹² Perhaps this determination had signaled a meaningful shift in court rationale and had brought legal analysis more in line with the economic realities of patent infringement.⁹³ However, it seems that if a “perfect market substitute” could potentially be concocted and made available by the alleged infringer, it follows that a patentee’s right to exclude others from making, using, or selling that article has little value.⁹⁴ The patentee’s remedy for infringement would then be limited to payment for a license, typically a reasonable royalty.⁹⁵

3. Effect of *Grain Processing* on Legal Standard

The court in *Grain Processing*, therefore, transformed the mechanical application of a once bright-line legal standard into a more accurate determination with substantial evidence on both sides of the issue.⁹⁶ *Grain Processing* has since stood for the proposition that even if the plaintiff substantially proves that most of the *Panduit* factors are satisfied, the alleged infringer may avoid paying lost profits damages by showing that it simply had the “equipment” and “know-how” necessary to “instantaneously” produce and introduce a consumer-acceptable, noninfringing substitute with “little effort.”⁹⁷ This approach marked a noticeable shift in the Federal Circuit’s move “towards a more thoughtful consideration of economic

91. *Id.*

92. *Grain Processing*, 185 F.3d at 1350–51.

93. See Chretien, *supra* note 8, at 1514 (“*Grain Processing* is an example of the recent trend of using economic principles to address . . . problems in patent damage calculations. Proponents of this approach assert that economic-based analysis improves the chances that damage awards will provide adequate compensation to the patent holder.” (footnote omitted)).

94. See Hausman et al., *supra* note 4, at 835.

95. See Chretien, *supra* note 8, at 1506, 1518–19; *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970).

96. *Grain Processing*, 185 F.3d at 1350–51 (Fed. Cir. 1999) (“[F]air 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.”).

97. See *id.*

realities.”⁹⁸ *Grain Processing* has remained reliable precedent, and its principles were reaffirmed in *Sprectralytics, Inc. v. Cordis Corp.* in 2011.⁹⁹

II. PRE- AND POST-*GRAIN PROCESSING* CASES

The following section summarizes court actions resulting from six Federal Circuit lost profits appeals. Three of these appeals were decided pre-*Grain Processing* and three others post-*Grain Processing*.¹⁰⁰ This Note uses these cases as factual inputs to further understand the *Grain Processing* decision, and analyzes both sets of cases to observe regular economic assumptions the courts have used in the normal course of their lost profits damages analysis.

A. PRE-*GRAIN PROCESSING* CASES

1. *State Industries Inc. v. Mor-Flo Industries, Inc.*

State Industries Inc., v. Mor-Flo Industries, Inc. involved a patent covering a method of insulating residential gas water heaters.¹⁰¹ State argued that the damages award, which combined a reasonable royalty and lost profits, was too low in light of the gross profits Mor-Flo had made selling an allegedly infringing product.¹⁰² Mor-Flo disagreed, maintaining that

98. Michael A. Morin, *Processing Grain: Lost Profits Damages and Some Practical Considerations for the Patent Litigator*, FINNEGAN.COM, <http://www.finnegan.com/resources/articles/articlesdetail.aspx?news=c29ba550-8c55-4b4f-a9a5-b2c72b1749c4> (last visited Oct. 20, 2013).

99. See *Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1346 (Fed. Cir. 2011).

100. These cases were selected from a small pool of relevant cases that seemed to turn on facts similar to the *Grain Processing* inquiry. All were published opinions from the United States Court of Appeals for the Federal Circuit.

101. *State Indus., Inc. v. Mor-Flo Indus., Inc.* 883 F.2d 1573, 1575–76 (Fed. Cir. 1989). At the time of this litigation, two types of water heater insulation—fiberglass and foam—dominated the market. State’s method involved an effective way of injecting foam insulation into the heater while also preventing the foam from invading the water heater’s working components. The process involved wrapping the heater with an envelope-shaped plastic sheet, mounting a surrounding metal jacket and cover, and finally injecting foam through an opening into the envelope. Mor-Flo’s method, on the other hand, used a cylindrical-shaped rather than an envelope-shaped plastic sheet, and injected foam through the top. *Id.*

102. State had cross-appealed a favorable judgment from the U.S. District Court for the Eastern District of Tennessee awarding lost profit damages due

there were other acceptable noninfringing alternatives to the alleged infringing product on the market.¹⁰³

Despite Mor-Flo's arguments, the court upheld the lost profits damages because there were no acceptable noninfringing alternatives on the market during the infringement period.¹⁰⁴ The court rejected common fiberglass insulation as an acceptable substitute for foam insulation included in the litigant's water heaters.¹⁰⁵ In addition, the court turned to comparisons between three foam insulation methods that were arguably available at the time of infringement.¹⁰⁶ The court concluded that none of the three foam insulations were sufficiently available noninfringing alternatives.¹⁰⁷ *State v. Mor-Flo* is also noted for the court's market-share approach, which considers the amount of relevant market share the patent holder lost to infringing competitors as a basis for damages.¹⁰⁸

to infringement. The U.S. Court of Appeals for the Federal Circuit in 1989 affirmed the lower court's decision but vacated and remanded for reconsideration of willful infringement and enhanced damages. *Id.*

103. *Id.* at 1579.

104. *Id.* at 1578–79.

105. *Id.* However, the court later reduced the reasonable royalty because fiberglass insulation did directly compete with foam. *Id.* at 1581. Further, foam insulation was superior as a denser material having greater insulating qualities, added dent resistance, and allowed for smaller heaters. *Id.* at 1576.

106. *Id.* at 1579.

107. Two of these methods—the “top-off” method and the fiberglass “foam stop” method—failed as redeeming substitutes because Mor-Flo had insufficient evidence to prove with certainty that either method was in fact available during the infringement period. *Id.* But it did not prove that either the “top-off” method or fiberglass foam stops were available during the period of infringement. *Id.* Mor-Flo's competitor even testified that they had started using the “top-off” method during the infringement period, but he was unsure when. *Id.* The third method—the Rheem-patented plastic foam belt—was actually used by Rheem during the period of infringement. *Id.* The court, however, dismissed the Rheem method as an acceptable alternative because Mor-Flo presented no evidence showing that the method could have been licensed and at what cost. *Id.* at 1581. As a result, lost profit damages were upheld because there were no acceptable non-infringing alternatives on the market during the infringement period. *Id.* at 1579.

108. *Id.* at 1576; see Roy J. Epstein, *The Market Share Rule with Price Erosion: Patent Infringement Lost Profits Damages After Crystal*, 31 AIPLA Q.J. 1, 3–4 (2003).

2. *Zygo Corp. v. Wyko Corp.*

Zygo Corp. v. Wyko Corp. concerned an industrial-product patent for an interferometer.¹⁰⁹ On appeal Wyko, the alleged infringer, argued that lost profits damages were inappropriate because its previously discontinued interferometer, named SIRIS, was an acceptable noninfringing alternative.¹¹⁰ Zygo's main assertion was that Wyko's previous SIRIS model was discontinued and not actually available on the market.¹¹¹

The court was unconvinced that Zygo was entitled to lost profits as Wyko's SIRIS strongly resembled an acceptable noninfringing alternative. The court favorably compared Wyko's SIRIS model with Zygo's Mark IV.¹¹² The court also considered SIRIS similar to Wyko's new "Wyko 6000" model.¹¹³ Satisfied with its determination that SIRIS was an "acceptable" alternative, the court vacated and remanded Zygo's lost profits award back to the trial court.¹¹⁴

109. *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1565 (Fed. Cir. 1996). An interferometer is a device used to measure wavelengths, wave velocities, small distances, and thicknesses. See Rüdiger Paschotta, *Interferometers*, ENCYCLOPEDIA LASER PHYSICS & TECH., <http://www.rp-photonics.com/interferometers.html> (last updated May 28, 2013).

110. *Zygo*, 79 F.3d at 1565–66. Wyko Corp. appealed an adverse judgment of infringement by the U.S. Federal District Court of Arizona. *Id.* at 1565. In 1996, the U.S. Court of Appeals for the Federal Circuit affirmed the lower court's finding of infringement for one model, the Wyko 6000, but reversed the finding of infringement for the second, the Wyko 6000 "redesign." *Id.* The U.S. Court of Appeals for the Federal Circuit remanded the case back to the trial court in order to recalculate damages. *Id.*

111. Wyko had discontinued its SIRIS model after it began to market and produce the Wyko 6000. *Id.* at 1571.

112. *Id.* at 1571. The court noted that SIRIS could test the same components, serve the same applications, and "there was nothing the Mark IV could do that the SIRIS . . . could not." *Id.* Further, the court found that SIRIS and the Mark IV were both the same type of "phase-shifting Fizeau type interferometer." *Id.*

113. The court observed that SIRIS was simply "repackaged" and renamed the Wyko 6000 and that software used for both of Wyko's models was "basically the same." *Id.*

114. *Id.* at 1571–72. The remand, however, included the important caveat noting that the non-infringing alternative must be "actual[ly] availabl[e]" during some of the period the . . . Wyko [6000] models were on the market." *Id.* at 1571. The court reasoned that the lost profits calculation was only a reflection of sales actually lost, not the "possibilit[y]" of a hypothetical market which the infringer might have created." *Id.*

3. *Pall Corp. v. Micron Separations, Inc.*

Pall Corp. v. Micron Separations, Inc. involved a product-patent lawsuit over a microfiltration membrane.¹¹⁵ The damages issue on appeal was whether an acceptable noninfringing alternative prevented Pall's entitlement to lost profit damages.¹¹⁶ Pall asserted that the noninfringing alternative did not bar lost profits entitlement, but also that it was entitled to lost profits on all of Micron's infringing sales.¹¹⁷

The court held that availability of an acceptable noninfringing alternative did not preclude Pall's entitlement to lost profits.¹¹⁸ The court acknowledged that an acceptable noninfringing alternative to Micron's membrane existed in the nylon membrane market, made by Cuno. But, prior to the Pall-Micron litigation, Cuno's membrane infringed upon Pall's patent,¹¹⁹ and Cuno had already entered into a licensing settlement with Pall. The court explored the impact of Cuno's licensing settlement with Pall on Micron's infringing membrane.¹²⁰ As a result, the court held that Pall was entitled to lost profits because the only acceptable alternative, Cuno's

115. *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1215 (Fed. Cir. 1995). Microfiltration membranes are used to remove unwanted microscopic substances, such as bacteria, from fluids or to separate desired substances, such as antibodies. See *Microfiltration Membrane Systems*, SIEMENS, http://www.water.siemens.com/en/products/membrane_filtration_separation/microfiltration_membrane_systems/Pages/default.aspx (last visited Sept. 7, 2013).

116. *Pall*, 66 F.3d at 1222. Both parties appealed judgment of the U.S. District Court of Massachusetts finding Micron Separations had infringed, entitling Pall Corp. to damages. *Id.* at 1214–15. In 1995, the U.S. Court of Appeals for the Federal Circuit reversed the lower court's finding of willful infringement, modifying and remanding the damages award back to the trial court for redetermination. *Id.* at 1215. The district court held that another participant in the nylon membrane industry, Cuno Corporation, was marketing an acceptable noninfringing alternative. *Id.* at 1222. Cuno's membrane alternative, however, had previously been the subject of litigation with Pall, prior to Pall's lawsuit against Micron. *Id.* at 1222–23.

117. *Id.* at 1222.

118. Cuno's "voluntary settlement" with Pall did "not retrospectively transform an accused infringing product into a 'noninfringing substitute,'" for the purposes of litigation with Micron. *Id.* at 1222–23.

119. *Id.* at 1222. The court limited the award of lost profits to the share of Micron's sales that Pall would reasonably have made, taking into account Cuno's post-settlement sales with Pall. *Id.* at 1223.

120. *Id.* at 1222–23.

membrane, was really an infringing one.¹²¹ *Pall* suggests that a compromise exists between patent value and a patentee's entitlement to compensation in that lost profits were recognized but reduced accordingly.¹²²

B. POST-GRAIN PROCESSING CASES

1. *Siemens Medical Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*

Siemens Medical Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc. involved a product-patent dispute over a particular type of scintillator crystal used in its positron emission tomography machines, also known as *PET* scanners.¹²³ Saint-Gobain, the alleged infringer, argued that the existence of two acceptable noninfringing alternatives defeated Siemens' entitlement to lost profits.¹²⁴ Siemens responded that both alternatives were inferior and were therefore not sufficiently acceptable noninfringing alternatives in the "high-end" marketplace.¹²⁵

121. *Id.* The lower court's damage award was affirmed, but damages as a result of Cuno's settlement with *Pall* were remanded for recalculation. *Id.* at 1223.

122. See *infra* note 165 and accompanying text.

123. *Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*, 637 F.3d 1269 (Fed. Cir. 2011). Positron emission tomography ("PET") is a nuclear medical imaging technique that provides images and information about the chemical structure and function of a patient's organ systems. See *Positron Emission Tomography*, MAYO CLINIC (May 7, 2011), <http://www.mayoclinic.com/health/pet-scan/MY00238>.

124. *Siemens*, 637 F.3d at 1287. The essential damages issue involved Siemens's cross-appeal that the U.S. District Court of Delaware had erred in granting Saint-Gobain's motion for judgment as a matter of law reducing the jury's award of damages. *Id.* at 1274. The jury found that the defendant had infringed upon the plaintiff's patent and awarded \$52.3 million in damages. *Id.* at 1276. The judgment was reduced to \$44.9 million by the trial court. *Id.* In 2011 the U.S. Court of Appeals for the Federal Circuit affirmed the lower court's decision on infringement but vacated and remanded the damages award, as it was understated by not including a reasonable royalty for those products that were made but not sold by the infringer. *Id.* at 1290–91. There were two possible noninfringing alternatives: one alternative, made by General Electric, used bismuth germinate scintillator ("BGO") crystals. The other was a lanthanum bromide ("LaBr3") scintillator crystal that Saint-Gobain arguably could have produced. *Id.* at 1287.

125. *Id.* at 1288. There was testimony that BGO-based scanners did not compete with Siemens' scanners in the high-end PET scanner market because BGO scanners had relatively low image quality and were purchased by low-

The court held that there was sufficient evidence for a lack of acceptable noninfringing alternatives to permit Siemens to recover lost profits.¹²⁶ The court evaluated the acceptability of Saint-Gobain's argued alternatives,¹²⁷ and, using the *Grain Processing* standard, gauged whether the noninfringing alternatives were actually available or on the market during the infringement period.¹²⁸ Despite evidence that Siemens' scintillator crystal was comparable to General Electric's,¹²⁹ the court found Saint Gobain's noninfringing-alternative arguments unavailing and upheld Siemens' entitlement to lost profits.¹³⁰

2. *Micro Chemical, Inc. v. Lextron, Inc.*

Micro Chemical, Inc. v. Lextron, Inc. involved a patent over a livestock and poultry feed-dispensing machine.¹³¹ Lextron argued, and a lower court found, that its Type 5 machine was an acceptable and available noninfringing substitute, which barred Micro's entitlement to lost profits.¹³²

On appeal, the court found the lower court's assessment unpersuasive and allowed Micro to present its case for lost profits.¹³³ The court first conducted an in-depth analysis of the *Grain Processing* standards for availability of noninfringing alternatives.¹³⁴ After examination of whether Lextron had the

budget customers while Siemen scanners were more expensive and were purchased by customers seeking the best in performance and technology. *Id.* at 1288.

126. *Id.* at 1289.

127. *Id.* at 1288–89 (deciding whether there was a two-supplier, high-end market for PET scanners).

128. *Id.* at 1288 (“Notwithstanding, the evidence reasonably supported a finding that LaBr3 was not an available alternative.”).

129. *Id.* at 1287 (“Saint-Gobain contends that GE's BGO scanners competed with Siemens' LSO scanners, because Siemens lost PET scanner sales to GE.”).

130. *Id.* at 1288 (“We perceive no legal error in the district court's decision to permit the jury to award lost profits damages.”).

131. *Micro Chem. v. Lextron, Inc.*, 318 F.3d 1119, 1121 (Fed. Cir. 2003). Both *Micro Chem.* and *Lextron* placed their machines in customer feedlots at no charge, allowing them to sell microingredients to the feedlots at a premium.

132. *Id.* at 1121–23.

133. *Id.* at 1126.

134. *Id.* at 1223–24. The court reversed the district court's finding that the *Lextron* Type 5 machine was available. *Id.* at 1224. *Lextron* therefore did not have the “necessary equipment, know-how, and experience to make the Type 5

equipment, know-how, and experience to manufacture and substitute its noninfringing machine for the allegedly infringing one, the court concluded that a noninfringing machine was not sufficiently available at the time of infringement.¹³⁵ The court also held that Lextron had instead attempted to design around Micro's patented technology after the suit was brought.¹³⁶

3. *Mars, Inc. v. Coin Acceptors, Inc.*

Mars, Inc. v. Coin Acceptors, Inc. concerned technology used in vending machines to authenticate coins.¹³⁷ Mars argued it was entitled to lost profits based on sales made prior to Coin Acceptor's ("Coinco's") introduction of alternative technology.¹³⁸ Coinco argued that lost profits should have been entirely excluded from calculation of a lost profits-influenced reasonable royalty rate.¹³⁹

The court upheld the exclusion of Mars' lost profits claim, and affirmed the district court's reasonable royalty calculation.¹⁴⁰ The court first analyzed whether lost profits were appropriate given that Mars' subsidiary, and not Mars itself, sustained losses from Coinco's infringement.¹⁴¹ Second, despite finding a lost profits remedy inappropriate, the court

machine at the time of infringement." *Id.* at 1123. Lextron had expended a significant amount of labor, taking over four months to convert all of its infringing machines to the non-infringing Type 5 machines. *Id.*

135. *Id.* ("This record shows that the Type 5 machine was not available at the time of infringement.")

136. *Id.* ("To the contrary, the record shows that Lextron designed around the patented technology after Micro established infringement.")

137. *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1362 (Fed. Cir. 2008).

138. *Id.* at 1365.

139. *Id.* at 1372 ("First, Coinco argues that the district court erred by awarding a reasonable royalty rate higher than the cost to Coinco of implementing acceptable noninfringing alternatives. Second, Coinco argues that the reasonable royalty rate could not exceed 4%, in light of Mars's representations to Inland Revenue. Finally, Coinco claims that the district court erred by relying on Coinco's incremental profit, rather than its operating profit, to calculate a reasonable royalty.")

140. *Id.* at 1374 ("[W]e *affirm* the district court's summary judgment excluding Mars's lost profits claim."). The reasonable royalty rate, however, was not limited by the cost of Mars's least expensive noninfringing alternative and the court seems to provide that the potential availability of noninfringing alternatives had an effect on the reasonable royalty rate. *Id.* at 1373.

141. *Id.* at 1364-67.

used *Grain Processing* language in justifying its reasonable royalty calculation.¹⁴² The court seemed to establish that Coinco's noninfringing alternatives were available—but not sufficiently available—to absolve Coinco of all lost profits damages owed to Mars.¹⁴³

III. ANALYSIS

A. *GRAIN PROCESSING* FORMALIZED CONSIDERATIONS THAT WERE ALREADY LARGELY AT WORK FOR DETERMINING THE PRESENCE OR ABSENCE OF AVAILABLE NONINFRINGEMENT ALTERNATIVES

The three earlier cases analyzed show that, even before *Grain Processing*, courts were already positioned to deviate from *Panduit* when considering entitlement to lost profits damages affected by the availability of acceptable noninfringing alternatives. The *Grain Processing* precedent provided courts with further latitude when interpreting the existence of an available noninfringing alternative and entitlement to lost profits.¹⁴⁴ *Grain Processing* seems to have provided litigants with a road map for the inquiry the Federal Circuit was previously, for the most part, inconsistently applying. While the presence of noninfringing alternatives, as defined under *Grain Processing*, precluded lost profits claims definitively in some instances, it failed to undermine claims for lost profits in other instances.¹⁴⁵

After *Grain Processing*, the courts applied the broader noninfringing-alternative standard to both support and deny the absence of available noninfringing alternatives. In *Siemens*

142. *Id.* at 1373 (“There was, therefore, no available and acceptable non-infringing alternative to which Coinco could have switched at the time of the hypothetical negotiation; there was merely the possibility that it could have come up with one.”).

143. *See id.* (discussing how the district court reduced the blended royalty rate from 11.5% to 7%).

144. *See generally* *Grain Processing Corp. v. Am. Maize-Prod. Co.*, 185 F.3d 1341, 1356 (Fed Cir. 1999) (“The availability of substitutes invariably will influence the market forces defining this ‘but for’ marketplace Moreover, a substitute need not be openly on sale to exert this influence. Thus, with proper economic proof of availability . . . an acceptable substitute not on the market during the infringement may nonetheless become part of the lost profits calculus and therefore limit or preclude those damages.”).

145. *See supra* Part II.A.

v. Saint-Gobain, despite the existence of an arguably acceptable noninfringing alternative on the scintillator crystal market, the court found lost profit damages appropriate.¹⁴⁶ In doing so, the court found it prudent to distinguish between “high-end” and “low-end” scintillator crystals, notwithstanding the evident arbitrariness of such a classification, as it invoked *Grain Processing* standards to bolster its analysis.¹⁴⁷ The court’s end-run on *Panduit*’s noninfringing alternative hurdle appears little more than an exercise in legal gymnastics.

In the pre-*Grain Processing* example of *State v. Mor-Flo*, if the *Panduit* standard had been adhered to strictly, the court’s recognition of Mor-Flo’s ability to in-license (and ultimately develop) an available and acceptable noninfringing alternative should have barred lost profits recovery. Yet, the court concluded: “we see no objection [to the lower court’s decision] not to allow Mor-Flo to rely on the availability of third party patents to mitigate damages.”¹⁴⁸ Even after explicit acknowledgment of the potential of a noninfringing alternative method, the court denied its existence in determining lost profits entitlement.¹⁴⁹ The court seemed uninterested or unwilling to adhere to *Panduit*, and to apply it consistently.

B. GRAIN PROCESSING HAS HAD A DEMONSTRABLE, BUT PERIPHERAL, IMPACT

One might also think that prior to *Grain Processing*, the four *Panduit* factors were sufficient and were guided by a well-developed body of case law ready for application.¹⁵⁰ But it becomes apparent, especially in the three cases prior to *Grain Processing*, that application of the *Panduit* factors and their effects on lost profits entitlement is strained.¹⁵¹ In this manner,

146. Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc., 637 F.3d 1269, 1287–89 (Fed. Cir. 2011).

147. The arbitrariness was evidenced by overlapping sales between what the court argues as discrete categories of PET scan machines. *See id.* at 1288.

148. *State Indus., Inc. v. Mor-Flo Indus., Inc.*, 883 F.2d 1573, 1581 (Fed. Cir. 1989).

149. *Id.* (“The district court may have overlooked that the Rheem patented plastic foam belt might have provided an alternative way to foam insulate heaters, but Mor-Flo presented no evidence that it could have licensed the Rheem foam belt, and at what cost.”).

150. *See Chretien, supra* note 8, at 1495–96.

151. *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1223 (Fed. Cir. 1995); *State Indus.*, 883 F.2d at 1577–81.

Grain Processing could have served to clarify or, by acting as an added guide post, to formalize further specific criteria that the courts should consider and the litigants should address. The addition of such criteria has provided courts a further-reaching, and potentially more solid, evidentiary basis for decisions on entitlement to certain forms of damages. Both litigating parties now have more than adequate incentive to provide evidence and expert testimony necessary to prove, or disprove, the capabilities and capacities necessary to produce a noninfringing alternative under *Panduit*. Some of the evident strain with application of *Panduit* seems to dissipate after additional criteria defining a noninfringing alternative were formalized by *Grain Processing*.

Prior to *Grain Processing*, *State v. Mor-Flo*'s dubious application of *Panduit*'s noninfringing-alternative test is noticeable.¹⁵² Despite the court's awareness of at least one acceptable noninfringing alternative to State's patented method, the court's probe goes no further because "Mor-Flo presented no evidence that it could have licensed the [alternative] foam [injection method], and at what cost."¹⁵³ Even though the court identified an available noninfringing alternative, it required more proof than the mere existence of such an alternative.¹⁵⁴ However, the court did apply an approach later formalized in *Grain Processing*. Its near-summary denial of a recognized alternative turns on concerns of the cost of and legal access to a potentially licensable

152. See *State Indus.*, 883 F.2d at 1579 ("The district court may have erred in finding that the Rheem foam belt method likely infringed because the patent on the foam belt was issued before and was cited as prior art in the '377 patent. But we need not decide. Foam insulation was the source of customer demand and the only two available ways to do it, State's and Rheem's, were patented. It therefore is probable, in light of the district court's undisputed finding that customers did not care about the particular method used, that both State and Rheem would have sold their market shares of Mor-Flo's infringing sales.").

153. *Id.* at 1581.

154. *Id.* at 1579 ("[T]here were other methods available—the Rheem patented plastic foam belt, the 'top-off' method, and the fiberglass foam stop . . ."); *id.* at 1581 ("The district court may have overlooked that the Rheem patented plastic foam belt might have provided an alternative way to foam insulate heaters, but Mor-Flo presented no evidence that it could have licensed the Rheem foam belt, and at what cost.").

alternative.¹⁵⁵ The court in *State v. Mor-Flo* might have been concerned with, as *Grain Processing* would later articulate, Mor-Flo's inability to "instantaneously" produce a customer-acceptable substitute with "little effort."¹⁵⁶

Pall Corp. v. Micron Separations, Inc. exemplifies a similarly tortured application of *Panduit*, with no apparent resolution.¹⁵⁷ This might have been solved if the standard of *Grain Processing* had been available to be applied. The court allowed limited lost profits, in spite of the availability of an acceptable noninfringing alternative.¹⁵⁸ While the decision turned on factual peculiarities, the court's conclusion was that Micron's noninfringing alternative was actually both noninfringing and infringing.¹⁵⁹ The court attempted to resolve this dilemma by distinguishing between a noninfringing alternative that was not a "legal noninfringing alternative" for the purpose of Pall's entitlement to all lost profits, but that was a "market noninfringing alternative" for the purpose of determining the proportional amount of lost profits that Pall was entitled to in addition to a reasonable royalty.¹⁶⁰ Micron, as a result, had to pay a combination of a reasonable royalty and a portion of lost profits after Pall settled with Cuno.¹⁶¹

In *Pall Corp. v. Micron Separations, Inc.*, it is possible that a hypothetical application of *Grain Processing* could have

155. *Id.* at 1581 ("Mor-Flo presented no evidence that it could have licensed the Rheem foam belt, and at what cost."). Whether Mor-Flo could have licensed from its competitor, Rheem, shows concern of legal access, while "at what cost" shows concern of whether it may have been prohibitively expensive to use Rheem's method.

156. *See* *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1356 (Fed Cir. 1999) ("American Maize could readily obtain all of the materials needed for Process IV.").

157. *See* *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1223 (Fed. Cir. 1995) (holding that the plaintiff shall be awarded lost profits on twenty-five percent of the defendant's infringing sales even after the settlement of two third parties that had acceptable non-infringing alternatives).

158. *Id.*

159. *Id.* at 1222-23 ("The voluntary settlement of litigation does not retrospectively transform an accused infringing product into a 'noninfringing substitute.'"); *id.* at 1223 ("However, after Pall settled with Cuno, the district court correctly held that Cuno's presence in the marketplace could not be ignored . . .").

160. *Id.* at 1222 ("The district court should have recognized the distinction between the legal and market situation before and after the licensing of the Cuno products.").

161. *Id.* at 1223.

entirely sidestepped the issue of whether entitlement to lost profits would be warranted, if a complex alternative was available. By barring a patentee's entitlement to lost profits damages when noninfringing alternatives are available, *Grain Processing* suggests that compensation for infringement should, to an extent, reflect the value of the patent.¹⁶² Thus, if strong alternatives exist, the value of the patent-in-suit is correspondingly low.¹⁶³ However, as mentioned above,¹⁶⁴ *Pall* seems to suggest a compromise between patent value, and a patentee's entitlement to compensation in a case in which lost profits should be recognized but reduced accordingly.¹⁶⁵ It seems odd that the court did not simply deny lost profits damages altogether, rather than using the information available to increase the award above a reasonable royalty determined under *Georgia-Pacific*.¹⁶⁶ Thus, even if *Grain Processing* had been applied, the court might have effectively distinguished its decision in such a way to avoid the

162. See *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353–56 (Fed. Cir. 1999).

163. James E. Bessen, *The Value of U.S. Patents by Owner and Patent Characteristics* 6 (Bos. Univ. Sch. of Law, Working Paper No. 06-46, 2006), available at <http://www.researchoninnovation.org/patval.pdf> (“A patent might depreciate because of technological obsolescence (the underlying invention becomes less valuable) or because competitors are able to ‘invent around’ the patent.”).

164. See *supra* Part II.A.3.

165. See *Pall*, 66 F.3d at 1223 (“However, after *Pall* settled with Cuno, the district court correctly held that Cuno's presence in the marketplace could not be ignored, and limited the award of lost profits to the share of MSI's sales that *Pall* would reasonably have made.”). However, this point could also be explained by an analysis of *Pall*'s market share. Before *Pall*'s settlement with Cuno, Micron deprived *Pall* of all of its infringing sales. After the *Pall*-Cuno settlement, however, only a portion of Micron's sales would have deprived *Pall* of sales, and the remaining sales lawfully would have gone to Cuno.

166. In *Georgia-Pacific*, the court used the following guidelines for computing a reasonable royalty:

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.

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

determination of whether a noninfringing alternative was clearly available, instead of interpreting it as a matter of degree.

C. *GRAIN PROCESSING* HAS APPARENTLY ENCOURAGED MORE ROBUST PROOFS

The definitive impact of *Grain Processing* seems to be the court's enforcement of a broad, but formalized, set of additional criteria, thus making it more difficult for patentees to substantiate their entitlement to lost profits.¹⁶⁷ Patentees interested in obtaining lost profits must now proffer enough evidence to negate the infringer's innate capability to create, develop, in-license, produce, and/or sell noninfringing alternatives, even if such alternatives were not on the market at the time of the alleged infringement.¹⁶⁸ This, in effect, aligns the litigants' lost profits interest (whether proving or disproving entitlement) with the court's interest in requiring a more robust evidentiary record that is essential for accurate evaluation.¹⁶⁹ Because of the need for greater amounts of additional information, courts' resources are likely to be taxed, which may lead to more time-consuming litigation as cases become more complex.¹⁷⁰

Even though the application of *Grain Processing* may conceivably foreclose the lost profits remedy for many patentees, the effects of *Grain Processing* have been beneficial because courts have been allowed to create more specialized solutions. Three general categories of such solutions show the accuracy-versus-increased-workload tradeoffs. First, a patentee that is not entitled to lost profits is limited to a reasonable

167. *Grain Processing*, 185 F.3d at 1348 (Fed. Cir. 1999) ("American Maize also had all of the necessary equipment, know-how, and experience . . .").

168. *See id.*

169. *See generally* Axel Schmitt-Nilson, *The Unpredictability of Patent Litigation Damage Awards: Causes and Comparative Notes*, 3 INTELL. PROP. BRIEF 53 (2012) (explaining that, in general, the intellectual property "value inquiry [is] highly contextual and fact-specific" and that important factors in this analysis include "the likelihood of invalidity of the patent, the size of the market for the protected product, and the availability of substitutes for the patented technology").

170. *See generally* Jennifer F. Miller, *Should Juries Hear Complex Patent Cases?*, DUKE L. & TECH. REV., no. 4, 2004 at 1 (discussing the rise in "the complexity and the importance of patent infringement cases" and how restructuring the adjudication process may be necessary).

royalty.¹⁷¹ In this situation, any additional claim for lost profits would only benefit the reasonable-royalty evaluation by further improving the record. Second, some patentees, whether or not they are entitled to lost profits, would erroneously be allowed, or otherwise, denied lost profit entitlement. A more robust record in these situations, however, supports a more rigorous appellate process and at the same time, maintains the ability to adjust the reasonable-royalty award, which is a valuable safety valve. Third, patentees able to meet the *Grain Processing* and *Panduit* standards would be entitled to lost profits. These three specialized pathways show that the added *Grain Processing* rigor errs on incentivizing more, rather than less, information disclosure during the trial process. Thus, the court seems to hedge the potentially more costly lost profits award against the minimum reasonable royalty bar, while only risking increased accuracy and workload in damages determinations. The pre-*Grain Processing* cases, when compared with those post-*Grain Processing*, offer ample evidence of a trend toward more robust proofs.

In *Mars, Inc. v. Coin Acceptors, Inc.*, for example, explicit lost profits damages were denied, and a reasonable royalty provided the necessary safety valve to afford adequate compensation to the patentee.¹⁷² The lost-profits-influenced reasonable royalty rate was reduced from 11.5% to 7%, which was still higher than the 4% rate argued during trial,¹⁷³ and was affirmed on the basis that Coinco did not have, but could have made, an acceptable noninfringing alternative.¹⁷⁴ Even though lost profits per se were excluded, the court covertly revealed strands of *Grain Processing* to justify its higher reasonable royalty.¹⁷⁵ This, along with the lower court's forty-

171. 35 U.S.C. § 284 (2006 & Supp. V 2011) (“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”).

172. *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1374 (Fed. Cir. 2008).

173. *Id.* at 1373–74.

174. *Id.* at 1372–73.

175. *Id.* at 1372–73 (“First, Coinco is simply wrong to suggest that the district court found that there were available, acceptable, non-infringing alternatives. What the district court found was that ‘Coinco had the ability, the resources, and the desire to design around Mars’ patents,’ that ‘it could

six page analysis under *Georgia-Pacific*, provided a nearly unassailable answer to Coinco's question about the propriety of a higher reasonable royalty.¹⁷⁶ Thus, the court had a fair, tailor-made remedy to Mars' particular factual circumstances.¹⁷⁷

In cases in which the entitlement to lost profits is questioned, such as in *Zygo Corp.*, any additional information submitted in hopes of achieving lost profits would contribute to a more credible court remedy.¹⁷⁸ The court specifically noted the anemic evidential record in *Zygo*, a pre-*Grain-Processing* case.¹⁷⁹ The court opined that "while sparse" it seemed contrary to find no available noninfringing alternative.¹⁸⁰ Wyko's SIRIS could have been available as an alternative, if it had not begun to market its new Wyko 6000 model.¹⁸¹ In this case, if *Grain Processing* would have been available and applied, the availability of Wyko's SIRIS as a noninfringing alternative might have limited Zygo's entitlement to lost profits damages without controversy.¹⁸² Any additional information to support

probably figure out a way to avoid infringement,' but that the available 'design around was not as good as it would like.' There was, therefore, no available and acceptable non-infringing alternative to which Coinco could have switched at the time of the hypothetical negotiation; there was merely the possibility that it could have come up with one." (citations omitted)).

176. See *id.* at 1364 ("[T]he district court issued a detailed oral opinion from the bench (spanning forty-six transcript pages), analyzing the fifteen *Georgia-Pacific* factors and concluding that a blended 7% royalty rate for the two patents was reasonable."). However, because the reasonable royalty exceeded the expected profit from use of the patented invention, *Georgia Pacific's* "willing licensor willing licensee" negotiation rationale seems to be compromised. Thus, it appears that the court's decision is not so unassailable.

177. See *id.* at 1373 ("Coinco had the ability, the resources, and the desire to design around Mars' patents." (internal quotation marks omitted)).

178. See *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1571 (Fed. Cir. 1996) ("The court's findings should include details regarding the similarities and differences between SIRIS, Mark IV, and Mark IVxp Interferometers.").

179. *Id.*

180. *Id.* ("Zygo bore the burden of proof and the record evidence, while sparse, suggests a contrary conclusion, at least as to the Mark IV interferometer.").

181. See *id.* ("The record indicates that Wyko stopped marketing the SIRIS interferometer when it began marketing the Wyko 6000 interferometer A lost profits award reflects the realities of sales actually lost, not the possibilities of a hypothetical market which the infringer might have created.").

182. Because Wyko had been a previous manufacturer of the non-infringing alternative, there is little doubt that *Grain Processing* would have

Zygo's claim of lost profits might have also provided reason to increase the reasonable royalty rate under *Georgia-Pacific*.¹⁸³

Unlike *Zygo Corp.*, which was decided before *Grain Processing*, the benefits of the additional information necessitated by the *Grain Processing* decision are revealed in *Micro Chem*.¹⁸⁴ The district court in *Micro Chem*. summarily denied Micro's lost profits claim by providing that a noninfringing alternative was readily available.¹⁸⁵ However, this decision was vacated on appeal.¹⁸⁶ As a result of Lextron's *Grain Processing* defense, the district court record provided a more detailed factual record as to the availability of Lextron's noninfringing alternative.¹⁸⁷ The evidence allowed for a robust inquiry at the appellate level, even when lost profits were denied on a motion for summary judgment rather than after trial.¹⁸⁸ The problem of an anemic evidential record that plagued pre-*Grain Processing* cases, such as *Zygo*, was avoided in *Micro Chem*. because of the additional *Grain Processing* hurdle. While the exact contribution of this more robust record is difficult to ascertain, *Micro Chem*. illustrates how *Grain Processing* might have aided litigation accuracy, a necessary component for a credible court remedy.

IV. CONCLUSION

This Note has endeavored to analyze whether Federal Circuit lost profit appeals have or would have been influenced by the *Grain Processing* standard. This Note examined three industrial product patent cases before, and three additional

limited lost profits here. See *Zygo Corp.*, 79 F.3d at 1571 ("It is axiomatic, however, that if a device is not available for purchase, a defendant cannot argue that the device is an acceptable noninfringing alternative for the purposes of avoiding a lost profits award.").

183. See *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (discussing the factors relevant for determining a reasonable royalty). Factors five, eight, nine, and twelve are particularly relevant to a lost profits analysis.

184. See generally *Micro Chem. v. Lextron, Inc.*, 318 F.3d 1119, 1120 (Fed. Cir. 2003) ("[A] technology not on the market at the time of infringement can, in certain circumstances, constitute an available, noninfringing alternative.").

185. *Id.* at 1120.

186. *Id.*

187. See *id.* at 1122 (discussing why the Type 5 machine was available under *Grain Processing*).

188. See *id.* at 1123–26.

cases after, *Grain Processing*. In analyzing these cases, this Note showed that the standards set out in *Grain Processing* have had an effect on these decisions. *Grain Processing* standards appear to stand out as a formal articulation of common-sense economic concepts that courts were already applying even before the *Grain Processing* ruling. However, *Grain Processing* provided additional clarity by establishing a standardized set of criteria to evaluate available noninfringing alternatives.¹⁸⁹ The decision could have allowed for more accurate decisions at the trial-court level, and subsequently for the Federal Circuit, by supplementing the evidentiary record. Thus, *Grain Processing* seems to have had subtle, but definitive, influence on lost profits damages.

189. See *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341 (Fed. Cir. 1999) (“American Maize had all of the necessary equipment, know-how, and experience to use Process IV to make Lo-Dex 10 . . .”).