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The Unpredictability of Patent Litigation Damage Awards: Causes and Comparative Notes

Keywords

patent infringement, reasonable royalty

THE UNPREDICTABILITY OF PATENT LITIGATION DAMAGE AWARDS: CAUSES AND COMPARATIVE NOTES

by Axel Schmitt-Nilson¹

Patent damage awards are an area of great concern in the public debate regarding the patent system. It is not only the horrendous numbers that are staggering to the newspaper reader. It is also the large amount of uncertainty that patent infringement suits raise, leading to business-threatening situations. This paper explores the underlying reasons for the current patent damage framework and contrasts U.S. procedures with those in Germany. Section A examines the general link between patent valuation and litigation damage awards. Basic principles of patent damage law are explored in section B. Section C examines the commonly applied, highly fact-intensive framework of a reasonable royalty analysis. Section D looks at current trends within that framework. A comparative analysis between the findings and the more formalistic German patent damage regime is laid out in section E.

I. PATENT VALUATION AND THE ROLE OF LITIGATION DAMAGE AWARDS

With a growing portion of today's businesses having numerous intangible intellectual property (IP) assets, the importance of valuing these assets is increasing. A price tag has to be attached to all forms of intellectual property for a number of reasons, including IP audits carried out for issuing corporate financial statements, public offers, mergers and acquisitions. Valuation of IP is extremely difficult, because each piece of intellectual property is different from another, making the value inquiry highly contextual and fact-specific.² It is apparent that important factors for a comprehensive value analysis are 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.

As such a comprehensive analysis is not feasible for every instance where a price tag is required, basic valuation metrics have been developed that tie the value of the IP at hand to a more readily accessible number. For example, the "25% Rule" estimates the value of the patent to be 25% of the gross profits before taxes realized with the product embodied in the patent.³ Another example is the "5% method", which deems 5% of the sum of all sales to be the value of the patent.⁴ It is also possible to estimate the investment associated with the development of a design and use that number as the ceiling of the patent value.

These and other simplified approaches not only inherently lack accuracy; they also fail to take into account the different motives for seeking patent protection and the "subjective" values associated therewith. Some companies merely want to build up their patent rights in order to have leverage in cross-licensing negotiations. Other companies enforce their patents to protect their market share. Non-practicing entities use patents as an asset only, and try to extract as much licensing value as possible. For start-up companies, having a patented technology is often a huge sales argument and helps them to acquire venture capital. A further complexity in the value inquiry arises from the territoriality of patents. Patents for the same technology can have greatly diverging values in different jurisdictions, depending on the respective markets, legal frameworks, and enforcement mechanisms.

In this thicket of value aspects and valuation methods, damage awards in patent infringement suits serve a strong notice function. They demonstrate the value that can be extracted from a patent when used for its intended purpose to prevent the making, using, offering, or selling of a patented invention.⁵ As litigation awards set the frame for both the potential

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2. See, e.g., *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1119-20 (S.D.N.Y. 1970) (where the parties' views regarding a reasonable royalty for a patent differed by a factor of 30. This led the court to compile a list of 15 factual inquiries to be made when assessing the reasonableness of royalties).

3. See *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1312-13 (Fed. Cir. 2011).

4. See John S. Torkelson, *Calculating Reasonable Royalty Damages for Infringement of Early-Stage Technology Patents*, 4 SEDONA CONF. J. 47, 63 (2003).

5. See 35 U.S.C. § 271 (2006).

return a patentee can hope for and the risk an infringer is running by violating a patent right, the numbers emanating from patent infringement suits heavily influence license negotiations and patent valuation.⁶ The RIM v. NTP saga is an illustrative example, showing that the fear of a large damage award raises the settlement value.⁷

II. INTRODUCTION TO DAMAGES IN PATENT LITIGATION

The patent statute does not provide much guidance on how to calculate damages in patent infringement cases.⁸ The only relevant provision states that the infringer owes the patentee “damages adequate to compensate for the infringement, but in no event less than a reasonable royalty.”⁹ The Federal Circuit has also affirmed that a reasonable royalty is the absolute minimum a patentee can expect.¹⁰

Besides providing the floor on damage awards, the reasonable royalty analysis is also the most commonly used method to calculate damages.¹¹ This is because of the fact that the lost profits analysis, which is the alternative method of calculating damages, poses severe evidentiary problems for the patentee. In accordance with the commonly applied four-factor test for calculating lost profits, the patentee has to establish “(1) demand for the patented product; (2) absence of acceptable non-infringing substitutes; (3) manufacturing and marketing capability to exploit the demand; and (4) the amount of profit it would have been made.”¹² Where a non-practicing entity is the plaintiff, the lost profits method is by definition not

applicable, because the plaintiff does not engage in its own production and can therefore not lose production profits.¹³

Accordingly, the reasonable royalty analysis is more of a last resort than a desired framework.¹⁴ It has the inherent problem that it creates a circular relationship between damage awards and negotiated license agreements.¹⁵ The higher damage awards rise, the more licensing fees patentees will ask for, which in turn will be reflected in increased damage awards. While such a circle leads to the overcompensation of the patentee, it is logical that an opposite circular development could lead to a structural undercompensation of the patentee as well.

It is difficult to accept this and other imperfections of the reasonable royalty analysis, because the damage calculation is “an area of the law where reliability and precision are deemed paramount.”¹⁶ Reliability and precision are not only of crucial importance to justify potentially business-destroying damage awards in the high-stakes field of patent litigation, but they are also essential to create a framework that delivers predictable damage awards.¹⁷ Only predictable results let businesses make sound decisions regarding their IP strategies and their research and development.¹⁸ Unfortunately however, attempts to make the reasonable royalty analysis as precise and comprehensive as possible have resulted in unpredictable and seemingly arbitrary damage awards, which is the opposite of the desired result.

III. THE REASONABLE ROYALTY FRAMEWORK AND ITS IMPACT ON PREDICTABILITY

There are multiple examples in patent litigation where the jury awarded damages that are more or less in the middle of the damages demanded by the

6. See Daralyn J. Durie & Mark A. Lemley, *A Structured Approach to Calculating Reasonable Royalties*, 14 LEWIS & CLARK L. REV. 627, 642 (2010).

7. DAVID WESTON & DR. KWANGHUI LIM, INTELLECTUAL PROPERTY RESEARCH INSTITUTE OF AUSTRALIA, BLACKBERRY, A TEACHING CASE FOR WIPO 6 (2008), available at http://www.wipo.int/export/sites/www/academy/en/ipacademies/educational_materials/cs2_blackberry.pdf (facing the possibility of a \$1 billion or more damage award led to a settlement of \$612.5 million).

8. See 35 U.S.C. §284 (2006).

9. *Id.*

10. See *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009) (“A reasonable royalty is . . . merely the floor below which damages shall not fall.”) (citation omitted).

11. See PRICEWATERHOUSE COOPERS, 2010 PATENT LITIGATION STUDY: THE CONTINUED EVOLUTION OF PATENT DAMAGES LAW 12 chart 4 (2010).

12. See *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995) (“*Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 197 U.S.P.Q. 726 (6th Cir.1978) articulated a four-factor test that has since been accepted as a useful, but non-exclusive, way for a patentee to prove entitlement to lost profits damages.”).

13. See CHRISTOPHER B. SEAMAN, THE CHANGING PATENT DAMAGES REGIME: REASONABLE ROYALTIES AFTER LUCENT AND WILLFUL INFRINGEMENT AFTER SEAGATE 11 (presented at the AIPLA 2011 Annual Meeting, Oct. 20, 2011).

14. See *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1157 (6th Cir. 1978) (“When actual damages, e.g., lost profits, cannot be proved, the patent owner is entitled to a reasonable royalty.”).

15. See Durie & Lemley, *supra* note 6, at 642.

16. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1312 (Fed. Cir. 2011).

17. See Merritt J. Hasbrouck, *Protecting the Gates of Reasonable Royalty*, 11 JOHN MARSHALL INTELL. PROP. L. REV. 192, 193 (2011) (“Patents require proper protection through clear guidance from the legislature and predictable results from the judiciary.”).

18. See *id.* (“Clear and predictable patent damages rules that lead to fair damages awards encourage subsequent inventors to improve upon existing inventions.”).

patentee and the number deemed appropriate by the defendant.¹⁹ In *Lucent Technologies, Inc. v. Gateway, Inc.*, the patentee, Lucent, had asked the jury for an award of \$561.9 million, while the defendant Microsoft claimed that \$6.5 million would be a reasonable royalty.²⁰ The jury awarded \$357.7 million to Lucent.²¹ Does that mean that 50% of the damages amount asked for by the patentee is the best predictor of the damage award?²² Why are juries not able to assume a more differentiated view to calculate a truly reasonable royalty?

The underlying idea of the reasonable royalty analysis is to reconstruct a hypothetical negotiation scenario between the patentee and the infringer.²³ The “willing licensor – willing licensee” approach tries to take into account the bargaining positions of the parties before the start of litigation, assuming the “asserted patent claims are valid and infringed.”²⁴ The court, therefore, takes a mainly economic approach, looking at what business decisions the parties would have made at a past point in time. An inquiry into the dynamics of a hypothetical negotiation is obviously very complex. In order to make the task reasonable, *Georgia-Pacific Corp. v. U.S. Plywood Corp.* proposed a non-exclusive 15-factor test in order to guide the factual questions around the hypothetical negotiation.²⁵ Those factors are:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

19. See e.g. *Uniloc*, 632 F.3d at 1311 (resulting in a jury award of \$388 million, after the plaintiff had asked for \$565 million).

20. See *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1323 (Fed. Cir. 2009).

21. See *id.* at 1324.

22. See *Uniloc*, 632 F.3d at 1311.

23. See *Lucent*, 580 F.3d at 1324 (looking at what the patentee “would have received through arms-length bargaining”).

24. *Id.* at 1325.

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

4. The licensor’s established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.

5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.

6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.

7. The duration of the patent and the term of the license.

8. The established profitability of the product made under the patent; its commercial success; and its current popularity.

9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.

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

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.²⁶

Although this 15-factor test comes from a district court decision from 1970, it is still good law for any reasonable royalty analysis. The Federal Circuit reiterated in *Uniloc* that the court “has sanctioned the use of the *Georgia-Pacific* factors to frame the reasonable royalty inquiry.”²⁷ Commentators have gone so far as to call the *Georgia-Pacific* factors the “gospel in the patent damages world.”²⁸

In addition to maintaining such a complex framework for the general inquiry, the Federal Circuit has expressly prohibited simplification through standardized methods, even in fact-specific cases.²⁹ The damage calculation has to be tied to the facts of the case

in order to satisfy the burden of proving damages.³⁰ Consequently, a simplified approach, such as the “25 percent rule of thumb,” is a “fundamentally flawed tool for determining a baseline royalty rate in a hypothetical negotiation.”³¹

The unpredictability of reasonable royalty awards stems from four factors. First, the *Georgia-Pacific* factors address such a wide range of issues that their application may have partly re-enforcing and partly contradicting effects.³² Valid reasons can be found for almost any sort of weighing of the factors.³³ The first two factors aim to establish a comparison to other licenses.³⁴ Factors 3 and 7 look at the objective properties of the hypothetical license.³⁵ Factors 4 and 5 take into account the bargaining positions of the parties and the licensing policy of the patentee.³⁶ Factors 6, 8, 9 and 10 assess the commercial advantage of the patented technology and the additional effect such patented technology has on other products in the eye of the consumer.³⁷ Factors 11 to 13 look at the extent of usage by the infringer and the impact on his profits.³⁸ While factor 14 enforces the allowability of expert testimony, factor 15 sums up the hypothetical negotiation scenario framework.³⁹ Juries will have a hard time applying 15 interrelated factors to the facts of the case and balance the respective outcomes.⁴⁰ A predictable outcome is almost impossible.

Second, the judge can be equally lost in this framework as the gate-keeper of evidence. It is the court’s responsibility to “ensur[e] that all expert testimony must pertain to scientific, technical, or other specialized knowledge under Federal Rule of Evidence . . . 702.”⁴¹ However, almost any piece of evidence or any piece of expert testimony may be argued to relate to one of the *Georgia-Pacific* factors, which cover

30. *See id.*

31. *Id.*

32. *See* Lucent Technologies, Inc. v. Gateway, Inc., 580 F.3d 1301, 1335 (Fed. Cir. 2009) (the factors “appear somewhat to offset one another”).

33. *See id.* (“A jury could have reasonably concluded otherwise with several of the factors mentioned here.”).

34. *See* *Georgia-Pacific Corp.*, 318 F.Supp. at 1120.

35. *See id.*

36. *See id.*

37. *See id.*

38. *See id.*

39. *See id.*

40. *See* Durie & Lemely, *supra* note 6, at 631 (“[A] non-exclusive fifteen-factor test that requires balancing and consideration of the interactions between the factors is likely to give little or no practical guidance to a jury.”).

41. *Uniloc*, 632 F.3d at 1315.

26. *Id.*

27. *Uniloc*, 632 F.3d at 1317.

28. *See* Durie & Lemely, *supra* note 6, at 631.

29. *See Uniloc*, 632 F.3d at 1315.

both technical and business aspects of both parties.⁴² A court will be hard-pressed to not allow a carefully outlined testimony, which ties the facts of the case to above factors, no matter how absurd the resulting damage figure may seem. Also, the court has very few means of preventing the jury from hearing information that inevitably skews their judgment.⁴³

Third, the 15-factor framework all but prevents a finding of clear error on a review level.⁴⁴ Deference has been traditionally high in patent damage questions, because a “jury’s damage award must be upheld unless the amount is grossly excessive or monstrous, clearly not supported by the evidence, or based only on speculation or guesswork.”⁴⁵ Recently, the Federal Circuit has looked more closely at the evidence supporting the damage award. In *Uniloc*, the damage award was vacated because of the non-allowable application of the “25 percent rule of thumb.”⁴⁶ In *Lucent*, the court held that the award of a lump sum payment was not supported by the evidence of running royalty licenses, which had been brought forward as comparable.⁴⁷ Despite these attempts to require “sound economic proof of the nature of the market and likely outcomes” of the hypothetical negotiation, the level of deference will remain high in the framework of a 15-factor test.⁴⁸

Fourth, expert testimony is likely to prevail as the single most effective and jury-convincing piece of evidence.⁴⁹ In the thicket of a 15-factor test with complex interrelations, the jury’s easiest way to deal with the balancing task at hand is to trust the convincing testimony of a qualified expert, which is explicitly called for by *Georgia-Pacific* factor 14.⁵⁰ This is all the more true, because the hypothetical negotiation scenario aims at including subjective factors, such as the parties bargaining power and their

general policies of striking licensing deals.⁵¹ In *Fujifilm Corp. v. Benun*, Fujifilm’s expert testified that a 40 cent royalty for disposable photo cameras would have been agreed upon because of Fujifilm’s strong bargaining position, which seems to have had a big impact on the jury justifying the damage award.⁵² Accordingly, the option of swaying the jury with well-targeted expert testimony will still be available to patentees.

IV. CURRENT EMPHASIS WITHIN THE REASONABLE ROYALTY FRAMEWORK

Although the Federal Circuit goes to great lengths to defend the comprehensive *Georgia-Pacific* framework, there seems to be a recent emphasis on some selected factors.⁵³ *Uniloc* particularly stressed the importance of comparable licenses and the profit portion that is customarily attributed to comparable inventions.⁵⁴ *Lucent* scrutinized the aspects of comparable licenses, the nature of the patented invention, the profit to be attributed to the invention, and the extent of infringer use, while merely brushing over the other factors.⁵⁵ Accordingly, the main focus of recent decisions seems to be truly comparable licenses and a correct apportionment of the infringing component’s contribution to the entire product value.⁵⁶

A. Comparable Licenses

Truly comparable licenses provide the best basis for a reasonable royalty analysis. In other words, “an established royalty is usually the best measure of a ‘reasonable’ royalty for a given use of an invention.”⁵⁷ However, in light of the recent decisions, the license argued to be comparable must be truly comparable. Besides the rejection of the allegedly comparable licenses in *Lucent*, as discussed above, the

42. See *Georgia-Pacific Corp.*, 318 F. Supp. at 1120.

43. See *id.* at 1320 (“The disclosure that a company has made \$19 billion dollars in revenue from an infringing product cannot help but skew the damages horizon for the jury.”).

44. See *Durie & Lemely*, *supra* note 6, at 628.

45. *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 285 (N.D.N.Y. 2009) (citation omitted); see also *Durie & Lemely*, *supra* note 6, at 645 (providing statistical data on overturned cases).

46. See *Uniloc*, 632 F.3d at 1318.

47. See *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325-32 (Fed. Cir. 2009).

48. *IP Innovation L.L.C. v. Red Hat, Inc.*, 705 F. Supp. 2d 687, 689 (E.D. Tex. 2010).

49. See *Durie & Lemely*, *supra* note 6, at 643.

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

51. *Id.* (see, in particular, factors 4 and 5).

52. See *Fujifilm Corp. v. Benun*, 605 F.3d 1366, 1372-73 (Fed. Cir. 2010).

53. See *SEAMAN*, *supra* note 13.

54. See *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1317-18 (Fed. Cir. 2011) (“In particular, factors 1 and 2 – looking at royalties paid or received in licenses for the patent in suit or in comparable licenses – and factor 12 – looking at the portion of profit that may be customarily allowed in the particular business for the use of the invention or similar inventions – remain valid and important factors in the determination of a reasonable royalty rate.”).

55. See *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325-35 (Fed. Cir. 2009) (factors 2, 10, 11 and 13 were discussed in separate sections, while all other factors were lumped into an “other factors” category).

56. See *SEAMAN*, *supra* note 13.

57. *IP Innovation L.L.C. v. Red Hat, Inc.*, 705 F. Supp. 2d 687, 691 (E.D. Tex. 2010) (internal quotation marks omitted).

Federal Circuit also objected to the reliance on “re-bundling licenses” that “had no relation to the claimed invention.”⁵⁸ In *Wordtech Systems, Inc. v. Integrated Network Solutions, Inc.*, it was reiterated that lump sum licenses could only be compared to other lump sum licenses, unless there is evidence regarding a conversion between running royalties and lump sum payments.⁵⁹ Also, an averaging of previous licenses is inherently flawed and can therefore not be used as a calculation method.⁶⁰ Under these circumstances, previous license agreements will probably only be deemed comparable in rare cases. Examples of such cases are companies that have long-standing licensing policies and companies that are required to give reasonable and non-discriminatory licenses because of their contractual obligations, such as companies contributing to patent pools or licensing out standard-relevant patents.⁶¹

B. Apportionment and the Entire Market Rule

It is particularly difficult to calculate a reasonable royalty when no comparable licenses are available, the invention only affects a subportion of a larger product, and the infringer is a reputable company.⁶² The sales of a reputable company are at least partially attributable to their brand name, marketing, and customer services. If only sales data for the product itself is available and the inventive feature is merely one of many features of the product, some form of analysis is necessary to apportion the contribution of the invention to the success of the product.

Patentees commonly try to use the total sales revenue of the product as a royalty basis for the reasonable royalty analysis, because even a tiny royalty rate may then lead to a large damage award.⁶³ However, the patentee can only use this entire market value of the accused product “where the patented

feature creates the basis for customer demand or substantially creates the value of the component parts.”⁶⁴ The patentee is further required to present evidence, such as “economic evidence, marketing information, or customer surveys,” that this condition is fulfilled.⁶⁵ In the *Lucent* case, Lucent was able to successfully argue the entire market rule because it was not possible to show that the patented feature, a calendar date picker, was the reason customers bought Microsoft Outlook.⁶⁶ Accordingly, most cases involving complex systems require an apportionment analysis to reach a fair royalty base.⁶⁷

The apportionment analysis is fundamentally an economic analysis. The conceptual starting point is *Georgia-Pacific* factor 13, which is directed to 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.”⁶⁸ Being an economic analysis, apportionment allows all of the efforts undertaken by the infringer that add to the value of the product, but are not related to the patent, to be taken into account.⁶⁹ These contributions include the infringer’s “own innovations, other investments in the product’s research, development, and design, and effective marketing, advertising, and sales strategies.”⁷⁰ Also, the infringer’s brand name, reputation for reliability, and service should be taken into account.⁷¹ Furthermore, the apportionment analysis has to deal with the problem that synergies within a product are not attributable to patented or non-patent features alone, but to the combination of the two.⁷² The question is then how to distribute the synergies among the

58. *ResQNet.com, Inc. v. Lansa, Inc.*, 594 F.3d 860, 870 (Fed. Cir. 2010).

59. *See Wordtech Systems, Inc. v. Integrated Networks Solutions, Inc.*, 609 F.3d 1308, 1320 (Fed. Cir. 2010).

60. *See id.*

61. *See, e.g., Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 304 (3d Cir. 2007) (standard setting institutions require their members to grant fair, reasonable and non-discriminatory (FRAND) licensing terms in exchange for their technologies being considered in the standard setting process).

62. *See SEAMAN, supra* note 13; *see also* *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 288 (N.D.N.Y. 2009).

63. *See, e.g., Cornell Univ.*, 609 F. Supp. 2d at 283 (N.D.N.Y. 2009) (“Cornell originally sought damages on the revenue from Hewlett-Packard’s entire server and workstation systems”, although the claimed invention only referred to “a component of a component within the processors used in Hewlett-Packard’s servers and workstations.”).

64. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011) (internal quotation marks omitted).

65. *See SEAMAN, supra* note 13.

66. *See Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1332-33 (Fed. Cir. 2009).

67. The court decisions are not free of contradictions on this point. While *Uniloc*, *Cornell* and *Red Hat* require the determination of both a reasonable royalty base and a reasonable royalty rate, *Lucent* seems to suggest that it may be possible to use the entire market value as the royalty base when offsetting the same accordingly with a small royalty rate.

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

69. *See SEAMAN, supra* note 13.

70. *Id.*

71. *See Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 288 (N.D.N.Y. 2009).

72. *See* Elizabeth M. Bailey, Gregory K. Leonard & Mario A. Lopez, *Making Sense of “Apportionment” in Patent Damages*, 12 COLUMBIA SCI. & TECH. L. REV. 255, 262 (2011).

features.

As is evident, apportionment leaves ample room for argumentation over the correct royalty base. Equally, it is highly debatable which royalty rate the patentee and the infringer would have agreed upon in a hypothetical arms-length negotiation. As the royalty award is the multiplication of the royalty base and the royalty rate, it is still subject to a great deal of uncertainty in the apportionment framework.

C. Example of Apportionment in Cornell University v. Hewlett-Packard Co.

Cornell is a very illustrative case regarding apportionment. The jury awarded damages of \$184 million to Cornell for Hewlett-Packard's infringement of a Cornell patent.⁷³ Federal Circuit Judge Randal R. Rader, sitting in the district court by designation, overruled the jury award on a judgment as a matter of law and lowered the award to \$53 million.⁷⁴ The decision was based on a lack of apportionment in the patentee's evidence for the damage calculation presented to the jury.⁷⁵

The patent in this case was directed to "a method for instruction issuance within a computer processor," wherein this method affected "one component of the instruction reorder buffer (IRB), itself a part of a computer processor."⁷⁶ The processor is in turn part of a CPU module, which yields a CPU brick when combined with "a temperature controlling thermal solution, external cache memory, and a power converter."⁷⁷ "A set of CPU bricks is then incorporated into a cell board, and that cell board is finally inserted into a server."⁷⁸ The entire server revenue was initially used for Cornell's damage calculation.⁷⁹ After being instructed that such an approach reflected a reliance on the entire market rule that was inadmissible in the absence of appropriate proof, Cornell based its calculations on the CPU bricks, which led to a royalty base of \$23 billion.⁸⁰ The jury used this calculation for the damage award of \$184 million.

The court's reduction of the damage award was based on the reduction of the royalty base. According to the court, the starting point for the royalty base

should be the "smallest salable infringing unit with close relation to the claimed invention – namely the processor itself."⁸¹ Even if that unit is not actually sold, an apportionment is inevitable, no matter if it has to be based on assumptions.⁸² Seeing Hewlett-Packard's hypothetical processor revenue calculation to be the only reliable evidence, the court reduced the royalty base to \$6.7 billion, leading to a damage award of \$53 million.⁸³

The outcome of this case is somewhat unsatisfying, because the court did not think the apportionment framework through to the end. The decision gives no analysis how much the patented method contributes to the instruction reorder buffer, and how much the instruction reorder buffer actually contributes to the processor. It does not ask what the economic relevance of these contributions is. The opinion gives the impression that the court was simply content with reducing the damage award, which came out low due to a very low royalty rate of 0.8%, which the court left untouched. It is questionable if it makes sense to look at the royalty base and the royalty rate independently.⁸⁴

V. DAMAGE CALCULATIONS IN GERMANY

The damage calculation framework employed in the US is highly fact-intensive and aims at taking into account all factors of the case. It is, however, also possible that a legal system does not aim for such factual completeness, but values procedural simplicity and predictability. One example for such a legal system is Germany, where the field of damage calculations is mostly free of controversy. This is illustrated by the fact that *Schulte*, the most renowned and ubiquitously used commentary regarding German patent law, dedicates a mere 11 out of almost 1,600 total pages to the issue of damage calculation.⁸⁵

Infringement damages may be calculated according to one of three methods: lost profits of the patentee, profits of the infringer, or a reasonable royalty analysis.⁸⁶ The reasonable royalty analysis poses the question what reasonable parties would have agreed upon.⁸⁷ It therefore explicitly disregards the

73. See *Cornell*, 609 F. Supp. 2d at 282.

74. See *id.* at 293.

75. See *id.* at 290.

76. *Id.* at 283.

77. *Id.*

78. *Id.*

79. See *Cornell*, 609 F. Supp. 2d at 283.

80. See *id.* at 284.

81. *Id.* at 288.

82. See *id.* at 290.

83. See *id.* at 292.

84. See Bailey, *supra* note 72, at 257-59.

85. See RAINER SCHULTE, PATENTGESETZ MIT EPÜ [PATENT LAW WITH EPC] 1431-42 (2008).

86. See *id.* at 1432.

87. See *id.* at 1436.

particular parties' bargaining positions and the issue if the patentee would have granted a license in the first place. Moreover, it is assumed that the parties would have anticipated the infringement as it is taking place.⁸⁸ Accordingly, the analysis is carried out completely ex-post and does not have any ex-ante element of a hypothetical negotiation between the parties before the infringement.

The calculation of a reasonable royalty in Germany is also a combination of the royalty basis and the royalty rate.⁸⁹ The royalty basis is the sales value of the product embodying the invention.⁹⁰ In case an inventive component is part of a larger system, it is to be determined if there is a market for the inventive component itself: if yes, the sales value of the component should serve as the royalty basis; if not, the sales value of the whole system or an estimated sales value of the component can serve as the royalty basis.⁹¹ Depending on the component or the system being used as the royalty basis, different royalty rates have to be used in order to reach equitable results.⁹² In this way, German damage law follows an economic apportionment inquiry when a separately sellable product embodies the invention. When the inventive component is part of a larger system, the inventive contribution to the larger system is estimated, which commonly leads to a relative value analysis of the individual components. A comprehensive economic apportionment inquiry, as carried out in the United States and described above, does not take place.

The royalty rate is a rate that reasonable parties would have agreed to, when knowing about the extension of the infringing use of the invention.⁹³ Common industry standards are the reference, which may be slightly adapted according to an equity analysis regarding the facts of the case.⁹⁴ However, no punitive raising of the royalty rate because of the infringer's illegal activity is admissible under German law.⁹⁵ Depending on the industry, royalty rates between 0.2% and 6% are standard in Germany, with the chemical industry being more towards the lower end, the mechanical industry being closer to the higher end, and the pharmaceutical and electrical industries falling in

between.⁹⁶

If we applied the German reasonable royalty framework to the facts in *Cornell*, the resulting damage award would have been lower under the additional assumptions given below. *Cornell* established that the processor was the smallest sellable unit that embodies the patented method.⁹⁷ The processor would therefore also be the starting point for the royalty base in Germany. However, the instruction reorder buffer is only one component of the processor. According to standard processor architecture, other components, such as the arithmetic logic unit and the control logic, are seen as the main components.⁹⁸ Therefore, it is likely that the instruction reorder buffer would only be attributed a small share of the value of the processor. For the hypothetical calculation, it is assumed that this share would be 10%. A typical royalty rate for electronic components in Germany would be 2%.⁹⁹ Accordingly, 0.2% of the processor revenue would be the reasonable royalty, which would amount to \$13 million. This would be a quarter of the damages awarded in *Cornell* by the District Court.¹⁰⁰ This reflects the perception that damage rewards are lower in Germany.

As this example shows, many facts of the case are disregarded for the damage calculation in Germany. The analysis essentially boils down to two questions: which portion of the value of the sellable product is attributed to the patented component and what is an industry-specific royalty rate? Importantly, the bargaining positions of the parties as well as their inclinations to license their technologies are not taken into account. By disregarding these company-specific, subjective factors, the analysis becomes more predictable. In this way, the framework also prevents very large damage awards, although they could be justified by a party's market position in a particular case. It can be concluded that the reflection of a party's subjective value of the patent in the damage award is sacrificed for a rather formalistic and predictable damage calculation procedure.

88. *See id.*

89. *See id.* at 1437.

90. *See id.*

91. *See* SCHULTE, *supra* note 85, at 1431-42 (2008).

92. *See id.*

93. *See id.* at 1438.

94. *See id.*

95. *See id.*

96. *License/Sales*, COPAT.DE, http://www.copat.de/mn_verwert_lizenz.htm (GER) (last visited Mar. 25, 2012).

97. *See* *Cornell Univ. v. Hewlett-Packard Co.*, 609 F.Supp.2d 279, 283 (N.D.N.Y. 2009).

98. CPU-Central Processing Unit, WEBOPEDIA, <http://www.webopedia.com/TERM/C/CPU.html> (last visited Mar. 25, 2012).

99. *License/Sales*, COPAT.DE, http://www.copat.de/mn_verwert_lizenz.htm (GER) (last visited Mar. 25, 2012).

100. *See Cornell*, 609 F. Supp. 2d at 292.

VI. CONCLUSION

German and U.S. law approach the issue of patent litigation damages in fundamentally different ways. German law carries out an ex-post analysis of the infringement actions, attributing a reasonable royalty to a portion of the sales that are deemed to relate to the inventive component of a product. In contrast, US law uses the ex-ante framework of a hypothetical negotiation between a willing licensee and a willing licensor. The basic inquiry is which reasonable royalty the parties would have agreed upon, given their bargaining position before the infringement took place. As this comprehensive analysis takes into account all technical and business aspects of the hypothetical license, a great deal of uncertainty remains as to the outcome of the damage awards. The courts are trying to bring more structure to this analysis by requiring the patentees to bring forward evidence which portion of their profits is actually attributable to the invention. This apportionment framework has brought patent damages down and increased legal certainty to some extent. However, a level of legal certainty comparable to Germany will not be achievable with the given framework of a hypothetical negotiation. On the other hand, only such a framework allows a patentee to recover damages that reflect his individual position, as is generally desired by awarding the monopoly right of a patent.