

The Limited Role Of Analytical Approach To Reasonable Royalty

Law360, New York (April 13, 2017, 12:28 PM EDT) -- A recent guest article in Law360, **"Determining Reasonable Royalties With Analytical Approach"** (March 3, 2017), points out that many products accused of infringing patents are complex and multifeatured, with only a portion of those features covered by the patents in litigation. The author then suggests that the analytical approach "may be a helpful tool in the complex analysis often required to determine a reasonable royalty." In fact, the actual implementation of the analytical approach has little basis in business practice or in economics, and is generally inappropriate for the valuation of intellectual property. It is especially unsuited for complex products. At best, it may be suited for the valuation of a single enhancement of a very simple product, such as an improved game call.[1] Even for simple products, it will frequently result in error since, as the analytical approach article demonstrates, its proponents suggest different methods of implementation, resulting in very different estimates of a reasonable royalty for the same innovation.



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The standard implementation of the analytical approach starts with a calculation of the gross profit that the infringer expected to make on the accused product. This gross profit (revenue minus cost of goods sold) is measured in dollars per unit. Most implementations of the analytical approach call for the further subtraction of overhead costs and of some of the fixed costs attributable to producing the accused product.[2] From this anticipated margin from selling the accused product, one subtracts a "normal profit to the infringer on similar products." [3] Under the standard analytical approach, this entire difference, the incremental profit or residual, is awarded to the patent holder as a reasonable royalty.[4]

As is frankly admitted in the analytical approach article, the standard implementation has several variations. These variations often have no theoretical basis. In some cases, for example, courts have subtracted a "standard" (or average) level of profit in the relevant industry from the profits of the accused product, instead of the infringer's "normal profit." [5] As I discuss below, the variations in the manner of implementation can result in profound differences in the size of the reasonable royalty.

The analytical approach has been criticized on legal grounds since it arbitrarily awards the entire incremental profit to the patent owner.[6] A principal legal objection appears to be that the method does not allow for apportioning, nor does it accommodate a negotiation between a willing patent owner and a willing licensee. Instead, it awards all of the infringer's incremental profits to the patentee, rather than calculating an award based on the harm suffered by the patentee. The calculation of the incremental profit, however, is sometimes used as a cap to a reasonable royalty calculation, as is implicitly suggested in the analytical approach article.

Whatever the legal objections, the analytical approach is an economically unreliable measure of the value of a feature, and the method generally cannot be used to apportion the residual between patented and nonpatented contributions to a feature.

Many of the economic objections to the analytical approach are obvious from deconstructing, or parsing, the implementations described above. Consider, for example, the latitude regarding which costs are to be deducted from the gross margin earned on the accused product. Such scope has profound implications when a "normal profit" is to be deducted from the profit margin of the accused product since the amount of the resulting residual (and, therefore, the benefit attributable to the patent) will change depending on which costs are deducted. As is admitted in the analytical approach article, "normal profit has been based on profitability from the infringer's industry" or from "other products." But "normal" industry profits are seldom measured in exactly the same way, or with the same level of financial account and product detail, as accused products.

Failing to account for differences in the way profits are calculated may result in apparent differences in profitability where no such differences actually exist. In other words, the residual profit attributed to the patented technology can be much greater or smaller than that attributable to the patent at issue, depending on the inputs used in calculating the profit margins. Damages experts utilizing the analytical approach seldom, if ever, ensure that the profits that they measure on the accused products are calculated in the same manner as the profits on similar products. Likewise, they fail to ensure consistency in the measurement of the alleged infringer's average profit or of a normal profit for the industry. In fact, damages analysts are unlikely to be able to do so with sufficient accuracy to ensure that they arrive at even an approximate calculation of the residual profitability. Failure to do so will generally result in error in the calculation of the patented technology's value. Furthermore, one is generally unable to determine whether the estimated residual profitability is above or below the correct value.

Even if the profit earned on the accused product is measured in exactly the same manner as the profit earned on similar products or in the industry, the comparison between those profit margins will not isolate the value of the patented technology. Even similar products can have characteristics that result in very different returns and different margins for reasons unrelated to the value of a patented feature incorporated into one of those products. These differences can include differences in geographic markets; differences in the investment in capital, in research and development and in advertising; and differences in uncertainty, risk and in the volatility of sales. All of these considerations will generally have an impact on margins that will be spuriously attributed, by the Analytical Approach, to the contribution of the patent.

The problem is exacerbated, of course, if the accused infringer makes many products that are unrelated to the accused product. In that case, the infringer's "normal margin" will be earned on products entirely unrelated to the product at issue. Such margins generally cannot be used as an indicator of the margin that would be earned on the same product without the patented feature. For example, Georgia-Pacific Corp.'s plywood products were targeted in the case thought by some to be the first lawsuit in which the analytical approach was used. Georgia-Pacific, however, also operated sawmills and pulp and paper mills, and managed timberlands during the period of alleged infringement, all of which would likely have margins that were different from that earned on plywood.^[7] Similarly, many defendants in patent cases make a wide range of products that are unrelated to the accused product. Under such conditions, a single firm's normal profit or an industry-wide standard profit cannot be used to reliably measure a patent's contribution to increased profitability due to the use of a patent.

Furthermore, the calculation of a standard, or average, industry margin can include data from companies that vary widely in their efficiency. This will further distort the results of the analytical approach. An infringer who, through better management or investment, is a more efficient producer, may appear to be making a larger incremental profit on an accused product if its profit margin on the accused good is compared to industry norms. Suppose, for example, that the average gross margin earned by an efficient company on noninfringing products is 50 percent, while the industry norm is only 45 percent. Suppose that the margin earned on an infringing product made by the efficient infringer is 55 percent, purportedly indicating incremental profitability of five percent on the infringing product. The plaintiff's damages expert can show higher apparent incremental benefit of the patented technology by using the industry norm. Such an application of the analytical approach would result in the portion of the infringer's return due to its greater efficiency being awarded as part of a reasonable royalty to a patent owner.

The analyst may also have to deal with issues related to a product's life cycle. In many high

technology industries, margins change as improved and updated versions of products are introduced. Thus, a feature that is incorporated into the new version will be associated with a relatively high margin at the time of introduction while prices for the previous version decline. That makes a case for calculating full life cycle margins of products in order to compare the margins on a product with and without the patented feature. In order for such a comparison to be a reliable indicator of value, it will need to be corrected for the effects of business cycles, advertising and other factors that are unrelated to the patented feature.

A final indicator of the utter unreliability of the analytical approach is the fact that the residual on a product that incorporates a patent can be negative even when the patented intellectual property has significant value. Suppose that the analysis is performed correctly and demonstrates that the typical industry or infringing firm's gross margin is 40 percent. Suppose that the accused product is expected to earn a margin of 35 percent and is further expected to have stable prices and very predictable sales. Suppose that the accused product is the expression of a single patent. Despite the fact that such a patent clearly has value, possibly significant value, the analytical approach indicates that it is worth nothing or has negative value.

The analytical approach article makes the additional suggestion that "An infringer's target profit (not specific to the infringing product) has also been used as a proxy for its normal profit." Again, to the extent that the infringer's target profit margin is determined for a wide variety of products, it cannot reliably be used to indicate patent value. If targets are set low, as minimums, then the margin on an accused product will appear to be higher than a more rigorous analysis would indicate.[8]

The trial in *Carnegie Mellon University v. Marvell Technology Group Ltd.*, [9] before the Western District of Pennsylvania provides a recent example of the use of such a version of the analytical approach. Interestingly, under cross-examination, Carnegie Mellon's expert appears to have admitted, correctly, that her technique did not determine the excess profits attributable to the technology of the patents in suit.

As is often the case in implementing the analytical approach, Carnegie Mellon's expert used an estimate of Marvell's actual gross percent margin on the accused products as the measure of expected profit. From that, she subtracted a percent target gross margin that the company expected to achieve on all of its semiconductor products. The basis for the target gross margin was merely the deposition testimony of two Marvell executives who testified to target margins of at least 50 percent.[10] The university's expert calculated an estimated gross margin of 59.6 percent on the accused products, from which she deducted the minimal target gross margin, giving "excess profit" of 9.6 percent of the price of a chip, or \$0.42.

Carnegie Mellon's expert had to concede, however, that the excess profits margin was at best only indirectly related to the value of the patented technology. In fact, under cross-examination, she described the \$0.42 per chip as no more than "excess profits that are available to pay a royalty over and above the target margin." [11] Thus, the expert's own trial testimony shows that her calculation did not measure the contribution or value of the patents, but merely the ability to pay.

In conclusion, from an economic point of view, the analytical approach is generally unsuited for determining a reasonable royalty. It generally will not provide an accurate measure of the value of an individual patent since it often does not account for all of the costs of offering products that incorporate the technology in question. It does not provide for apportionment between contributions by the patent and nonpatented elements. Furthermore, as the analytical approach article and other literature make clear, there is some ambiguity in the manner in which the analytical approach can be implemented. The analytical approach remains "the roughest of proxies," giving rise to the same mechanical and arbitrary awards that caused the Federal Circuit to pronounce the 25 percent rule of thumb to be junk science in *Uniloc v. Microsoft*. [12]

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their comments on this article.

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[1] See Lance E. Gunderson, Stephen E. Dell and Scott W. Cragun, The “Analytical Approach” as a Technique to Determine a Reasonable Royalty, in *Economic Damages in Intellectual Property: A Hands-on-Guide to Litigation* 185-7 (Daniel Slottje, ed. 2006) (Applying the Analytical Approach to game calls but showing that two different implementations will give very different estimates of the reasonable royalty).

[2] *TWM Mfg. Co. v. Dura Corp.* 789 F.2d 895, 899 (Fed. Cir. 1986). In *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 166 U.S.P.Q. (BNA) 235 (S.D.N.Y. 1970), the court calculated that the infringer, United States Plywood, earned a profit of \$48.64 on an “absorption cost” basis. Absorption costing, “assigns all types of manufacturing costs (direct material, direct labor, fixed and variable overhead) to units produced,” Clyde P. Stickney and Roman L. Weil, *Financial Accounting, An Introduction to Concepts, Methods and Uses* 903 (2003).

[3] “One starts with the selling price by the infringer of the article embodying the feature, and then subtracts three elements, namely the infringer’s: (1) Direct and variable costs in the article; (2) Fixed costs, including overhead, to produce the article; and (3) “Normal” profits to the infringer on similar products. All of the remainder is then given to the patentee, and is described to be a ‘reasonable royalty.’” Robert Goldscheider, “Reasonable Royalties” in the Commercial World and as a Measure of Damages in Intellectual Property Litigation, in *Licensing Law Library: 1989 Licensing Law Handbook* 82-83 (Robert Goldscheider and Gregory J. Maier, eds. 1989) (“Goldscheider”).

[4] Goldscheider, *supra* note 3, at 83.

[5] *TWM Mfg. Co., Inc. v. Dura Corp.*, 789 F.2d 895 (Fed. Cir. 1986).

[6] William C. Rooklidge, *Infringer’s Profits Redux: The Analytical Method of Determining Patent Infringement Reasonable Royalty Damages*, 88 PTCJ 33 (2014) (Arguing that the Analytical Approach ignores that the infringer’s anticipated profits properly serve only to cap the hypothetical negotiation reasonable royalty, fails to apply rigorous apportionment (the requirement of which led to Congress’ rejection of the profits remedy) and when using actual, instead of anticipated, profits, awards those infringer’s apportioned profits or a proxy even though Congress rejected that remedy).

[7] “In 1957 the company entered the pulp and paper business by building a kraft pulp and linerboard mill at Toledo, Oregon.” See <https://en.wikipedia.org/wiki/Georgia-Pacific>.

[8] Profit margin targets tend to be set on a product-by-product basis and are used in cost accounting in the development of new products. Determining an infringer’s “target profit” is probably a meaningless exercise. See Robin Cooper and Regine Slagmulder, *Develop Profitable New Products with Target Costing*, 40 *Sloan Mgmt. Rev.* 23-33 (1999).

[9] No. 09-290, (W.D. Pa.), *rev’d in part, vacated in part*, 807 F.3d 1283 (Fed. Cir. 2015)

[10] One of these executives was asked “[C]an you tell me the typical gross margin on the accused product?” He responded “No, a typical gross margin, no.” He was then asked if he could provide a range: “We’d certainly hope to do better than 50 percent. That’s for sure.” It is not clear whether the executive was providing an estimate for infringing products, storage products or for the whole company.

[11] Transcript, December 11, 2012, p. 95, lines 6 - 9.

[12] William C. Rooklidge, *Infringer’s Profits Redux: The Analytical Method of Determining Patent Infringement Reasonable Royalty Damages*, 88 PTCJ 33 (2014) at 10, citing *Uniloc*, 632 F.3d at 1313.

