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## THE VALUE OF A THOUGHT: THE NASH PRINCIPLE

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In patent litigation claims, experts often are called upon to determine a reasonable royalty that would have resulted from a hypothetical negotiation between the patentee and the infringer. This hypothetical negotiation is a bargaining transaction and, accordingly, a reasonable royalty analysis should reflect the bargaining positions of each party. Unfortunately, conventional methods used in patent litigation to date neglect the bargaining aspect and rely on at least one of two approaches: 1) a so-called 25 percent rule-of-thumb and/or 2) the Georgia-Pacific factors. The “25 Percent Rule” can be attributed to Robert Goldscheider, who found that the royalty rates in a series of commercial agreements in the late 1950s averaged 25 percent of pre-tax gross profits. There is little, if any, economic basis for applying this approach and, not surprisingly, average royalty rates across industries vary significantly both above and below 25 percent. Only by chance, will adherence to an average that lacks wide applicability lead to an appropriate royalty rate.

The Georgia-Pacific approach is more specific – it generally starts with royalty rates from prior licensing agreements entered into by

1) the licensor or licensee and 2) other firms in the same industry. That starting rate is then adjusted via upward and/or downward “pressures” from the remaining Georgia-Pacific factors. These “pressures” have no quantitative meaning, and their qualitative direction and weight can be highly subjective. A number of problems exist with relying upon past agreements. Most importantly, past agreements might not be of similar character and strength in light of changing economic conditions, technology, and rate of return requirements. Although these conventional approaches may be useful as references, they can lead experts astray from the critical elements of a bargaining transaction: the economic profits from cooperation and relative bargaining power. I propose that the Nash Bargaining Solution (NBS) – which takes these critical elements into account – should be strongly considered as an alternate tool to calculate a reasonable royalty. The NBS provides a method to solve the bargain described by the 15th Georgia-Pacific factor. In this factor, the bargain has the following rules: 1) the patent is valid, infringed, and enforceable; 2) both parties know all relevant financial information; and 3) a license must be agreed upon.

## THE VALUE OF A THOUGHT - CONTINUED

The NBS follows from a set of axioms, which John Nash regarded as fair and reasonable when the bargainers are sufficiently knowledgeable (consistent with the 15th factor) and rational (consistent with economic theory). The principal axioms are maximization of joint profit/utility, individual rationality and symmetrical treatment of parties with equal bargaining positions. Based on these axioms, a unique solution exists.

The elements necessary to calculate a reasonable royalty using the NBS are: 1) the cooperative economic benefits from reaching an agreement and 2) each side's bargaining strengths, as measured by the alternatives available to each side in the absence of an agreement. These elements can be identified from financial analyses prepared by the respective parties. Once the

elements are in place, the calculation is relatively straightforward. Disagreements likely will arise about the most appropriate values for each of these elements. However, it is preferable for damages experts to debate their respective financial analyses – which can be contrasted with the parties' internal, non-litigation financial models obtained through discovery – rather than to dispute opinions of directional “pressure.”

The NBS is a relatively simple model but nevertheless is rich with mathematical ingenuity and common sense. It is the seminal model in bargaining theory and possesses sound strategic foundations that make it applicable to a large class of bargaining situations. Since its initial publication, the NBS has been widely cited by articles published in peer-reviewed journals and has been empirically applied to the studies of labor negotiations, baseball arbitration, international trade, auction design and household labor decisions.