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Total-Sales Royalties Under the Patent-Misuse Doctrine: A Critique of Zenith

Acting on the specific authority of the United States Constitution, Congress grants to inventors, for a limited time, an exclusive right to their inventions.1 This patent grant carries out a public policy "to promote the Progress of Science and useful Arts."2 The courts will prohibit a patentee from extending its limited monopoly in ways which undermine this patent policy.3 Under the patent-misuse doctrine, for example, the courts deny infringement relief to a patentee who has abused the patent privilege.4

This Note considers whether one kind of patent-licensing provision—a total-sales royalty—should constitute patent misuse.5 A total-sales royalty provision calls for royalties based upon the licensee's total sales of a product. Unlike licensing provisions based solely on patent use, a total-sales royalty obligates the licensee to pay

1. See U.S. Const. art. I, § 8, cl. 8. The present patent law is codified in Title 35 of the U.S. Code and states in part: "Every patent shall contain . . . a grant to the patentee, his heirs or assigns, for the term of seventeen years . . . of the right to exclude others from making, using, or selling the invention throughout the United States . . . " 35 U.S.C. § 154 (1970).


5. The methods of charging for the privilege of using a patent are highly varied. Many of these licensing provisions have been successfully challenged as constituting patent misuse. These include (1) "tie-in" arrangements whereby the sale of unpatented materials is "tied" to the sale or license of the patented invention, see, e.g., Morton Salt Co. v. G.S. Suppiger, 314 U.S. 488 (1942), discussed in text at notes 21-25 infra; (2) requirements that the licensee abstain from producing products which compete with the licensed product, see, e.g., National Lockwasher v. George K. Garrett Co., 137 F.2d 255 (3d Cir. 1943), discussed in note 26 infra; (3) price-fixing agreements, see, e.g., United States v. Line Material Co., 333 U.S. 287 (1948); see Note, 29 GEO. WASH. L. REV. 782 (1961); see also Gibbons, Price Fixing in Patent Licenses and the Antitrust Laws, 51 VA. L. REV. 273 (1965); (4) discriminatory royalty rates, see, e.g., Laitram Corp. v. King Crab, Inc., 244 F. Supp. 9 (D. Alas. 1965), discussed in Note, The Misuse Doctrine and Post Expiration—Discriminatory—and Exorbitant Patent Royalties, 43 IND. L.J. 106, 116-26 (1967); (5) exorbitant royalty rates, see, e.g., American Photocopy Equip. Co. v. Rovico, Inc., 257 F. Supp. 192 (N.D. Ill. 1966), aff'd, 384 F.2d 813 (7th Cir. 1967); see Note, Regulation of Patent License Royalty Rates Under the Antitrust Laws, 65 Mich. L. Rev. 1631 (1967); (6) mandatory package licenses, see, e.g., American Securit Co. v. Shatterproof Glass Corp., 268 F.2d 769 (3d Cir.), cert. denied, 361 U.S. 902 (1959), discussed in note 69 infra; and (7) post-expiration royalties, see, e.g., Brulotte v. Thys Co., 379 U.S. 29 (1964); see Comment, Validity of Patent License Provisions Requiring Payment of Post Expiration Royalties, 65 COLUM. L. REV. 1256 (1965); 1965 U. ILL. L.F. 325.
royalties on the sale of each end product covered by the royalty even though the end product does not embody or use the licensed patent. The United States Supreme Court held in *Zenith Radio Corp. v. Hazeltine Research, Inc.*, that, "... conditioning the grant

6. In this Note, "end product" refers to the actual product unit sold by the licensee. "Product" includes the class of end products covered by the royalty. Thus, if the licensee manufactures contact lenses and agrees to pay royalties on the sale of each lens, the contact lenses are the product covered by the total-sales royalty. The total-sales royalty means that the licensee must pay royalties on the sale of each lens (the end product), even if the individual lens does not use the licensed patent. (If there are different classes of end products, such as "hard" and "soft" lenses, these will be referred to as market segments. See text at note 131 infra.)

In a recent survey, 64% of the respondents reported that royalties are "always" or "usually" based on a percentage of the licensee's sales. Fifteen percent of the respondents "always" or "usually" used a fixed sum per unit of sale or production. While the survey investigated the use of royalties payable upon the sale of end products, it did not distinguish between total-sales royalties and royalties payable only on the sale of end products which use the licensed patent. See Oppenheim & Scott, *Empirical Study of Limitations in Domestic Patent and Know-How Licensing: A Preliminary Report*, 14 IDEA 193 (1970); Oppenheim & Scott, *Empirical Study of Limitations in Domestic Patent and Know-How Licensing: A Second Report*, 14 IDEA 123 (Conference Issue 1970).

7. A further feature of total-sales royalties is that total royalties increase as each end product is sold. Total-sales royalties, moreover, may be divided into two types. Under a "percentage" total-sales royalty provision, the licensee must pay a percentage of its total dollar sales of the covered product, while under the "flat-rate" total-sales royalty, the licensee must pay a fixed sum on each sale of the covered product. These differences can be expressed algebraically. Assume:

- \( S = \) sales price per unit of product sold
- \( Q = \) total quantity produced and sold in units
- \( Rp = \) percentage rate applied to dollar sales
- \( Rf = \) flat rate in dollars applied to each unit sold

Total dollar sales = \( S \times Q \)

Thus, under a "percentage" total-sales royalty, the total royalty payment will equal \( Rp \times (S \times Q) \), while the royalty per unit will equal \( \frac{Rp \times S \times Q}{Q} \) or \( Rp \times S \). This means that total royalties will increase with each unit sold by the amount of \( Rp \times S \). Moreover, the royalty per unit will vary with the sales price per unit product.

In contrast, under a "flat-rate" total-sales royalty provision, total royalties will amount to \( Rf \times Q \). Although total royalties will increase with each unit sold, total royalties will not vary with the sales price.

An example of the "percentage" total-sales royalty provision may be found in Mutchnik v. M.S. Willett, Inc., 274 Md. 610, 611-12, 337 A.2d 72, 73 (1975), discussed in text at notes 90-94 infra. The license agreement specified that Willett would:

(b) ... pay Licensees (the Mutchniks) ... a royalty of five percent (5%) of the highest gross invoiced prices charged by Licensee (Willett) and/or its sublicensees for such [metal table] slides . . . . In the event Licensee and/or any of its sublicensees shall manufacture and/or sell any other slides, such royalty shall also apply to and be payable on the same basis, on the manufacture and/or sale of such other slides.

274 Md. at 611-12, 337 A.2d at 73 (emphasis original).

An example of the "flat-rate" total-sales royalty provision may be found in Glen Mfg. Inc. v. Perfect Fit Indus., Inc., 420 F.2d 319, 320 (2d Cir.), cert. denied, 397 U.S. 1042 (1970), discussed in text at notes 95-99 infra. The license agreement provided that

(4) Perfect Fit and C. & H. agree to pay to Glen a royalty of ten (10) cents on each toilet tank cover made or sold by Perfect Fit or C. & H. after the date of this agreement, for the full term hereof, provided, however, that only one payment of royalty will be made by Perfect Fit or C. & H. on any single toilet tank cover sold under this agreement.

8. 395 U.S. 100 (1969); see text at notes 43-84 infra.
of a patent license upon payment of royalties on products which do not use the teaching of the patent does amount to patent misuse." Of this "conditioning" test, a total-sales royalty provision constitutes patent misuse when "the patentee refuses to license on any other basis and leaves the licensee with the choice between a license so providing and no license at all." The Court further characterized conditioning as the patentee's use of the patent power "to insist on a total-sales royalty and to override the protestations of the licensee." Thus, the Zenith conditioning test permits total-sales royalties where the provision is implemented for the convenience of the parties or where the licensee fails to protest such a royalty.

This Note criticizes the Supreme Court's treatment of total-sales royalties. Part I outlines the scope of the patent-misuse doctrine, and Part II describes the development of the Zenith conditioning test. Part III analyzes that test; it suggests that the Zenith opinion is not internally consistent and that courts may not be able to apply the conditioning test satisfactorily. Finally, in response to Justice Harlan's dissenting opinion in Zenith, in which he notes the dearth of literature on the economic consequences of total-sales royalty provisions, Part III undertakes an analysis of those consequences. The analysis demonstrates that total-sales royalty provisions undermine the purposes of the patent-misuse doctrine by discouraging inventive activity and by deterring the licensee from entering new markets. In short, it will be suggested that all total-sales royalty provisions, regardless of conditioning, should be condemned as patent misuse.

I. HISTORY OF THE PATENT-MISUSE DOCTRINE

The judicially created patent-misuse doctrine arose out of the attempts of patentees to enlarge the scope of their patent monopolies by "tying" the sale of unpatented materials to the sale or license of their patented inventions. Although it had previously approved tying, the Supreme Court overruled its approval in Motion Picture

9. 395 U.S. at 135.
10. 395 U.S. at 135.
11. 395 U.S. at 138.
12. 395 U.S. at 138.
13. 395 U.S. at 139.
14. 395 U.S. at 145.
Patents Co. v. Universal Film Manufacturing Co. In that case, the assignee of a patent had licensed the patented machine on the condition that the licensee notify purchasers that they must purchase unpatented supplies from the licensor. The Court rejected the assignee’s claim that the licensee had infringed the patent by violating this condition. The Court reasoned that the rights of a patentee are restricted to those expressly granted by the patent and a provision which restricted the buying or selling of unpatented goods extended the patent monopoly to products beyond the scope of the patent and thereby undermined the policy of a limited patent grant.

In Morton Salt Co. v. G.S. Suppiger Co., the Court further extended the patent-misuse doctrine by allowing it as a defense against a claim of direct infringement. Unlike the plaintiff in Motion Picture, who alleged that the licensee had violated the tie-in condition, the patentee in Morton Salt alleged that the defendant, by leasing machines within the plaintiff’s patent, was liable for patent infringement. The Court rejected this claim on the ground that the patentee had misused its patent by licensing it on the condition that the licensee purchase unpatented supplies for the patented product.

17. 243 U.S. 502 (1917).
18. The plaintiff was the assignee of a patent on a mechanism which accurately and uniformly fed film through a motion picture projector. The plaintiff required its licensee, a manufacturer of projectors, to attach to all its projectors a notice that restricted the use of the projectors to films specified by the plaintiff.
19. In overruling Heaton-Peninsular Button-Fastener Co. v. Eureka Specialty Co., 77 F. 288 (6th Cir. 1896), the Court rejected the argument that since the patentee may withhold the patent from public use, the patentee must logically and necessarily be permitted to impose any conditions on the patent’s use. 243 U.S. at 514. The Court held that the patentee could not restrict the buyer’s use of the patented machine and asserted that that holding did not deprive “the inventor [of] the exclusive use of just what his inventive genius has discovered.” 243 U.S. at 513.
20. Although the Court acknowledged that one purpose of the patent laws is to reward inventors by giving them an exclusive right to their inventions for a limited period, the Court also noted that the primary purpose of the patent laws is not the creation of private fortunes, but is rather “to promote the progress of science and the useful arts.” 243 U.S. at 511. Accordingly, the Court held that the patent grant is designed to provide only a reasonable reward to inventors and that “the only effect of [a] patent is to restrain others from manufacturing, using, or selling” that which has been invented. 243 U.S. at 510.
22. 243 U.S. 502 (1917). As it did in Motion Picture, the Court has frequently said that the violation of an illegal tie-in condition by a licensee does not create an infringement cause of action. See, e.g., Leitch Mfg. Co. v. Barber Co., 302 U.S. 458 (1938); Carbice Corp. of America v. American Patents Dev. Corp., 283 U.S. 27 (1931).
23. The patentee sought damages for infringement as well as an injunction preventing the licensee from leasing the infringing machines. 314 U.S. at 489.
24. Specifically, the patentee had licensed a patented salt-tablet canning machine on the condition that the licensee purchase the salt tablets from the patentee’s wholly owned subsidiary.

The Court denied relief even though the defendant had not made a licensing agreement with the patentee nor agreed to the tie-in provision. The Court reasoned, “It is the adverse
The tie-in provision, the Court said, was an attempt by the patentee to extend its monopoly beyond what the patent policy permitted.\textsuperscript{25}

Although both \textit{Motion Picture} and \textit{Morton Salt} explicitly relied on the patent policy, the patent-misuse doctrine also rests on antitrust concepts.\textsuperscript{26} Language in the \textit{Morton Salt} opinion, for example, indicated that the Court feared that the patentee’s tie-in arrangement restrained competition in the sale of the unpatented article.\textsuperscript{27} The Court cautioned, however, that it was unnecessary to decide whether the plaintiff had violated the antitrust laws. Although this implies that a finding of patent misuse does not require a finding of an antitrust violation,\textsuperscript{28} antitrust notions have had a strong influence on the

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\textsuperscript{25} 314 U.S. at 494. According to the Court, although the “patent monopoly carries out a public policy adopted by the Constitution and laws of the United States, ‘to promote the Progress of Science and useful Arts, by securing for limited Times to ... Inventors the exclusive Right ... ’ to their ‘new and useful’ inventions,” the monopoly covers nothing “that is not embraced in the invention.” 314 U.S. at 492. The Court noted that relief would be permitted when the improper practice had been abandoned and the misuse had been dissipated. Dissipation of a misuse can occur before, during, or after trial. \textit{See DeLong v. Lemco Hosiery Mills, Inc.,} 223 F. Supp. 1001, 1009 (M.D.N.C. 1963). \textit{See generally Nordhaus, Antitrust Laws and Public Policy in Relation to Patents, 3 Duq. L. Rev. 1, 17-22 (1964); Comment, Dissipation of Patent Misuse, 1968 Wis. L. Rev. 918.}

\textsuperscript{26} \textit{Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.,} 320 U.S. 680 (1944), discussed in note 32 infra; \textit{National Lockwasher v. George K. Garrett Co.,} 137 F.2d 255 (3d Cir. 1943). The influence of antitrust notions on the patent policy developed despite earlier cases which had indicated that an antitrust defense was irrelevant to a patent infringement suit. \textit{See Brown Saddle Co. v. Troxel,} 98 F. 620 (C.C.N.D. Ohio 1899); Strait v. National Harrow, 51 F. 819 (C.C.N.D. N.Y. 1892). Those cases were cited as late as 1941. \textit{See Wisconsin Aluminum Research Foundation v. Vitamin Technologists, Inc.,} 41 F. Supp. 857, 867 (S.D. Cal. 1941). \textit{National Lockwasher} nicely illustrates the influence of antitrust policy on the patent-misuse doctrine. In that case, the patentee licensed the manufacture of a nontangling spring washer. The patentee’s standard license agreement provided that the licensee would not manufacture any nontangling spring washer that did not use the licensed patent. The court directed dismissal of the infringement complaint because the patentee had used its patent monopoly to suppress the manufacture and sale of competing unpatented articles. The patentee, according to the court, had attempted “by means other than that of free competition to extend the bounds of its lawful monopoly to make, use, and vend the patented device to the extent where such device would be the only one available to a user of such an article.” 137 F.2d at 256. Thus, the court’s opinion suggests that the suppression of competition is a legitimate concern of the misuse doctrine.

\textsuperscript{27} The Court noted that the issue was “whether a court of equity will lend its aid to protect the patent monopoly when the respondent is using it as the effective means of restraining competition with its sale of an unpatented article.” 314 U.S. at 490 (emphasis added). The Court concluded the patentee who thus restrains competition cannot receive such aid. 314 U.S. at 491.

\textsuperscript{28} \textit{Accord, Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.,} 329 U.S. 637, 641 (1947) (“though control of the unpatented article or device falls short of a prohibited restraint of trade or monopoly, it will not be sanctioned”). \textit{Cf.} \textit{Zenith Radio Corp. v. Hazeltine Research, Inc.,} 295 U.S. 100, 140 (1956) (“if there was such patent misuse, it does not necessarily follow that the misuse embodies the ingredients of a violation of either Section 1 or Section 2 of the Sherman Act”).
patent-misuse doctrine. This can be seen in the Court's implication, in a later case, that conduct offensive to the antitrust laws is, per se, patent misuse.\textsuperscript{29} Similarly, other courts have, by basing their misuse decisions almost exclusively on competitive considerations, neglected the policy of the patent grant.\textsuperscript{30} In still other cases the alleged infringer could choose whether to base its misuse defense upon either patent or antitrust policy.\textsuperscript{31}

Since the patent-misuse doctrine rests on both antitrust and patent law,\textsuperscript{32} we will examine the legality of total-sales royalties in light of both policies. This Note argues that both policies are frustrated by this kind of royalty provision.

II. THE DEVELOPMENT OF THE CONDITIONING TEST

This Note now moves to its discussion of the patent-misuse doctrine as it has been applied to total-sales royalties. The Supreme Court first assessed the validity of total-sales royalties in \textit{Automatic Radio Mfg. Co. v. Hazeltine Research, Inc.}, 339 U.S. 827 (1950), \textit{discussed in text at notes 33-42 infra}. The Court’s failure to consider patent policy is noted in Justice Douglas’ dissent. 339 U.S. at 836.

\textsuperscript{29} See \textit{United States Gypsum Co. v. National Gypsum Co.}, 352 U.S. 457 (1957). National Gypsum, on the ground that United States Gypsum had been convicted of antitrust violations, refused to pay royalties until a licensing agreement which had no price-fixing provisions was reached. When United States Gypsum sued to recover royalties due under the existing license agreement, National Gypsum argued that United States Gypsum “was barred from recovery by reason of unpurged misuse of the patents involved . . . .” 352 U.S. at 462. The court remanded the case to the district court for evidence on the patent-misuse issue. The Court noted that “the only patent misuse that has ever been established in this long-drawn-out litigation is concerted price fixing under the former patent licenses . . . .” and reasoned that United States Gypsum could not recover if the misuse found in the antitrust litigation remained unpurged. 352 U.S. at 472-73. That reasoning suggests that the Court considered United States Gypsum’s prior Sherman Act violation to be patent misuse.


\textsuperscript{32} In Mercoid Corp. v. Minneapolis-Honeywell Regulator Co., 320 U.S. 680 (1944), for example, the opinion seems grounded in both antitrust and patent policy. The Court wrote, “The legality of any attempt to bring unpatented goods within the protection of the patent is measured by the anti-trust laws not by the patent law.” 320 U.S. at 684. The Court, however, must not have intended to abandon the patent-policy basis for misuse, since it also invoked that policy when withholding equitable relief from the patentee. 320 U.S. at 684. \textit{See generally Wood, The Tangle of Mercoid Case Implications, 13 GEO. WASH. L. REV. 61, 79-81 (1944).}

Radio Manufacturing Co. v. Hazeltine Research, Inc.\textsuperscript{33} Automatic Radio, a manufacturer of radio-broadcasting receivers, had entered into a licensing agreement which entitled it to use, in the manufacture of its "home products," any or all of the 570 patents which were held by Hazeltine or might be acquired by it. In exchange for the license, Automatic agreed to pay a small percentage of the selling price of its complete radio-broadcasting receivers.\textsuperscript{34} Under this agreement, Automatic was not obliged to use any of the licensed patents but was required to pay royalties whether or not they were used. Hazeltine sued to recover royalties due under the agreement, and Automatic defended by arguing that the total-sales royalty provision constituted patent misuse.

The Supreme Court, in affirming the decision of the court of appeals, held that a total-sales royalty provision, even among related businesses, was not a per se misuse of patents.\textsuperscript{35} The Court distinguished total-sales royalty provisions from the previously prohibited tie-in provisions, thereby rejecting the licensee's claim that a total-sales royalty provision "ties" the payment of royalties on unpatented goods to the grant of a license. According to the Court, a tie-in provision extends "the monopoly of the patent to create another monopoly or restraint of competition,"\textsuperscript{36} while a total-sales royalty provision does not restrain competition beyond the legitimate grant of the patent. Although the Court noted that convenience alone

\textsuperscript{33} 339 U.S. 827 (1950). An earlier case, United States v. United States Gypsum Co., 333 U.S. 364 (1948), involved a licensing agreement whereby the licensee paid a stipulated percentage of the selling price of "all plaster board and gypsum wall board of every kind" whether or not made by patented processes or embodying patented inventions. 333 U.S. at 381. The Court, however, decided the case on other grounds and held that the patentee had restrained trade in violation of the Sherman Act by fixing prices of patented gypsum board and by eliminating production of unpatented board. The Court was influenced by the presence of the percentage total-sales royalty provision: "Patents grant no privilege to their owners of organizing the use of those patents to monopolize an industry through price control, through royalties for the patents drawn from patent-free industry products and through regulation of distribution." 333 U.S. at 400 (emphasis added). The opinion, however, did not directly ask whether the provision, standing alone, constituted patent misuse. That is, the Court considered the total-sales royalty provision in the context of a Sherman Act violation, not in the context of a licensee's defense to a patentee's infringement or breach-of-contract suit.

\textsuperscript{34} 339 U.S. at 829.

\textsuperscript{35} 339 U.S. at 834. The district court had sustained the validity of the licensing agreement, had entered judgment for an accounting and recovery of royalties, and had enjoined the licensee from failing to pay royalties, keep records, and render reports during the life of the agreement. 77 F. Supp. 493 (D. Mass. 1948). The court of appeals affirmed. 176 F.2d 799 (1st Cir. 1949).

\textsuperscript{36} 339 U.S. at 832. As examples of tie-in provisions, the Court cited those instances where the patentee licenses its patent on the condition that the licensee either (1) purchase an unpatented good, (2) promise not to produce or sell a competing good, or (3) accept the license of another patent. 339 U.S. at 830-31.
could not justify the unlawful extension of the patent monopoly, the Court also invoked, in part, the reasoning of the lower courts that the royalty provision was a convenient and legitimate method of calculating royalties. The district court, for example, noted that a total-sales royalty makes it unnecessary for firms to determine the extent to which the licensee's products embody one of the licensed patents.  

*Automatic Radio* is also significant because the Court upheld the validity of total-sales royalty provisions without expressly considering the purposes and policies of the patent grant. Indeed, the Court's opinion suggests that misuse will be found only when the patentee's conduct has anticompetitive effects. In dissent, Justice Douglas criticized this failure of the Court to remember that "the power of Congress to grant patents is circumscribed by the Constitution." Justice Douglas recognized that a total-sales royalty provision, like a tie-in provision, may compensate the patentee for unpatented products. He wrote: "[T]he patent owner has therefore used the patents to bludgeon his way into a partnership with this licensee, collecting royalties on unpatented as well as patented articles. . . . A plainer extension of a patent by unlawful means would be hard to imagine." Although Justice Douglas was correct in criticizing total-sales royalties on "patent policy" grounds, the most telling criticism of a total-sales royalty rests not on the fact that it compensates the patentee for unpatented products, but on its undesirable economic consequences. This criticism will be elaborated upon below.

The Supreme Court did not again rule on the validity of total-sales royalty provisions until *Zenith Radio Corp. v. Hazeltine Research, Inc.* As in *Automatic Radio*, the dispute involved a standard Hazeltine license for all Hazeltine's domestic radio and television patents; it called for a royalty of a percentage of the licen-

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37. 339 U.S. at 834.  
38. 339 U.S. at 833. The court of appeals affirmed the decision of the lower court on the ground that, because it would not be unlawful to pay a fixed royalty, it was permissible to pay a variable consideration measured by a percentage of the licensee's sales.  
39. For this policy, see notes 20 & 25 supra and accompanying text.  
40. This can be seen in the Court's definition of patent misuse as "an extension of the monopoly of the patent to create another monopoly or restraint of competition." 339 U.S. at 832 (emphasis added). Indeed, the Court concluded that the total-sales royalty "does not create another monopoly; it creates no restraint of competition beyond the legitimate grant of the patent." 339 U.S. at 833.  
41. 339 U.S. at 836.  
42. 339 U.S. at 838.  
The district court addressed the infringement issue first and held the patent invalid. On the misuse counterclaim, the court held that Hazeltine had misused its domestic patents by coercing Zenith to accept a five-year package license and by insisting on royalties for unpatented products. The court enjoined the patentee from "conditioning" the grant of a license upon the licensee's payment of royalties on the sale of products "not covered by the patent." The court of appeals agreed that the patent was invalid, but on the misuse counterclaim it concluded that conditioning the grant of a license upon the payment of royalties on the sale of products which made no use of the patent was not patent misuse. Accordingly, the court reversed this portion of the district court's injunction.

44. The district court described Hazeltine's licensing policy as follows:

Plaintiff's policy ... was to grant a so-called standard package license which conferred on the licensees for a five-year period freedom from any charge of infringement under all present as well as future Hazeltine patents issuing during the term of the agreement. Royalties were required to be paid on the licensees' entire production whether its products employed any or none of the Hazeltine patents. The license was in effect a covenant not to sue the licensee or its customers should Hazeltine decide within the license period that the manufacture and sale of any particular apparatus infringed upon any of its patent rights. 239 F. Supp. 51, 69-70 (1965) (emphasis added).

45. 239 F. Supp. at 54.

46. 239 F. Supp. at 69. Zenith also sought treble damages and injunctive relief for Hazeltine's alleged conspiracy with foreign patent pools. Zenith contended that the patent pools had refused to license to Zenith those patents, including Hazeltine's, which had been placed within their exclusive licensing authority. The district court found that Hazeltine had conspired with the pools in violation of the antitrust laws and awarded Zenith an injunction and treble damages of nearly $35,000,000. The court of appeals reversed this judgment on the ground that Zenith had failed to show actual injury. 388 F.2d 25 (7th Cir. 1967). The Court reversed in part, holding that, for some of the patent pools, Zenith had met its burden of showing injury. This portion of the case is considered in 395 U.S. at 113-33.

47. For a discussion of package license provisions, see text at notes 69-70 infra.

48. See 239 F. Supp. at 68-72, 77. The court enjoined Hazeltine from engaging in further misuse and awarded Zenith $150,000 in treble damages. See note 49 infra.

49. The injunction is printed, in part, in 395 U.S. at 133-34. It prohibited Hazeltine from "[c]onditioning directly or indirectly the grant of a license to ... Zenith ... upon the taking of a license under any other patent or upon the paying of royalties on the manufacture, use or sale of apparatus not covered by such patent." 395 U.S. at 133-34 (emphasis original).

50. The court of appeals achieved this by deleting the last clause of the injunction. See note 49 supra. It should be noted that the court of appeals' resolution of the total-sales royalty issue did not lead it to reverse the district court's award of treble damages. Instead, the court affirmed the treble damage award because Hazeltine's coercive attempts to induce a package-licensing agreement constituted misuse.
The Supreme Court reversed, holding that "conditioning the grant of a license upon payment of royalties on products which do not use the teaching of the patent does amount to patent misuse."51 The Court carefully pointed out that the parties could, for purposes of mutual convenience, use a total-sales royalty provision.52 The Court's rule only prohibited "conditioning" a license upon the payment of royalties on unpatented products, "that is, where the patentee refuses to license on any other basis and leaves the licensee with the choice between a license so providing and no license at all."53 Indeed, the Court noted that a licensee "may insist upon paying only for use, and not on the basis of total sales."54

This conditioning test permitted the Court to distinguish rather than overrule *Automatic Radio*. According to the Court, *Automatic Radio* was not inconsistent with the district court's injunction against conditioning a license upon the payment of royalties on unpatented products.55 *Automatic Radio*, wrote the Court, did not discuss the negotiations leading up to the adoption of the royalty formula and thus did not rely on a finding that the patentee had used its patent leverage to coerce a total-sales royalty provision. Thus the Court concluded that *Automatic Radio* did not authorize the patentee to override the protestations of the licensee.56

Justice Harlan dissented from the majority's treatment of patent misuse, and described it as holding that a "patent license provision which measures royalties by a percentage of total sales is lawful if included for the 'convenience' of both parties but unlawful if 'in-

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51. 395 U.S. at 135. Since the district court's treble damage award for patent misuse was affirmed by the court of appeals, the Supreme Court only discussed whether the court of appeals was correct in striking the last clause of the injunction. 395 U.S. at 133.

52. 395 U.S. at 138. It is often more convenient to base royalties on the sale of products, regardless of whether the product uses the teaching of the patent. See note 38 supra and accompanying text. See also text at note 106 infra.

53. 395 U.S. at 135. For a further definition of conditioning, see text at note 11 supra.

54. 395 U.S. at 139.

55. 395 U.S. at 138.

56. Its conclusion that the legality of a total-sales royalty provision should be determined by a conditioning test did not lead the Court to affirm the injunction. First, the Court remanded the case to the trial court for a determination of whether Hazeltine had "conditioned" its license upon the inclusion of this provision. Second, the Court held that a finding of patent misuse would not necessarily establish a Clayton Act violation. That holding settled a long-debated question. According to the Court, patent misuse does not, in itself, violate the antitrust laws and, before an injunction can be granted, the ingredients of an antitrust violation must be established. Nonetheless, a showing of misuse is a defense for the licensee and precludes any injunction against infringement by the licensee. The holding that patent misuse does not necessarily violate the antitrust laws implies that the competitive restraints that constitute patent misuse are not as extensive as those constituting a violation of the antitrust laws. See note 28 supra and accompanying text.
Justice Harlan predicted that difficulties in applying the conditioning test would produce undesirable uncertainty in this area of business. The test, according to Justice Harlan, would force courts to evaluate negotiations artfully embellished by wary patentees and would give little assurance to the parties that their agreements would be enforced. Justice Harlan also contended that the majority had, in effect, overruled *Automatic Radio*. He read *Automatic Radio* as holding that total-sales royalty agreements do not constitute misuse, even if they were insisted upon by the patentee. The majority opinion, Justice Harlan insisted, found misuse in a patent license of "precisely the same tenor" as that upheld in *Automatic Radio* and did so "without offering more than a shadow of a reason in law or economics for departing from that earlier ruling." He saw no reason why this method of calculating the amount of royalties should be any less permissible than other alternatives, whether or not it is "insisted upon" by the patentee.

Justice Harlan concluded by attempting to show that the conditioning test failed to achieve any of its possible purposes. He argued that if the Court intended to protect licensees against overreaching, it failed to explain why licensees as a class need this protection or why royalties based solely upon use could not be equally overreaching. If the Court thought that total-sales royalties discouraged the licensee from "inventing around" the patent or acquiring substitutes, Justice Harlan argued that these effects would be present even if the parties freely bargained for the provision. According to Justice Harlan, the Court did not address the critical issue: whether total-sales royalties without exception constitute patent misuse. He considered but rejected as insufficient the argument that percentage-of-sales royalty provisions are economically undesirable. Given the

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57. 395 U.S. at 141.
58. 395 U.S. at 142.
59. Other alternatives would include the payment of a fixed sum to acquire a license for a given period of time and the use of royalties based upon the sale of items which use the patent's teaching.
60. One commentator has asserted, "As a class patent licensees are unlikely candidates for 'ward of the court' status, and the cases that rest on the premise of overreaching are likely to be unsound, either in their reasoning or in both reasoning and result." Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 *Yale L.J.* 267, 278 (1966) (footnotes omitted).
61. In a later part of this Note, this argument will be made and supported. *See* text at *Part III.C infra*.
62. 395 U.S. at 142.
63. Baxter, *supra* note 60, condemned *all* royalties based on the sale of end products. *See* note 6 *supra*. That is, he condemned not only total-sales royalties, but also those royalties based on the sale of end products which use the patent. This Note argues more modestly that
choice between holding total-sales royalty provisions valid or invalid, Justice Harlan asserted that he would adhere to the rule of *Automatic Radio* and uphold all total-sales royalty provisions.

This Note will argue that while many of Justice Harlan's criticisms of the *Zenith* test are well taken, his conclusion that all total-sales royalty provisions should be upheld is unwise. Because of their undesirable economic consequences, all total-sales royalty provisions should be condemned as patent misuse.

III. CRITICISMS OF THE *ZENITH* DECISION

Three specific criticisms of the *Zenith* conditioning test can be made. First, the Court failed to explain adequately its reasoning. Second, applying the *Zenith* test properly may be difficult. Finally, an economic analysis of total-sales royalty provisions suggests that they misuse the patent grant.

A. The Rationale of the *Zenith* Decision

As Justice Harlan said, the language of the majority opinion in *Zenith* makes it difficult to discern precisely why a total-sales royalty provision constitutes patent misuse only when it is insisted upon by the patentee. The Court spoke conclusorily, asserting only that this kind of royalty provision unlawfully extends the patent monopoly. This section briefly dissects the possible justifications for the conditioning test.

First, the Court explained its decision with an analogy to the tie-in cases. The tie-in cases, as we have seen, prohibit a patentee from "conditioning" the right to use the patent on the licensee's agreement to purchase, use, or sell another product not within the scope of the patentee's monopoly.64 The *Zenith* Court reasoned that just as the patent's leverage may not be used to extract from the licensee a commitment to purchase, use, or sell other products according to the desires of the patentee, neither can that leverage be used to garner as royalties a percentage share of the licensee's receipts from sales of other products; in either case, the patentee seeks to extend the monopoly of his patent to derive a benefit not attributable to use of the patent's teaching.65

The Court, then, suggested that conditioning, for both tie-ins and total-sales royalties, is illegal.

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64. See note 36 *supra*.

65. 395 U.S. at 136.
That reasoning, however, is clearly unpersuasive. As the Court's confusion over the term "conditioning" illustrates, the Court failed to recognize the distinction between its holding and the reasoning of the tie-in cases. As used in the *Zenith* opinion, "conditioning" the grant of a license relates to the licensor's decision whether to grant the license. Under the *Zenith* test, it is unlawful to grant a license only upon the "condition" that the licensee pay royalties on products which do not use the teaching of the patent. It is the refusal to grant the license without this provision that the Court condemns as "conditioning." The tie-in cases, on the other hand, make the negotiations irrelevant and simply condemn, as a per se misuse, including in a license a "condition" which ties the sale of unpatented materials to the sale or license of the patented product.66

Furthermore, if tie-in and total-sales royalty provisions are analogous, logic requires that they be treated similarly. If tie-in provisions are per se misuse, total-sales royalty provisions should be condemned. But, while purporting to analogize tie-in and total-sales royalty provisions, the Court treats the two provisions quite differently. The tie-in cases, for example, reveal that a finding of a tie-in inevitably leads to a finding of misuse even if the patentee gave the licensee other alternatives or the licensee freely agreed to the provision. *Zenith*, on the other hand, held that a coerced total-sales royalty provision is misuse, while a freely negotiated one is not. This odd result suggests that the *Zenith* Court considered total-sales royalty provisions less onerous than tie-in provisions; it suggests that, in some way, the evils of total-sales royalties vanish when there has been no conditioning and the agreement was freely bargained for. As Justice Harlan pointed out, however, the Court failed to explain why a coerced acceptance of the royalty extends the patent monopoly while a freely negotiated acceptance does not. In either case, the patentee may "derive a benefit not attributable to the patent's teaching."67


The *Zenith* Court cited two cases other than *Motion Picture* and *Morton Salt* to demonstrate that patentees may not "condition the right to use [the] patent on the licensee's agreement to purchase, use or sell . . . another article of commerce not within the patent monopoly." 395 U.S. at 136. Although both opinions appeared to hold that tie-in provisions violate the antitrust laws even though they are freely bargained for, both opinions did evidence sensitivity to the coercive aspects of tie-in provisions. *See International Salt Co. v. United States*, 352 U.S. 392, 395-96 (1947); Ethyl Gasoline Corp. v. United States, 309 U.S. 436, 455-59 (1940). This sensitivity to coercion explains, perhaps, why the court cited these cases in lieu of *Motion Picture* and *Morton Salt*. Neither court, however, focussed on the negotiation process or relied on coercion in reaching its decision. Thus the general rule remains the same: tie-in provisions are per se violations of the patent and antitrust laws, and even a freely bargained-for tie-in provision is patent misuse.

A second explanation for the Court's adoption of the conditioning test may be that it relied too heavily on the logic of the district court's injunction.68 Besides enjoining the conditioning of the total-sales royalty provision, the district court prohibited the patentee from refusing to grant a license unless the licensee acquired other patents. The courts have condemned this practice as "mandatory package licensing."69 Package licensing is not economically undesirable if the licensee desires rights to all the patents in the package;70 it is only objectionable when the patentee forces the licensee to pay for undesired patents. Since the misuse associated with mandatory package licensing lends itself to expression in terms of "conditioning," and since both total-sales royalties and mandatory package licenses were similarly prohibited by the district court injunction, the Zenith Court may simply have assumed that total-sales royalty provisions are also undesirable only when "insisted upon." However, it is not at all clear that total-sales royalty provisions should be condemned only when the bargaining process is characterized by conditioning. Indeed, it will be argued below that the undesirable economic consequences of total-sales royalty provisions are not escaped when the parties freely bargain for the provision.71

Third, the decision may also have resulted from the Court's concern with overreaching by patentees. That interpretation is substantiated by the Court's implication that what is being condemned is the patentee's use of "leverage."72 If the decision rests on this ground, however, it is unsatisfactory. Since the Court concedes that a pur-
pose of the patent grant is to give the patentee "leverage" to garner high royalties, why should total-sales royalty provisions, as opposed to any other type of royalty provision, be singled out as particularly objectionable if "leverage" or "coercion" has been used? Rather, under the Court's reasoning, all types of royalty provisions should be condemned if conditioning is proved. Thus, the "leverage" rationale for the conditioning test, absent any additional economic or patent-policy justification, is insufficient.

This Part suggests, then, that the *Zenith* Court failed to justify adequately the conditioning test. The Court apparently believed that the ills of total-sales royalty provisions are avoided if the parties freely bargain. The Court, however, did not say why this is so: it simply concluded that conditioning the grant of a license upon acceptance of a total-sales royalty provision unlawfully extends the patent monopoly.

### B. Judicial Application of the Conditioning Test

In his dissent in *Zenith*, Justice Harlan said that the conditioning test would prove "exceedingly difficult to apply" and would therefore cause "uncertainty in this area of business dealing." He anticipated that "in practice, it often will be very hard to tell whether a license provision was included at the instance of both parties or only at the will of the licensor." This Part tests the accuracy of that prediction and concludes that, despite the apparent ease with which the lower courts have applied the *Zenith* test, it will pose practical difficulties for the courts. While these difficulties may not, standing alone, justify overruling *Zenith*, they at least significantly decrease its desirability.

#### 1. The Conditioning Test in the Lower Courts

The principles on which the lower courts have relied in applying the conditioning test can be readily stated. In order to find patent misuse under the *Zenith* test, a court must determine that the patentee has conditioned its grant of a license on the licensee's acceptance of a total-sales royalty provision. In *Zenith*, the Supreme Court

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73. 395 U.S. at 135, 136 (citing Brulotte v. Thys Co., 379 U.S. 29, 33 (1964)).
74. 395 U.S. at 141.
75. 395 U.S. at 141.
held, as have the lower courts, that conditioning cannot be inferred merely because the license agreement includes such a provision. Accordingly, the courts have placed the burden of introducing evidence of coercion or conditioning on the licensee. Courts ask (1) whether the provision was bargained for or insisted upon, (2) whether the licensee made protests which were overridden by the licensor, (3) whether the patentee rejected the licensee's alternative proposals, and (4) whether the patentee failed to offer reasonable alternatives. Finally, although most courts have not construed Zenith as requiring the patentee to show that the parties used the provision for their mutual convenience, some courts have suggested that a provision's convenience or mutual benefit will be weighed in deciding whether it was freely bargained for.

A number of cases support these propositions and illustrate the apparent ease with which the courts have applied the Zenith test. In


77. The Court stated:

No such inference of conditioning follows from a mere license provision measuring royalties by the licensee's total sales even if, as things work out, only some or none of the merchandise employs the patented idea or process, or even if it was foreseeable that some undetermined portion would not contain the invention. 395 U.S. at 138.


79. See, e.g., Mutchnik v. M.S. Willett, Inc., 274 Md. 610, 619, 337 A.2d 75, 76 (1975). Similarly, the court in Plastic Contact Lens Co. v. W.R.S. Contact Lens Laboratories, Inc., 330 F. Supp. 441, 443 (S.D.N.Y. 1970), held that the licensee had the burden of showing "a posture on the part of the [patentee] which rejected alternative proposals by the [licensee]."


81. See cases cited in note 80 supra.


84. See, e.g., Glen Mfg. Inc. v. Perfect Fit Indus., Inc., 324 F. Supp. 1133, 1137 (1971), discussed in text at notes 95-98 infra, where the court stated that Plaintiff has failed to show that the License Contract involved was executed for the mutual convenience of the parties. In fact it is clear that its purpose was for the sole monetary convenience of the plaintiff. . . . If the reason for employing the royalty provision which is based on total sales is the mutual convenience of both of the parties rather than as leverage from which the licensor can extract payment for the manufacture of unpatented items, there is no patent misuse.
Plastic Contact Lens Co. v. W.R.S. Contact Lens Laboratories, Inc.,\textsuperscript{85} for example, the licensing agreement provided for a fixed royalty on each corneal contact lens sold by the licensee.\textsuperscript{86} The agreement, in other words, required the licensee to pay royalties even on the manufacture and sale of lenses which did not embody or make use of the patent. When the plaintiff, an assignee of the patent, sued to recover royalties under the license agreement, the licensee replied that royalties based on total sales rather than solely on patent use constituted misuse. The court rejected the licensee’s argument, finding that the Zenith conditioning test had not been met. In support of its conclusion that the licensee had entered into the agreement freely, voluntarily, and with full understanding of its terms, the court relied on the plaintiff’s offer of an alternative proposal calling for royalties, at slightly higher rates per end product, only upon the sale of those lenses which use the patent.\textsuperscript{87} The court noted that, during the negotiations, defendants had been represented by counsel, and it found no evidence that the plaintiff had induced the contract by misrepresentation or by physical or economic duress.\textsuperscript{88} Thus, the court concluded that the plaintiff had not refused to license on a basis other than a total-sales royalty.\textsuperscript{89}

The court in Mutchnik v. M.S. Willett, Inc.\textsuperscript{90} considered a somewhat more complex set of facts. The plaintiff, Mutchnik, had granted the defendant, Willett, a ten-year exclusive license to manufacture and sell a metal table slide. The agreement specified that Willett, or any of its sub-licensees, would pay royalties of five percent of the highest gross invoiced prices of its slides. The agreement further provided that if Willett or any of its sub-licensees manufactured or sold any slide not covered by the Mutchnik design, the five-percent royalty would also apply. When the plaintiff sued to recover royalties under the contract, the licensee argued that an agreement

\textsuperscript{86} In this case, the agreement provided:
Licensee, solely for the purpose of accounting hereunder, agrees to pay Solex royalties upon such devices consisting of pieces of finished material in which two lens surfaces are applied thereto and which are adapted to be or are made into a finished or unfinished corneal contact lens calculated in accordance with the following schedule on all such devices sold by Licensee.
330 F. Supp. at 442 (emphasis added). This provision, then, provided for a “flat-rate” total-sales royalty to be paid upon the product’s sale. \textit{See note 7 supra.}
\textsuperscript{87} 330 F. Supp. at 443.
\textsuperscript{88} 330 F. Supp. at 442.
\textsuperscript{89} 330 F. Supp. at 444.
\textsuperscript{90} 274 Md. 610, 337 A.2d 72 (1975).
requiring that royalties be paid on items other than those described and claimed in the patent constituted patent misuse.

The lower court accepted the misuse defense and found that illegal conditioning of the license had been established. The lower court reasoned that Mutchnik, aware of Willett’s substantial tooling-up expense in expectation of a license grant, had exerted “leverage” by insisting on the provision and that Mutchnik’s tactic of indicating that others were interested in the patent pressured the licensee. The appellate court reversed. It placed the burden of showing coercion on the licensee and concluded that the evidence relied upon by the lower court did not support a finding of conditioning under the Zenith test: “There is no evidence that the Mutchniks refused to license on any basis other than a total-sales royalty, or overrode any objection which Willett may have had to the provision, or rejected any alternative proposal which Willett may have advanced.” Indeed, the court doubted that the total-sales royalty was ever a “bone of contention” between the parties, much less that it was demanded by the Mutchniks.

In contrast to the courts in the above two cases, the court in Glen Manufacturing Inc. v. Perfect Fit Industries, Inc., found patent misuse under the conditioning test. As in the previously mentioned cases, the licensing agreement based royalties on total sales rather than solely on patent use. The court explained that the patentee, by consistently employing a standardized total-sales royalty provision in numerous licensing agreements over a three-year period, had established a policy of refusing to grant licenses unless they con-

91. See 274 Md. at 614, 337 A.2d at 74.
92. 274 Md. at 618, 337 A.2d at 76. Indeed, the court explicitly declined to construe Zenith as holding that the payment of royalties on unpatented goods, except for the convenience of the parties, constitutes patent misuse. 274 Md. at 620, 337 A.2d at 77.
93. 274 Md. at 619, 337 A.2d at 76.
94. 274 Md. at 619, 337 A.2d at 76.
95. 324 F. Supp. 1133 (S.D.N.Y. 1971). Glen, the plaintiff, held a patent on toilet-tank covers. The district court originally held that Glen’s licensing agreement with the defendant, Perfect Fit, constituted a patent misuse because it required the payment of royalties on all toilet-tank covers sold by Perfect Fit and not only on those within the scope of the patent. 299 F. Supp. 278 (S.D.N.Y. 1969). This holding was affirmed in a supplemental opinion. 299 F. Supp. at 283.
96. This royalty provision is quoted in note 7 supra.
tained such provisions. As further support for its conclusion, the court noted that the plaintiff had charged other manufacturers with infringement and had given them the choice of accepting the standard license or discontinuing the manufacture of the product. Finally, the court found that the patentee had failed to rebut this proof or show that the agreement was entered into for the mutual convenience of the parties.

*Glen* is significant for two reasons. First, it suggests that conditioning may be inferred from a licensor's practice of refusing to license without the inclusion of a total-sales royalty. Second, it suggests that a finding of misuse does not depend on affirmative evidence that the licensee protested or requested some alternative form of royalty arrangement.

This may depart from language in *Zenith* which notes that conditioning depends, in part, on the licensor's rejection of the licensee's alternative proposals and protests. To the extent that other courts accept the *Glen* court's inferences, the licensee's task of proving conditioning will be eased.

Finally, in at least one case, *Chandler v. Stern Dental Laboratory Co.*, the court simply misinterpreted the *Zenith* test. In that case, the patentee alleged that the licensee had violated the antitrust and patent laws, and, as in the other cases, the licensee contended that total-sales royalty provisions constitute patent misuse. Although the court concluded that the patentee insisted upon and coerced the licensee into accepting the provision, the agreement itself was apparently the only evidence upon which the court relied.


98. A corollary of this proposition raises an intriguing question. As note 24 supra suggests, patent misuse may be a defense to an infringement suit even though the infringer was not harmed by the misuse. In other words, if an infringer refuses a licensing agreement providing for an illegal tie-in provision, the infringer can raise the tie-in provision as a defense to the patentee's infringement suit. In a total-sales royalty situation, however, it is unclear whether the courts would permit an infringer who has refused a total-sales royalty provision to use later evidence of the patentee's past practice of conditioning as a defense to an infringement suit. On one hand, it can be argued that this situation is no different from that posed by the tie-in cases: since conditioning licenses on total-sales royalties is just as undesirable as a tie-in provision, infringers should be able to raise patent misuse as a defense in both circumstances. On the other hand, since the *Zenith* case holds that the mere use of a total-sales royalty is not per se patent misuse, it might be reasonable to insist that the infringer show evidence of conditioning. If the infringer has refused the licensing arrangement, the infringer will be hard pressed to show that he was "coerced" into accepting the license. In any event, a licensee who has *freely agreed* to a total-sales royalty should not be permitted to use evidence of the patentee's past history of conditioning as a defense to an infringement suit. If this were allowed, the conditioning test would be effectively circumvented, since the total-sales royalty was not imposed upon the licensee.

99. 395 U.S. at 138, 139. For a discussion of those cases in accord with *Zenith*, see notes 76-84 supra and accompanying text.


101. This conclusion is supported by the court's statement that
rule, however, clearly requires external evidence of conditioning: "no . . . inference [of conditioning] follows from the mere licensing provision." 102

2. Potential Problems Under the Zenith Test

As these cases show, the lower courts have easily applied the Zenith conditioning test. Nevertheless, this facility may be more apparent than real. That is, the courts, by glossing over the practical difficulties presented by the test, may have improperly applied it in these cases. Or, this facility may simply reflect the fact that the courts have not yet had to face the perplexities of evaluating the fairness of a total-sales royalty provision arising out of complex negotiations. To the extent that future cases involve such negotiations, the Zenith test will be harder to apply and easier to misapply. 103

It might of course be argued that evidence that there had been complex negotiations should simplify the judicial task. Such evidence might create a presumption that the parties freely bargained for the total-sales royalty provision. Since, however, the patentee might have been "careful to embellish the negotiations with an alternative proposal," 104 evidence of an alternative proposal would require the court to determine whether the alternative was offered in good faith or was instead a calculated, subtle form of coercion. If the patentee, for example, offered clearly unattractive alternatives to the licensee, it might still be legitimately concluded that the patentee had conditioned its grant of the license on the licensee's acceptance

[A]t the trial plaintiffs asserted a right to receive royalties on certain thermoplastic sheets, as well as similar teeth protector devices manufactured or sold by defendants. By plaintiff's own admissions these products do not come within the scope of the Chandler patent. As a result, it is this Court's conclusion that the patent has been misused. 335 F. Supp. at 583.

The court also referred to the licensing provision which required that all the licensee's improvements of the patent become the property of the original patentee, a kind of provision commonly referred to as a "grant-back." The Chandler court seems to suggest that a grant-back provision is evidence of conditioning. However, in Transparent-Wrap Mach. Corp. v. Stokes & Smith Co., 329 U.S. 637 (1947), the Court held that grant-backs are not unenforceable per se and distinguished tie-ins from grant-backs. Tie-ins, according to the Court, expand the monopoly power to nonpatented products while grant-backs involve "using one legalized monopoly to acquire another legalized monopoly." 329 U.S. at 644. This language suggests, contrary to the Chandler court's inference, that the mere inclusion of a grant-back in a license which includes a total-sales royalty is not sufficient proof of use of leverage to satisfy the conditioning test. For a judicial history and economic analysis of grant-backs, see Comment, The Validity of Grant-Back Clauses in Patent Licensing Agreements, 42 U. CHI. L. REV. 733 (1975).

102. 395 U.S. at 138.
103. See 395 U.S. at 141 (Harlan J., dissenting).
104. This was the concern expressed by Justice Harlan in his dissent in Zenith. 395 U.S. at 142.
of the total-sales royalty provision. Thus, a total-sales royalty provision should not be deemed "bargained for" simply because the negotiations were complex or because the patentee offered alternative proposals.\textsuperscript{105}

The problems with a test which requires a subsequent judicial evaluation of the parties' negotiations are obvious. First, the court must perform the difficult task of determining the reasonableness of the patentee's alternative proposals in light of the economic conditions at the time of the negotiations rather than at the time of the suit. Suppose a patentee offers to license its patent for either a total-sales or a fixed lump-sum royalty. Although the court could assess the reasonableness of the patentee's alternative lump-sum proposal by comparing the amount actually paid under the total-sales royalty with the amount proposed under the fixed lump-sum royalty, this may lead to the wrong result.

For instance, the court could be easily led to assume that an alternative lump-sum royalty offered by the licensor was reasonable simply because it would have yielded lower royalty payments than those actually made under the total-sales royalty. This situation would result if the parties failed to anticipate that the licensee would either (1) sell end products on which a royalty is due even though the end product made no use of the patent or (2) improve the end product so as to increase its sales. To the extent the parties miscalculated at the time of negotiations, then, the alternative lump-sum proposal ought to be deemed unreasonable even though the licensee would have paid less under it than under the total-sales royalty provision.

As the above example illustrates, a second related difficulty with the Zenith test is that it not only requires the court to gauge the economic conditions at the time of the negotiations, but it also requires the court to reconstruct the parties' perceptions of and forecasts for the various proposals. Since those perceptions and forecasts are extremely speculative when made, and since those of the patentee may differ from those of the licensee, they resist judicial reconstruction.

A third difficulty with the Zenith test is that the court, in determining the reasonableness of the licensor's alternatives, must recog-

\textsuperscript{105} This problem is not unknown in patent litigation. In package-licensing cases, see text at note 69 \textit{supra}, courts frequently evaluate the reasonableness of the patentee's alternative offers to determine if the patentee had coerced the licensee to accept a package-licensing provision. A good example of this can be found in Hazeltine Research, Inc. v. Zenith Radio Corp., 239 F. Supp. 51, 69-72 (N.D. Ill. 1965), affd. in relevant part, 388 F.2d 25, 33-34 (7th Cir. 1967), affd. in part and revd. in part on other grounds, 395 U.S. 100 (1969). The court of appeals noted, for example, that the patentee's alternative offers were "a transparent attempt" to force the licensee to accept a package-licensing arrangement.
nize that total-sales proposals typically provide for a lower royalty rate than royalty proposals based solely on patent use. A total-sales royalty is often convenient for the licensor—it facilitates the administration of the license and allows the licensor to avoid many of the infringement problems and litigation expenses that may be encountered if royalties are paid only on the sale of end products which use the patent's teaching. Accordingly, royalty proposals based solely on patent use ought to reflect the risk of these additional costs. Somewhat similarly, the court must also be aware of an additional reason for higher royalty rates when a royalty is based solely on patent use: since a royalty based on patent use means that royalties will be paid upon a smaller group of end products, the patentees charge a higher rate per end product sold. Both of these factors are easy to overlook, difficult to calculate, and make the court's evaluation of alternatives less precise. 106

Since courts commonly reconstruct past events, the difficulties presented by the Zenith test should not be overplayed. Nevertheless, the test, as Justice Harlan suggested, 107 requires judgments of unusual difficulty. This has two implications. First, the courts, in order to reduce business uncertainty as well as to simplify their own decisions, may attempt to promulgate rules distinguishing bargained-for from coerced agreements. The courts, for example, may decree that certain types of alternative proposals are "per se" reasonable, so that if the patentee offers those alternatives, the agreement on the total-sales royalty provision will be deemed freely bargained for. The promulgation of such rules, however, must contravene the intent of the Zenith test. In some instances the line drawn will be arbitrary, while in other cases patentees will become adept at couching unreasonable alternative proposals in terms acceptable to the court. In either case, the court would mistakenly approve coerced agreements.

Second, rather than rely on rules, the courts may continue to resolve these disputes case by case. This would only intensify business uncertainty and, for that reason, would discourage total-sales royalty provisions. Under the Zenith test, if the licensee failed to protest the inclusion of a total-sales royalty provision, the validity of the provi-

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106. A further difficulty should be mentioned. In Automatic Radio and Zenith, the license agreements also provided that the licensee could use any patent subsequently acquired by the licensor. Such provisions confuse the Court's analysis of alternative proposals because the licensees speculate on the possibility that the licensor will acquire a valuable patent during the term of the license. To the extent there is such a likelihood, the licensee will find the licensor's proposal more attractive. A court, however, could not easily reconstruct and evaluate the effect that the "future patents" proposal had upon the bargaining process.

107. 395 U.S. at 141 (Harlan, J., dissenting).
sion would be relatively well assured. But once the negotiations focussed on the provision, uncertainty would arise. As was discussed above, if the provision is to be upheld, the Zenith test suggests the licensor develop a record of "reasonableness" by not rejecting the licensee's alternative proposals and by offering alternatives of its own. However, the licensor can never be certain that a court will determine that the licensor acted reasonably. As a result, licensors, rather than insisting upon a total-sales royalty provision and risking the loss of a later infringement suit, may conclude that once the total-sales royalty becomes a "bone of contention," it should be abandoned altogether. Although it will be argued below that such discouragement is desirable, this result was certainly not the goal of the Zenith Court. Applying the Zenith test case by case might also encourage courts to sanction total-sales royalties which are, in fact, conditioned. The licensee's burden of showing conditioning normally can be met only if the licensee protested the total-sales royalty provision and can document the negotiation process. To the extent that this is too heavy a burden on the licensee, the courts may uphold coerced agreements.

Finally, even if the Zenith test effectively prevents "coerced" agreements, it still ought to be abandoned because it sanctions some total-sales royalties. This Note now will argue that all such royalties should constitute patent misuse.

C. Total-Sales Royalties as Patent Misuse

The Zenith test is not only difficult to apply in practice; it is fundamentally flawed in principle. Pace Justice Harlan, this Note contends that all total-sales royalty provisions, regardless of whether they have been "conditioned," have undesirable economic consequences and ought to constitute patent misuse. Because total-sales royalties add a variable cost to each end product sold by the licensee, they undermine the patent policy by discouraging inven-


109. See text at note 108 supra.

110. Variable costs are those costs which increase with the level of output. C. McConnel, Economics 501 (6th ed. 1975). A total-sales royalty adds a variable cost to each end product, since the required royalty payments will increase as sales and output increase. Fixed costs, in contrast, do not vary with changes in output and must be paid even if the firm's output is zero. Id. at 500. Since a fixed lump-sum royalty does not vary with production or sales, it is a fixed cost. Net profit, of course, is the difference between total revenue and total costs (the sum of fixed and variable costs).

111. See note 7 supra.
tion, and they restrain competition by deterring licensees from entering new markets. So long as the licensee sells the product covered by the royalty, the licensee must pay royalties on the sale of each end product even though it makes no use of the patent; and since this variable cost is unavoidable, a total-sales royalty distorts the licensee's decisions. The next two sub-parts support and elaborate this proposition.

1. Economic Effects upon the Patent Policy

The patent-misuse doctrine, we have said, is grounded in the patent grant's purpose: "to promote the Progress of Science and useful Arts." In neither Zenith nor Automatic Radio, however, did the Court consider whether a royalty based on total sales rather than solely on patent use disserves that policy and, if so, whether the conditioning test eliminates that disservice.

The first undesirable patent-policy consequence of a total-sales royalty provision is that it discourages inventive activity by the licensee. Suppose that a manufacturer decides to produce a product which uses an existing patent and that it agrees to pay royalties to the licensor on the product's total sales. Since the licensee would have to pay royalties even if the end product did not use the patent, substituting an internally developed patent for the licensed patent would not reduce the end product's variable costs and the licensee would have little incentive to invest in research and development to "invent around" the licensed patent. In contrast, if the licensing arrangement provided for the payment of royalties only when the patent was used, substituting a new patent would enable the licensee to avoid paying the royalties for the original patent and would thereby reduce the variable cost of each end product. The licensee, then, would have a greater incentive to invest in research and development.

112. The variable cost can be avoided, of course, only if the licensee declines to sell products covered by the royalty.


114. Suppose, for example, a company sells 500 units of end products of product A each year. Further, suppose that product A embodies a patent and that the company enters into a five-year license agreement with the patentee under which the company must pay $10 for each unit it produces or sells which uses the teaching of the patent. During year 1, the company spends $10,000 on research and eventually develops an invention which can be substituted in year 2 for the licensed patent. If it is assumed that the costs of producing the substitute and the original are equal, substitution will result in a reduction in royalty payments of $10 per unit sold. (It is irrelevant whether the royalty is flat-rate or percentage.) This is true because the company, under the licensing agreement, is not obligated to pay royalties on those units or end products which make no use of the original patent. The savings which will result from this substitution can be calculated as follows:
Similarly, but more significantly, total-sales royalty provisions discourage invention by diminishing the market opportunities for inventors other than licensees: a total-sales royalty provision gives a licensee little reason to solicit a license on a substitute invention. For example, again suppose that a manufacturer has licensed a patent under a total-sales royalty provision. Further suppose that, by substituting a new patent for the licensed patent, the licensee could improve its end product so as to increase either its sales or sales price and thereby increase its total revenue. Unfortunately for the licensee and inventor, however, such a substitution, far from lessening the licensee’s obligation to pay royalties on the sale of the end product, would increase the licensee’s royalty payments. Substitution would make economic sense only in those uncommon cases in which the increase in the licensee’s total revenue or in his cost savings outweighed the added royalties that would have to be paid to the patentee of the substitute invention. Licensees unable to project

<table>
<thead>
<tr>
<th>units sold per year</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>royalties saved per unit sold</td>
<td>$10</td>
</tr>
</tbody>
</table>

annual savings: $5000
remaining term of the license in years: 4

Total royalties avoided: $20000
less: research and development costs: ($10000)

Net savings: $10000

(For purposes of simplification, savings have not been discounted to present values, as a more accurate analysis would require.)

In contrast, if the company had entered into a total-sales arrangement, substitution would not reduce its royalty payments for the original patent. Accordingly, it would make economic sense to invest in research and development only if the production costs of the substitute invention were less than those of the patented item and variable costs were consequently lower. The difficulty of predicting these figures discourages such research and development.

115. If substitution leads to an increased sales price, rather than to increased sales, royalties under a total-sales royalty provision will also increase if the total-sales royalty is based on a “percentage” of total dollar sales. See note 7 supra for a discussion of “percentage” and “flat-rate” total-sales royalties. Thus, the only situation in which royalties under a total-sales provision will not increase is when the royalty is based solely on the amount of sales (a “flat-rate” provision) and the substitution leads to an increased sales price.

116. A substitute patent may improve the end product and enable the licensee to increase its sales or its sales price. To the extent this occurs, the licensee’s total revenue will of course rise.

117. If the original patent is licensed under a total-sales royalty provision, the increase in total revenue required to justify licensing a substitute patent can be determined as follows:
assume:
- \( P \) = net profits
- \( S_1 \) = sales price per unit prior to substitution
- \( S_2 \) = sales price per unit after substitution
- \( F \) = fixed costs
- \( V \) = variable costs (including the total-sales royalty on the original patent)
- \( Q_1 \) = quantity sold prior to substitution
- \( Q_2 \) = quantity sold after substitution
such a revenue increase must be uninterested in purchasing a substi-

so that

\[ P = (S \cdot Q) - [F + (V \cdot Q)] \]

Thus, if the licensee is to pay fixed royalties for the substitute patent (Rb), it would make economic sense to license the substitute patent only when

\[(S_2 \cdot Q_2) - [(F + Rb) + (V \cdot Q_2)] > (S_1 \cdot Q_1) - [F + (V \cdot Q_1)]\]

Similarly, if the licensee is to pay a royalty for the substitute patent of a variable amount per unit sold (Rb), it would make economic sense to license the substitute patent only when

\[(S_2 \cdot Q_2) - [F + Q_2(V + Rb)] > (S_1 \cdot Q_1) - [F + (V \cdot Q_1)]\]

These two equations assume that the original patent is licensed under a total-sales royalty provision. If, however, the royalty on the original patent is based solely on patent use, it is more likely that the licensing of a substitute patent would make economic sense, since the elimination of royalties on the original patent will reduce the product's variable costs by Ra per unit. If, for example, the licensee is to pay fixed royalties for the substitute patent (Rb), it would make economic sense to license the substitute patent when

\[(S_2 \cdot Q_2) - [(F + Rb) + (Q_2(V - Ra))] > (S_1 \cdot Q_1) - [F + (V \cdot Q_1)]\]

Similarly, if the licensee is to pay a royalty of a variable amount per unit sold (Rb) for the substitute patent, it would make economic sense to license the substitute patent when

\[(S_2 \cdot Q_2) - [F + Q_2(V + Rb - Ra)] > (S_1 \cdot Q_1) - [F + (V \cdot Q_1)]\]

These conclusions can be more clearly illustrated by the following examples. The examples will be based on these assumptions:

\[
\begin{align*}
S_1 &= $10 \\
S_2 &= $11 \\
F &= $10,000 \\
V &= $8 \\
Q_1 &= 10,000 \\
Q_2 &= 11,000 \\
Ra &= $2 \\
\end{align*}
\]

(1) Suppose the licensee is to pay a fixed royalty of $20,000 for the substitute patent (Rb = $20,000). If the original patent is licensed under a total-sales royalty, then

\[
\begin{align*}
&S_1 = 11,000 \\
&F = 10,000 \\
&V = 8 \\
&Ra = 2 \\
&S_2 = 10,000 \\
&Q_1 = 10,000 \\
&Q_2 = 11,000 \\
&\end{align*}
\]

In other words, under the above facts, it would not make economic sense for the licensee to license a substitute patent even though the substitute patent would lead to increased sales of 1000 units at a selling price 10 per cent higher. (For purposes of simplicity, this example assumes the original patent is licensed under a “flat-rate” total-sales royalty provision. See note 7 supra. If a “percentage” total-sales royalty provision had been employed, then the royalty per unit sold (Ra) after the substitution would be equal to the applicable percentage rate multiplied by the sales price per unit after the substitution.)

Conversely, if the royalty on the original patent is based solely on patent use, it would make economic sense, under the above facts, for the licensee to license a substitute patent. This is because

\[
\begin{align*}
&S_1 = 11,000 \\
&F = 10,000 \\
&V = 8 \\
&Ra = 2 \\
&S_2 = 10,000 \\
&Q_1 = 10,000 \\
&Q_2 = 11,000 \\
&\end{align*}
\]

(2) Now suppose the licensee is to pay a royalty of a variable amount of $2 per unit sold
Conversely, if the royalty on the original patent is based solely on patent use, licensees would more often find it profitable to solicit and license a substitute patent, since substitution would relieve the licensee of the obligation to pay royalties on those end products which did not use the original patent. The variable cost of each end product, in other words, would be reduced. Licensees would find substitution profitable either where the substitute patent license called for lower total royalty payments or where the substitution resulted in product improvements which increased total revenues.119

Total-sales royalty provisions, then, discourage invention and thus undermine the patent policy. Moreover, the Zenith conditioning test does not prevent that consequence. Even a convenient or freely bargained for total-sales royalty provision limits the market for new inventions in the product lines subject to the royalty.

The conditioning test might be justifiable if it measured whether the licensee planned to "invent around" the patent or to license substitute patents. If the parties had freely bargained for the total-sales royalty, a court might infer that the licensee did not contemplate "inventing around" the patent or licensing substitute patents and that therefore the total-sales royalty agreement would not affect the patentee.

For the substitute patent (Rb = $2). If the original patent is licensed under a total-sales royalty provision, the licensee would not license a substitute patent. This is because

\[(\$11 \times 11,000) - [\$10,000 + (11,000 \times (\$8 + \$2))]\]

\[= \$121,000 - \$120,000\]

\[= \$1,000\]

\[< \$10,000.\]

If, on the other hand, the royalty on the original patent is based solely on patent use, the licensee would license the substitute patent. This is because

\[(\$11 \times 11,000) - (\$10,000 + (11,000 \times (\$8 + \$2 - \$2))]\]

\[= \$121,000 - \$10,000 - \$88,000\]

\[= \$23,000\]

\[> \$10,000.\]

This Note has discussed the amount by which total revenue must increase to justify the licensing of a substitute patent. Although the amount by which costs must be reduced to justify substitution could be similarly estimated, this Note does not undertake to do so.

118. New producers, of course, may enter the market. To the extent they purchase new patents, market foreclosure may not be significant. Nevertheless, the removal of only a few potential patent purchasers from the market may significantly reduce the opportunities of inventors. From the perspective of the inventor, that reduction is particularly acute in those product lines where a certain patent is almost a prerequisite to the manufacture and sale of the end product. If the patentee of such a patent has licensed most of the manufacturers of the product under a total-sales royalty provision, the outside inventor who seeks to create a new patent in the area would be almost completely foreclosed. The inventor would not be foreclosed, of course, if the substitute patent generated cost savings greater than the total-sales royalty payments.

119. See note 117 supra.
ent policy. However, since future inventions are typically unforeseeable, it cannot sensibly be inferred that a licensee knew in advance whether it would be economically benefitted by seeking a substitute patent. But even if the licensee fully calculated the risk of unforeseeable future inventions and concluded that a total-sales royalty was advantageous, and even if the conditioning test reflected those calculations, the conditioning test remains unsatisfactory, since the goals of the licensee are not those of the patent policy. The societal interest in inventive activity is harmed whenever a total-sales royalty discourages the licensee from “inventing around” the original patent or soliciting a substitute patent. The conditioning test leaves untouched, for example, the prospective inventor’s deprivation of the market opportunities resulting from the licensing of many producers under a total-sales royalty provision.120

2. Economic Effects and Antitrust Policy

Automatic Radio, we have seen, held that total-sales royalty provisions create “no restraint of competition beyond the legitimate grant of the patent.”121 Since Zenith did not overrule that holding and did not discuss the anticompetitive effects inherent in the royalty provision, the Zenith Court also must have concluded that—at least where the provision was not forced upon the licensee—a total-sales royalty provision lacks anticompetitive effects. Since restraint of competition is a legitimate concern of the misuse doctrine,122 a fuller analysis of the anticompetitive effects of total-sales royalties is warranted.

Justice Harlan, in his dissent in Zenith, referred to and rejected Professor Baxter’s economic analysis of legal restrictions on the exploitation of the patent monopoly.123 Baxter argued that all royalties based on a percentage of a licensee’s sales of “unpatented end products” should be prohibited because they restrain output and increase prices of the unpatented end products incommensurately with the value of the invention.124 By “unpatented end product” Baxter

120. See note 118 supra.
121. 339 U.S. at 833.
122. See note 26 supra and accompanying text.
123. 395 U.S. at 145. See Baxter, supra note 60.
124. See Baxter, supra note 60, at 356. Baxter’s analysis is complex and difficult to follow. The relevant part of his reasoning, however, can be explained as follows. As a general proposition a producer uses various proportions of goods and services, or inputs, in the production of a given end product. This production “recipe” is usually flexible, so that the amount of each input used to produce the end product can vary according to the cost of the input and its marginal physical product. (Marginal physical product of an input is the change in output that will result from an incremental change in the quantity of a single input, while other inputs are
meant a product sold by the licensee which uses a licensed patent but
which is not as a whole patented. 125 The licensed patent is merely
part of the recipe for the end product.

Baxter condemned all percentage-of-sale royalties and did not
distinguish total-sales royalties from percentage-of-sale royalties that
require a royalty only on those end products which employ the li-
censed patent. Since the practice of calculating royalties upon the
sale of end products has long been accepted by business and by the
courts, 126 it is not surprising that Justice Harlan rejected Baxter's
analysis and declined to condemn all percentage-of-sales royalties.
What both Justice Harlan and Professor Baxter missed, however, is
that total-sales royalties—as distinguished from other royalties based
on end product sales—have particularly undesirable anticompetitive
effects and can be independently condemned. 127 Specifically, a total-
sales royalty, unlike a percentage-of-sales royalty based solely on
patent use, may prevent the licensee from entering new markets. 128

125. This Note uses “end product” to mean a product unit that may or may not embody a
patent. See note 6 supra. Baxter's use of the term differs in that he refers to a product unit
which is not patented but does embody a patent.

126. See Oppenheim & Scott, 14 IDEA 193, supra note 6. Indeed, Baxter himself recog-
nized that most royalties are based on a percentage of the licensee's sales. Baxter, supra note
60, at 302.

127. The purpose of this Note is not to advocate a reform as far-reaching as that proposed
by Baxter, but to attempt to distinguish total-sales royalties from other royalties based upon
end product sales and to point out that the economic evils inherent in the total-sales royalty are
greater than those of the ordinary royalty based upon end product sales.

128. In deciding whether or not to make an investment, firms often use “break-even” anal-
analysis determines the point at which sales equal total costs. In other words, break-even
analysis is a technique for studying the relationship among fixed costs, variable costs, and
profits. If a firm's costs were all variable, the problem of break-even volume would seldom
arise; a firm with some variable and some fixed costs must suffer losses until a given volume
has been reached. The break-even point is described algebraically as follows:

If:  
S = sales price per unit  
Q = quantity produced and sold  
F = fixed costs  
V = variable costs per unit

Then:  
S • Q = F + V • Q
S • Q - V • Q = F
Q (S - V) = F

Q (at break-even point) = \frac{F}{S-V}
A total-sales royalty attaches a variable cost to end products even though they do not use the patent. This variable cost cannot be avoided by substituting a new patent: so long as the licensee continues to sell the product covered by the royalty, the licensee must pay royalties even though the end product makes no use of the patent. These facts may discourage the licensee from entering other market segments for the product covered by the royalty. Suppose that a lens manufacturer decides to sell hard contact lenses and desires to license a hard-lens patent. Further suppose that the hard-lens patentee and the manufacturer agree to a total-sales royalty provision calling for a royalty on the sale of any contact lens. If opportunities were to develop for expansion into the soft-lens market, the licensee company would have to decide whether it would be profitable to expand into the market. This decision would be distorted by the initial total-sales royalty provision: the added variable cost of the royalty on the soft lens to the hard-lens patentee must reduce the profit margin obtainable from the sale of soft lenses and must thereby artificially deter the licensee from entering the new market segment.

\textit{Id.} at 73. (The above discussion assumes linear (straight-line) relationships. It assumes, for example, that variable costs and sales price do not change as units sold increase.)

129. The amount of this added variable cost will depend upon the type of total-sales royalty employed. The "percentage" royalty, for example, is calculated by applying a percentage rate to the licensee's total dollar sales of a specified product, while the "flat-rate" royalty is calculated by multiplying the number of units of the product sold by a specified flat-rate in dollars. See note 7 \textit{supra}.

The variable costs added by adoption of a flat-rate royalty provision equals the flat rate paid on the sale of each unit sold. This type of royalty will affect the licensee's break-even point as follows:

\begin{align*}
\text{If:} & \quad Q = \text{quantity of product covered by the total-sales royalty needed to be sold to break even} \\
& \quad F = \text{fixed costs} \\
& \quad S = \text{sales price per unit} \\
& \quad V = \text{variable costs per unit (excluding royalties)} \\
& \quad R_f = \text{flat-rate royalty per unit} \\
\text{Then:} & \quad Q = \frac{F}{S - (V + R_f)}
\end{align*}

Under a percentage total-sales royalty, the added variable cost will equal the percentage rate times the sales price of one unit. This kind of royalty will affect the licensee's break-even point as follows:

\begin{align*}
\text{If:} & \quad Q = \text{quantity of product covered by the total-sales royalty needed to be sold to break even} \\
& \quad F = \text{fixed costs} \\
& \quad S = \text{sales price per unit} \\
& \quad V = \text{variable costs per unit (excluding royalties)} \\
& \quad R_p = \text{percentage total-sales royalty} \\
\text{Then:} & \quad Q = \frac{F}{S - (V + (R_p \times S))}
\end{align*}

Under a percentage total-sales royalty, any price increase will also lead to increased royalties. See text at note 112 \textit{supra}.

130. See note 7 \textit{supra}.

131. See note 7 \textit{supra}.

132. The effect of the total-sales royalty upon a decision to enter a new product market...
Where entry into the new market segment offers a relatively low profit margin the added variable cost of each end product in the new segment must often so reduce the licensee's profit margin that entry is economically infeasible. In short, the total-sales royalty will restrain competition in markets not dependent upon the teaching of segment can be illustrated by the following example. First, note that, as is discussed in note 129 supra, the break-even points using a flat-rate (Rf) and percentage (Rp) total-sales royalty are as follows:

\[
\text{Flat-rate: } Q = \frac{F}{S - (V + Rf)} \quad \text{Percentage: } Q = \frac{F}{S - (V + (Rp \times S))}
\]

Then suppose that a company projects sales of the new product segment of 10,000 units and assume that

\[
F = $10,000 \\
S = $5 \\
V = $3
\]

If, under a total-sales royalty provision the licensee is to pay a flat-rate royalty of $1 (Rf = 1), then

\[
Q = \frac{10,000}{5 - (3 + 1)} = 10,000 \text{ units}
\]

This means that at a projected sales level of 10,000 units the company will just break even. Accordingly, the licensee will not enter the new market. Moreover, since some minimum rate of return will probably be required by the company, it is unlikely that the licensee will enter the market even if sales are projected slightly in excess of 10,000.

In contrast, if the licensee is obligated to pay royalties solely on products which use the patent's teaching, then the licensee need not pay the royalty Rf and the break-even quantity can be determined as follows:

\[
Q = \frac{10,000}{5 - 3} = 5,000 \text{ units}
\]

Thus, in the absence of a total-sales royalty provision the company need sell only 5,000 units of the product in order to break even. If, as we have assumed, the profit margin on each unit sold is $2, and if a total of 10,000 units are sold, the company's estimated net profits arising from entry will be $10,000. Since this appears to be an excellent return, it is likely that the licensee would enter the new product segment.

It should be noted that the same outcome would have been reached if the licensee paid a percentage total-sales royalty of 20% (Rp = 20%). As is the case under a flat-rate royalty provision, a projected sales level of 10,000 units will mean that the licensee will just break even.

\[
Q = \frac{10,000}{5 - (3 + 20 \times 5)} = 10,000
\]

The break-even point of a royalty based solely on patent use, of course, will remain at 5,000 units as described above.

133. This can be illustrated by the following example. First, suppose that a licensee licensed a patent for a royalty of $10 on each end product sold (R = $10). Further, assume that the variable costs per unit equal $50 (V = $50) and that the sales price per unit equals $100 (S = $100). Thus, the licensee has a very attractive profit margin of $40:

\[
S - (V + R) = $100 - ($50 + 10) = $40
\]

Now suppose an opportunity arises for the licensee to enter a new segment of the product market and assume that the licensee estimates that its variable costs per unit excluding royalties will be $80 (V = $80) and that the sales price per unit will be $100 (S = $100). Since the licensee is bound by the earlier total-sales royalty provision, the licensee must pay royalties of $10 per end product sold even if the new end product makes no use of the patent. This means that the licensee's profit margin on sales of the new product will be only $10:

\[
S - (V + R) = $100 - ($80 + 10) = $10
\]

Depending upon the fixed costs involved in entering the new segment and depending on the
the patent. In contrast, had the licensee only been paying royalties on the use of the hard-lens patent, its decision would not have been distorted by the license and it would have been far likelier to enter the new market.\textsuperscript{134}

The anticompetitive effects of a total-sales royalty are especially apparent where the patentee-licensor is competing with the licensee in the sale of the product covered by the total-sales royalty, since the patentee may employ a total-sales royalty provision to prevent the licensee from entering potential market segments. Although a licensee could delay entry into the new market until the license term expired, the delay might so firmly entrench the patentee in that market that it would be futile for the licensee, belatedly, to enter.

Finally, the Zenith conditioning test cannot prevent these anticompetitive effects. The licensee, unable to foresee future inventions or anticipate which markets it may wish to enter, may consider a total-sales royalty provision an attractive proposal. A total-sales royalty which was freely bargained for and unprotested by the licensee may still ultimately restrain competition.\textsuperscript{135}

\section*{IV. Conclusion}

This Note has argued that the Supreme Court has not understood the economic evils associated with total-sales royalty provisions. In \textit{Automatic Radio}, the Court condemned tie-in practices because they projected sales of the product, this profit margin may or may not be sufficient to justify entry into the new segment.

In contrast, if the original patent had been licensed with royalties payable only upon use of the patent's teaching, then the profit margin on the new segment would be

\[ S - V = $100 - $80 = $20 \]

Accordingly, the licensee would be far more likely to enter the new market.

Finally, to the extent entry into the new segment requires the licensee to license additional patents and pay additional royalties, the likelihood that entry will be profitable is further reduced.

\textsuperscript{134} See note 132 \textit{supra}.

\textsuperscript{135} See also Glen Mfg. Inc. v. Perfect Fit Indus., Inc., 299 F. Supp. 278 (S.D.N.Y. 1969), affd., 420 F.2d 319 (2d Cir.), cert. denied, 397 U.S. 1042 (1970), where the court, prior to the Zenith decision, recognized that a total-sales royalty provision could reduce competition. The court stated: "This royalty structure has the effect of raising the cost of non-patented, competing toilet tank covers, thereby restraining their output and tending to lessen competition in the toilet tank cover industry." 299 F. Supp. at 282. The case was appealed. Subsequent holdings are discussed at notes 95-99 \textit{supra}. On remand, the district court held that the license agreements unreasonably lessened competition in the toilet tank cover industry. 324 F. Supp. 1133, 1137 (S.D.N.Y. 1971).

Since the purpose of the patent laws is not "the creation of private fortunes," see note 20 \textit{supra}, total-sales royalties are subject to a further objection. Even if the variable costs attached to any new or improved products covered by the royalty are not great enough to discourage entry into a new market, the patentee will garner profits that are not properly attributable to its inventive efforts. This will certainly be true whether or not the provision is insisted upon by the patentee.
restrain competition in unpatented goods, but it failed to recognize that total-sales royalties also have anticompetitive effects. A licensee's inability under a total-sales royalty provision to avoid royalty costs by substituting a new patent discourages invention. Furthermore, the licensee's inability to escape royalty costs when entering a new market segment discourages licensees from entering new markets.

*Zenith* does not resolve these difficulties. It suggests but does not demonstrate that the undesirable effects of total-sales royalties are avoided if the royalty is not a product of conditioning. This Note has argued that the fact that the provision is mutually convenient or freely bargained for does not vitiate the economic evils inherent in total-sales royalties.

The courts, then, should condemn all total-sales royalties as patent misuse. This rule would eliminate the uncertainties caused by the conditioning test and would further the policies of both the patent grant and the antitrust laws.