Tying, Refusal to Deal, and Patents:
ECONOMICS AT THE SUMMIT

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Introduction

Among the common trade practices that often attract competitive concern are "tying arrangements", in which sellers foreclose the sale or licensing of one good unless buyers also purchase particular complementary goods that could otherwise be bought in a wider competitive market/[1] For example, an inventor of a particular hardware product could oblige customers to buy her related software and maintenance services as well. In foreclosing competition, tying arrangements can stop buyers and licensees from combining complementary components of a complex system in the most cost-effective fashion. Tying goods frequently are patented or copyrighted products that can be leveraged to obtain market power in the market in the tied good. .

Tying is a forcing arrangement that should be distinguished from market strategies that increase both quality and price of a product by bundling a complementary element in an attractive combination.[2] Tying can be enabled through formal contracts that commit

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[1] "A [contractual] tying arrangement may be defined as an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product, or least agrees that he will not purchase that product from any other supplier." Northern Pacific RR. Co. v. United States, 356 U.S. 1, 5 (1958).

[2] Infra note 42, 14, 1559, 14.

buyers or licensees to exclusive arrangements, or by refusals to deal or license key patented inputs to potential competitors. Tying can also implicate the design of a contract for a patented good that exceeds the terms of the original patent grant.[3] These forms of tying should be distinguished from technological integration that combines two products with operational synergies that should be judged under different legal standards.[4]

Tying arrangements have been tried under Sections 1 and 2 of the Sherman Act (15 U.S.C. 1-2) and Section 3 of the Clayton Act (15 U.S.C. 14). They are now judged often under rules of "per se illegality" that more realistically resemble a circumscribed rule of reason. Tying arrangements for patented goods can be additionally tried under patent misuse.[5]

Tying takes on an additional dimension when affected products are patented or copyrighted. To ensure that profit rewards are not dissipated by immediate competition, the Patent Act confers to the owner of IP the exclusive right to use his invention and exclude others from unauthorized use of the product for a specified period.[6] Copyright

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[3] C.R. Bard, Inc. v. M3 Systems, Inc., 157 F. 3d 1340 (Fed. Cir. 1998).

[4] Technological bundling is allowed unless the sole purpose of the tie is to restrict competition. Response of Carolina, Inc. v. Leasco Response, Inc. 537 F. 2d 1307, 1330 (5th Cir. 1976). The sole purpose standard seems to have been modified to a more balanced rule of reason in United States v. Microsoft Corp., 147 F. 3d 935, 949-50 (D.C. Cir. 1998), 253 F.3d at 84. see K.N. Hylton and M.Salinger, *Tying Law and Policy; A Decision Theoretic Approach*, 69 ANTITRUST LAW JOURNAL 469, 479-484 (2001).

[5] 35 U.S.C. 271.

[6] 35 U.S.C. 101, 154 (1994 and Supp. II 1996); see U.S. v. Westinghouse, 648 F. 2d 642, 647 (9th Cir. 1981) (Once a patent is lawfully acquired, subsequent conduct that is permissible under patent law is the "untrammeled right of the patentee"); SCM v. Xerox, 645 F. 2d 1195, 1204-5 (2d Cir. 1981). ("No court

grants are similarly conditioned.[7] However, while patent rights may trump antitrust restrictions on producer activities that are undertaken within the scope of the patent, power gained through a patent can give rise to antitrust liability if "a seller exploits his dominant position in one market to expand his empire into the next."[8] To synthesize the two positions of antitrust and intellectual property, the Ninth Circuit cast a distinction: "(1) neither patent nor copyright holders are immune from antitrust liability, and (2) patent and copyright holders may refuse to sell or license protected work."[9]

Speaking in the fall of 2001, Commissioner Timothy Muris observed that while antitrust law and policy once failed to appreciate the incentives for innovation that IP protection provided, the current IP doctrine may be failing to appreciate the related power of market competition. Muris cited as concerns a nearly threefold increase in the annual number of patents from 1980 to 2000, their widening scope, the inception and growing role of the Federal Circuit Court, and the ongoing application of refusals to deal where patent or copyright holders unilaterally refuse sales or licenses to interested takers.[10] Using court

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has ever held that the antitrust laws require a patent holder to forfeit the exclusionary power inherent in his patent the instant his patent monopoly afford him monopoly power over a relevant product market."); Zenith Radio Corp. v Hazeltine Research Inc., 395 U.S. 100, 135, 89 S. Ct. 1562, 1582 (1969) ("The heart of the patentee's legal monopoly is the right to invoke the State's power to prevent others from utilizing his discovery without his consent."). Intergraph Corp. v. Intel Corp., 195 F. 3d 1346, 1362 (Fed. Circ. 1999). ("antitrust laws do not negate the patentee's right to exclude others from patented property.")

[7] 17 U.S.C. 106 (1994 and Supp. III 1997); see also Fox Film Corp. v. Doyal, 286 U.S. 123, 127, 76 L. Ed. 1010, 52 S. Ct. 546 (1932); Steward v. Abend, 495 U.S. 207, 229, 109 L. Ed. 2d 184, 110 S.Ct. 1750 (1990).

[8] Eastman Kodak, supra note 127, 479, 2089, 292, n. 29.

[9] Image Technical Service, supra note 133, 1217. The second right is paramount in patent law; the patent holder has "the right to invoke the State's power to prevent others from utilizing the discovery without [his] consent." Hazeltine Research Inc. v. Zenith Radio Corp. 239 F. Supp. 51 (N.D. Ill. 1965), aff'd in relevant part, 388 F. 2d 25 (7th Cir. 1967); aff'd in part and rev'd in part, 395 U.S. 100 (1969).

cases and practical examples, we illustrate below extensions of microeconomic theory that can inform advocates and courts of the proper domains for patent grants and antitrust restrictions in matters involving tying and refusal to deal.

Patent Misuse and Early Antitrust

Tying can be both a patent misuse and an antitrust violation, the former being generally easier to prove[11] and more inclusive.[12] The misuse claim is only available as an affirmative defense against patent infringement[13] and involves no compensation for financial damages[14] or court costs.[15] However, if misuse can be demonstrated, the courts will withhold infringement remedies, even against parties not harmed by the abusive

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[10] Id.

[11] Patent misuse is easier to prove for three reasons. The definition is generally broader, key elements of an antitrust case are not essential (particularly if regarding monopolization under Section 2 of the Sherman Act) and the grieving party has standing regardless of whether it can demonstrate individual harm. M. Lemley, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 CALIF. L. REV. 1599, 1611 (1990). Richard Calkins identified ten distinct kinds of patent misuse: resale price maintenance, tying arrangements, resale territorial restrictions, noncompetition agreements, package licensing, beyond patent terms, nonmetered royalties, refusal to license, resale field-of-use limitations, and grant back clauses. R. Calkins, *Patent Law: The Impact of the 1988 Patent Misuse Reform Act and Noerr-Pennington Doctrine on Misuse Defenses and Antitrust Counterclaims*, 38 DRAKE L. REV. 175, 176, n. 1 (1989).

[12] Zenith, supra note 6, 140; Transparent Wrap Mach. 329 U.S. at 641; Morton Salt, infra note 31, 494.

[13] R.J. Hoerner, *Patent Misuse: Portents for the 1990s*, 59 ANTITRUST L.J. 687, 688-690 (1991); P.A. Martone, W.J.Gilbreth, and R.G. Gervase, *The Patent Misuse Defense – Its Continued Expansion and Contraction*, in 1 INTELLECTUAL PROPERTY ANTITRUST: 1996, at 325, 350-51

[14] Contrast antitrust (treble damages and attorneys fees), Sherman Act 15 U.S.C. 4 (1994); Clayton Act, 15 U.S.C. 15 (1994). See also J. B. Kobak, Jr., *The Misuse Doctrine and Intellectual Property Litigation*, 1 B.U.J. SCI. & TECH. L.2, 2 (1995).

[15] Eastern R.R. Presidents' Conference v. Noerr Motor Freight, 365 U.S. 127 (1961); United Mine Workers v. Pennington, 381 U.S. 657 (1965); California Motor Transp. Co. v. Trucking Unlimited, 404 U.S. 508 (1972).

practice.[16] Misuse permits wider standing[17] and therefore allows greater judicial scrutiny than antitrust claims, where plaintiffs must demonstrate actual damages that result from defense liability.[18]

Judicial scrutiny of tying began in misuse cases that considered patented inventions tied to staple inputs that were beyond the scope of the patent grant.[19] A defining moment occurred in *Motion Picture Patents Company v. Universal Film Manufacturing Company*,[20] where the inventor of a patented projector affixed a license notice that restricted the use of movies from competing suppliers.[21] The Supreme Court held that 1.) the scope of every patent is limited solely to the invention described in the claims, 2.) the patent law protects the inventor only in the monopoly of that which he has invented, and 3.) the patent law exists primarily not to create private fortunes but to promote the progress of science and useful arts.[22] The decision vacated the earlier *Henry v. A. B.*

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[16] D.S. Chisum, PATENTS: A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY, AND INFRINGEMENT 19.01, AT 19-5 (1996). Patent rights can be restored when the misuse is discontinued and its consequences dissipated. Morton Salt, infra note 31, 492.

[17] P.E. Areeda & H. Hovenkamp, ANTITRUST LAW 360, 200-202 (1995).

[18] Cargill, Inc. v. Monford of Colo. Inc., 479 U.S. 104, 109-13 (1986), Brunswick Corp. v. Pueblo O-Mat, Inc., 429 U.S. 477, 489 (1977). "The greater scope of the misuse doctrine may produce benefits by providing for increased judicial scrutiny of patent practices … If a litigant can make a plausible argument that the restriction is anticompetitive – that is, harms innovation and negatively affects efficiency – then the courts should hear it." *Note: Is the Patent Misuse Doctrine Obsolete?,* 110 HARV. L. REV 1922, 1939 (1997).

[19] Morgan Envelope Company v. Albany Perforated Wrapping Paper Company (the *Paper Roll* case) 152 U.S. 425, 14 S.Ct. 627; 38 L. Ed. 500; 1894 U.S. LEXIS 2132 (1894). See also Heaton-Peninsular Button-Fastener Co. v. Eureka Speciality Co. (the Button Fastener case) 77 F. 288; 1896 U.S. App. LEXIS 2241 (6th Cir. 1896).

[20] 243 U.S. 502; 37 S. Ct. 416; 61 L. Ed. 871; 1917 U.S. LEXIS 2017 (1917).

[21] Id., 506-7

Dick,[23] which had upheld a license restriction on a patented mimeograph that disallowed the use of staple products (stencil, paper, and ink) made by other producers.[24]

While the Supreme Court in *Motion Pictures* did not formally rule on antitrust considerations, the Court did point out the close relevance of the recently enacted Clayton Act, which disallowed tying of second products when competition may be lessened.[25] The Court subsequently both extended the breadth of patent misuse and antitrust considerations in *Carbice Corporation of America v. American Patents Development Corp. et al.*,[26] where the tying arrangement was analogized to a Section 1 restraint of commerce,[27] and in *Leitch Manufacturing Co. v Barber Company*,[28] where no formal restrictive contract had been entered.[29]

Antitrust considerations were elevated to common law in two related cases regarding the leasing of patented depositing machines bearing license agreements to use salt tablets that were provided by the patent owner. In *Morton Salt Co. v. G.S. Suppiger Co.*,[30] the

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[22]Id., 510, 512.

[23]Motion Pictures, at 518. "It is obvious that the conclusions arrived at in this opinion are such that the decision in Henry v. Dick Co. must be regarded as overruled."

[24]224 U.S. 1; 32 S. Ct. 364; 56 L.Ed. 645; 1912 U.S. LEXIS 2279 (1912).

[25] 15 U.S.C. 14 (1914).

[26]283 U.S. 27; 51 S. Ct. 334; 75 L. Ed. 819; 1931 U.S. LEXIS 123 (1931).

[27]Id., 34, citing Standard Sanitary Mfg. C. v. United States, 226 U.S. 20; 33 S. Ct. 9; 57 L. Ed. 107; 1912 U.S. LEXIS 2129 (1912).

[28]302 U.S.458; 58 S. Ct.288; 82 L. Ed. 371; 1938 U.S. LEXIS 76 (1938).

[29]Id., 463

Supreme Court defined a narrow product scope for the implicated patent right,[31] but declined to consider the merits of an antitrust plea upheld in the Circuit Court.[32] However, in the subsequent *International Salt Co. v. U.S.*,[33] the Supreme Court ruled that patents afforded no immunity from antitrust and that tying represented a per se violation under Section 1.[34] *International Salt* calls to mind the preceding *International Business Machines v. U.S.*,[35] where the Supreme Court held that IBM's practice of tying sales of tabulating cards to lessees of its computer equipment was an infringement of Section 3 of the Clayton Act,[36] and the subsequent *Standard Oil v. U.S.*. which held that tying arrangements serve "hardly any purpose beyond the suppression of competition"[37]

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[30]314 U.S. 488 (1942). The G.S. Suppiger Company licensed the patented machine, while Morton Salt produced a competing unpatented machine that was charged to violate the Suppiger patent. Suppiger leased its patent machines to commercial canners with a license agreement that required that only its subsidiary's salt tablets be used.

[31]Id. 490-91. "The present suit is for infringement of a patent. The question we must decide is not necessarily whether responded has violated the Clayton Act, but whether a court of equity will lend its aid to protect the patent monopoly when respondent using it as the effective means of restraining competition with its sale of an unpatented article."

[32]117 F. 2d 968 (7t Cir. 1941)

[33]332 U.S. 392 (1947).

[34]Id., 396. "Not only is price-fixing unreasonable, per se, but also it is unreasonable, per se to foreclose competitors from any substantial market.", citing United States v. Trenton Potteries Co. 273 U.S. 392, 50 A.L.R. 989; Fashion Originators' Guild of America v. Federal Trade Commission, 114 F. 2d 80, affirmed, 312 U.S. 457, 668.

[35]298 U.S. 131, 56 S. Ct 701; 80 L. Ed. 1085 (1936).

[36]Id., 134-5, 703, 1088, disallowing the leasing of machinery on the condition that the user shall not purchase the supplies of a competitor, where such a condition would be to lessen competition or create a monopoly. Id., 134-5, 703, 1088.

[37]Standard Oil Co. of California v. United States, 337 U.S. 293, 305-306 (1949).

International Salt would serve as a landmark case that would elevate tying as a per se offense of Section 1, joining price fixing,[38] division of markets,[39] and group boycotts;[40] "certain tying arrangements pose an unacceptable risk of stifling competition and therefore are unreasonable per se."[41] Supreme Court decisions would condition per se terms upon a two-part test (*Times Picayune*[42]), which would be later reconditioned to three parts (*Northern Pacific Railway*[43], *Fortner I*[44]) and four parts (*Kodak* [45]). Furthermore, for *technological* tying, the Circuit Court in *U.S. v Microsoft* suggested that

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[38]Trenton Potteries (supra note 35), United States v. Socony-Vacuum Oil Co., 310 U.S. 150, 210.

[39]United States v. Addyston Pipe & Steel Co. 85 F. 271, aff'd, 175 U.S. 211.

[40]Fashion Organizers (supra note 35)

[41]Jefferson Parish Hospital District No. 2 v. Hyde, 466 U.S. 2, 9; 104 S. Ct 1551, 1556; 80 L. Ed. 2d 2, 11 (1984).

[42]Tying would be per se unlawful if "the seller enjoys a monopolistic position in the market for the 'tying' product, or if a substantial volume of commerce in the 'tied' product is restrained. The per se rule of International Salt can apply only if both its ingredients are met." Times Picayune Publishing Co. v. United States, 345 U.S. 594, 608-609, 73 S. Ct. 872, 880; 97 L. Ed. 1277, 1290 (1953).

[43] First, there must be two separate products, with the sale of one conditioned upon the purchase of the other. Second, the seller must possess sufficient economic power in the tying market to restrain competition in the tied. Third, the amount of affected commerce in the tied market must be substantial. N. Pac. Ry., supra note 1, 5-6.

[44]Fortner Enterprises, Inc. v U.S. Steel Corp., "Fortner I", 394 U.S. 495, 499; 89 S. Ct. 1252, 1256 (1969), see also U.S. Steel Corp. v. Fortner Enterprise, "Fortner II", 429 U.S. 610; 97 S. Ct. 861; 51 L Ed. 2d 80 (1977); , Bogosian, 561 F. 2d at 449; Moore v. Jas. H. Matthews & Co. 550 F. 2d 1207, 1212 (9th Cir. 1977); In Re Data General Corp. Antitrust Litigation, 490 F. Supp. 1089, 1100 (N.D.Ca. 1980), Robert's Waikiki U-Drive, Inc. v. Budget Rent A Car Sys., 732, F. 2d 1403, 1407 (9th Cir. 1984); 3 P.M. Inc., v. Basic Four Corporation, 591 F. Supp. 1350, 1356 (E.D. Mich 1984); Town Sound and Custom Tops, Inc. v. Chrysler Motors Corporation, 959 F. 2d 468, 477 (1990).

[45]First, tying and tied products are actually two distinct products. Second, there is an agreement or condition, express or implied, that establishes a tie. Third, the entity accused of tying has sufficient economic power in the market for the tying product to distort consumers' choices with respect to the tied product. Fourth, the tie forecloses a substantial amount of commerce in the market for the tied product. Eastman Kodak, infra note 128, 2079-81. see also Grappone, Inc. v. Subaru of New England, Inc., 858 F. 2d 792, 794-97 (1st Cir. 1988); Data General Corporation et al. v. Grumman Systems Support Corporation, 36 F. 3d 1147, 1178 (1st Cir. 1994); Microsoft, infra note 137, 85.

a rule of reason would more appropriately allow the first mover to demonstrate new efficiency gains of the product combination.[46]

The key elements of the per se test for illegal tying are the existence of two separate product markets and the presence of market power in the tying good. The separate products test of *Jefferson Parish* depends on a demonstrable historic demand for the purchase of two distinct products,[47] enabling criticism that the test is "backward looking" and not supportive of efficient product integration.[48] Market power[49] can be inferred from dominant market share, a patent or other government granted monopoly, or a unique product or a market advantage not shared by its competitors.[50]

The determination of market share would delineate a product market that would consider demand elasticity,[51] the existence of economic substitutes, [52] relative production costs,[53]

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[46]Microsoft, infra note 137, 92-3, sourcing Grappone, supra note 46, 799; Town Sound, supra note 45, 482, Kaiser Aluminum & Chem. Sales, Inc., v. Avondale Shipyards, Inc., 677 F. 2d 1045, 1048-49, n. 5 (5th Cir. 1982). A software firm's decision to bundle multiple functionalities should not be "conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use" Id., 90, 145, quoting N. Pac. Ry, supra note 1, 5.

[47] Jefferson Parish, supra note 42, 19-21; see also Times Picayune, supra note 43, 614, Eastman Kodak, infra note 128, 463; Microsoft, infra note 137, 135-36. "If a court finds either that there is no noticeable separate demand for the tied product or there being no convincing direct evidence of separate demand, that the entire 'competitive fringe' engages in the same behavior as the defendant, then the tying and tied products should be declared one product and per se liability should be rejected."

[48]Microsoft, infra note 137, 89.

[49]Defined as the power "to force a purchaser to do something that he would not do in a competitive market", Jefferson Parish, supra note 42, 14. and the "ability of a single seller to raise price and restrict output". Fortner I, supra note 45, 503; U.S. v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 391 (1956).

[50] Jefferson Parish, supra note 42, 16-17; citing respectively Times Picayune, supra note 43, 611-613; Loews, infra note 59, 102, 118; Fortner I, supra note 45, 502-03.

and barriers to entry for alternatives.[54] The definition of market share encounters the standard difficulties elaborated in the *Horizontal Merger Guidelines* of the antitrust agencies.[55] Moreover, it may generally encounter in patent cases some additional legal difficulties in the judicial doctrine of equivalence,[56] which contends that potential substitutes bearing similar attributes to a patented good are sometimes infringements not legitimately considerable as market substitutes.[57]

Even if high market share is absent, the Supreme Court decision *U.S. v. Loews*[58] held that desirability to consumers or product uniqueness[59] may provide sufficient leverage to

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[51]Virtual Maintenance, Inc. v. Prime Computer Inc. 11 F. 3d. 660, 665. "[The copyright owner] Prime Computer has market power in the trivial sense that no one else makes [its product]. But true market power – power sufficient to change and sustain anticompetitive prices – cannot be inferred from this because were Prime to charge exorbitant prices for its software support, its customers would simply switch to some other manufacturer."

[52]F.M. Scherer, Panel Discussion, *The Value of Patents and Other Legally Protected Commercial Rights*, 53 ANTITRUST L.J. 535, 547 (1985). "A patented product may well be unique. It may, however, face a lot of substitutes, perhaps equally unique; and, as a result of this extensive availability of substitutes, confer very little, if any monopoly power. Statistical studies suggest that the vast majority of all patents confer very little monopoly power – at least, they are not very profitable."

[53] H. HOVENKAMP, ECONOMICS & FEDERAL ANTITRUST LAW 8.3, AT 219 (1985). "Many patents confer absolutely no market power on their owners, and often patented products are not even marketable at their cost of production … The economic case for 'presuming' sufficient market power to coerce consumer acceptance of an unwanted tied product simply because the tying product is patented [or] copyrighted … is very weak."

[54]Will v. Comprehensive Accounting Corp. 776 F. 2d, 665, 672 (7th Cir. 1985). "Unless barriers to entry prevent rivals from entering, even large market share does not establish the market power that is a requisite element of violation."

[55]U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, Section 1.5, Washington, D.C.

[56]Graver Tank & Manufacturing Co. v. Linde Air Products Co. 339 U.S. 605, 94 L. Ed. 1097, 70 S. Ct. 854 (1949).

[57]K.J. Burchfiel, *Patent Misuse and Antitrust Reform: Blessed be the Tie?*, 4 HARV. JOUR. OF L & T, 3, 97-8 (1991).

[58]U.S. v. Loews, Inc. 371 U.S. 38, 45; 83 S. Ct. 97, 102; 9 L.Ed. 2d 11, 18 (1962).

enable market power. The decision further held that the requisite market leverage needed to force unwanted tied sales can be presumed when the tying product is patented or copyrighted.[60] While early decisions enforced *Loews*[61], later Courts came to regard the ruling only within the domain of block booking or package licensing[62] and not to tie-ins of copyrighted works in general.[63] In a similar vein, the presence of patents[64] and trademarks[65] do not now by themselves establish the existence of market power. Indeed,

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[59]Id.; Fortner I, supra note 45, 502-04, Fortner II, supra note 45, 620, n. 14 .

[60]Id. 46. "Since one of the objectives of the patent laws is to reward uniqueness, the principles of these cases was carried over into antitrust law on the theory that the existence of a valid patent in the tying product, without more, establishes a distinctiveness sufficient to conclude that any tying arrangement involving the patented product would have anticompetitive consequences."

[61]Hazeltine, supra note 9. The Hazeltine case applied the Loew's doctrine to package licensing of patents.

[62]Block booking requires users of one movie to purchase a group of less desired offers. "The requirements that all be taken if one is desired increased the market for some. Each stands not on its own footing but in whole or in part on the appeal which another film may have…. [The] result is to add to the monopoly of the copyright in violation of the principle of the patent cases involving tying clauses." The Court found the practice of block-booking of copyrighted movies at theaters and subsequently in television stations to be per se illegal. United States v. Paramount Pictures, 334 U.S. 131, 156-159 (1948); see also United States v. Griffith, 334 U.S. 100, 106-108 (1948); Loews, supra note 59, 46-47.

[63] Capital Temporaries, Inc. of Hartford v. Olsten Corp., 506 F. 2d 653, 663 (1974) ("The appellant misreads Loew's if he concludes that the mere existence of the copyrighted tying motion pictures was enough to create the tying."); In Re Data General Corp. Antitrust Litigation, 490 F. Supp. 1089, 1112 (N.D. Ca. 1980) ("Notwithstanding implied suggestions to the contrary, the sole fact of the existence of a copyright notice has not been held to be sufficient to prove economic power."); see also 3 P.M. Inc v. Basic Four Corp., 591 F. Supp. 1350, 1359 (E.D. Mich. 1984) (copyright does not itself imply "some advantage not shared by competitors in the market for the tying product", sourcing Fortner II, supra note 45, 629) A.J. Root Co. v. Computer Dynamics, Inc., 806 F. 2d 673, 676 (6th Cir. 1986) (rejecting "any absolute presumption of market power for copyright or patented product."); but see Digidyne, infra note 122, and surrounding text.

[64] Abbott Laboratories v. Brennan, 952 F. 2d 1346, 1354 (1991), citing Walker Process Equipment Inc. v. Food Machinery & Chemical Corp. 382 U.S. 172, 178, 86 S Ct. at 350 (1965); American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F. 2d 1350, 1367, 220 USPQ, 763, 776 (Fed. Cir. 1983), cert. denied, 469 U.S. 821, 105 S. Ct. 95, 83 L.Ed. 2d 41 (1984) ("patents are not legal monopolies in the antitrust sense of that word.")

[65] Capital v. Olsten , supra note 64; Carpa, Inc. v. Ward Foods, Inc., 536 F. 2d 39 (5th Cir. 1976); Northern v. McGraw-Edison Co. 542 F. 2d 1336 (8th Cir. 1976), cert. denied, 429 U.S. 1097, 97 S. Ct. 1115, 51 L. Ed. 2d 544 (1977); Town Sound, supra note 45.

a presumption of market power that may result from a legal patent could inhibit the development of new technology to secure the latter.[66]

Patent Misuse and Antitrust

As antitrust acquired a growing stature in judging tying arrangements, the importance of patent misuse as a separate domain would peak in the Supreme Court's *Mercoid Corporation v Mid-Continent Investment Co. et al.*, [67] which was decided in 1944. While previous decisions[68] considered the legality of tied staple products, *Mercoid* held that it made no difference that the tied complement was a nonstaple good with no application beyond use with the patented product;[69] the tying restriction was ruled both a patent misuse and an antitrust violation.[70] The *Mercoid* decision was reinforced in *Mercoid Corp. v. Minneapolis-Honeywell Regulatory Co*, which concluded that patent misuse was a per se violation of the antitrust laws and a legitimate basis for a counterclaim

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[66] "As a threshold matter, the threat of antitrust liability may act as a disincentive to the creation and distribution of new technology. However, even after a product has been developed and is enjoying public distribution, the possibility that a court will apply the presumption of market power may divert corporate resources toward litigation and away from vital research and development endeavors." S. Rep. No. 492, 100th Cong. 2d Sess. (1988).

[67] 320 U.S. 661, 64 S. Ct. 268; 88 L. Ed. 376 (1944) "If a limited monopoly over the combustion stoker switch were allowed, it would not be a monopoly accorded inventive genius by the patent laws but a monopoly born of a commercial desire to avoid the rigors of competition fostered by the anti-trust laws." Id. at 667-8. Overturning Leeds & Catlin Company v. Victor Talking Machine Company 213 U.S. 325, 29 S. Ct. 503, 53 L. Ed. 816 (1909).

[68]supra note 20-31.

[69]Id., 663, 270, 380.

[70]Id., 667, 272, 382.

without need for a market impact study or demonstration of injury.[71] A subsequent District Court decision held that even the wrongful filing of an action for contributory infringement could present evidence of patent misuse.[72]

Following *Mercoid*, Congress in 1952 enacted new law to protect patentee rights to tie in nonstaple products. Per the newly enacted 35 U.S.C. 271(c), an unauthorized seller of a tied nonstaple could be deemed a contributory infringer of a patent.[73] Moreover, the patent owner has immunities from misuse charges for exercising rights that could be denied to others.[74] As a practical consideration, Sections 271(c) and (d) granted to patent holders a "statutory right to control [i.e., tie] nonstaple goods that are capable only of infringing use in a patented invention, and that are essential to that invention's advance over prior art."[75] While the statute protects patent holders from the affirmative defense of patent misuse, it does not necessarily grant a wider exemption from antitrust concerns.

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[71]320 U.S. 680, 684 (1944); see also Calkins, supra note 12, 183-5.

[72]Stroco Products, Inc. v. Mullenbach 67 USPQ 168, 170. (1948)

[73]35 U.S.C. 271(c) "Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.".

[74]35 U.S.C. 271(d)(1)-(3) "No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief of deemed guilty of misuse or illegal extension of the patent right by reason of his having done on or more of the following: (1) derived revenue from acts which if performed by another without his consent would constitute contributory infringement of the patent; (2) licensed or authorized another to perform acts which if performed without his consent would constitute contributory infringement of the patent; (3) sought to enforce his patent rights against infringement or contributory infringement. "

[75] Dawson Chemical Co. et al. v. Rohm & Haas Co 448 U.S. 176, 200; 100 S. Ct. 2601, 2615, 2622; 65 L. Ed. 2d 696, 715, 723 (1980), affirming 599 F. 2d 685. R&H had obtained a patent on a method for applying an unpatented, nonstaple chemical commodity (propanil) deemed to have no other significant use outside of the patented method (At 181, 2606, 703). Dawson manufactured and marketed propanil with printed directions for use with the patented method. The contending parties raised respective issues of

The Patent Interference and Misuse Reform Act of 1988[76] moved further to protect owner rights that involve tied staples. While a Senate version (S 438) that would have judged *all* patent misuse by antitrust standards failed passage,[77] the passed legislation maintained a separate misuse test in general but moved to judge tying and refusal to deal by antitrust standards. Accordingly, Section 271(d) was amended to protect patent owners from misuse charges in matters involving exclusive dealing and tying unless market power could be demonstrated.[78] Legislative history shows that the requisite definition of market power was purposely left to later Court discretion.[79] Although Congress did not expressly adopt an antitrust test for misuse, "the new statute arguably required much of the same analysis, at least for tying arrangements."[80]

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contributory infringement and patent misuse. The Supreme Court held that the defendant's activities – selling, authorizing use, and suing for contributory infringement of a nonstaple product– represented "conduct no different from that which the statute expressly protects." (At 202, 2616,716) .

[76] Pub. L. No. 100-703, 102 Stat. 4674 (1988).

[77]A more complete adaptation to antitrust would have followed Judge Posner, infra note 89, 510-12. "The doctrine of patent misuse has been described as an equitable concept designed to prevent a patent owner from using the patent in a manner contrary to public policy. This is too vague a formulation to be useful … The doctrine arose before there was any significant body of federal antitrust law …The antitrust laws define a separate role for a doctrine also designed to prevent an anticompetitive practice – the abuse of a patent monopoly…If misuse claims are not tested by conventional antitrust principles, by what principles shall they be tested? Our law is not rich in alternative concepts of monopolistic abuse; and it is rather later in the day to try to develop one without in the process subjecting the rights of patent holders to debilitating uncertainty."

[78] "No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief of deemed guilty of misuse or illegal extension of the patent right by reason of his having done one or more of the following …. (4) refused to license or use any rights to the patent; or (5) conditioned the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the market for the patent or patented product on which the license or sale is conditioned." 35 U.S.C. 271(d).

[79]Burchfiel, supra note 58, Calkins, supra note 12; J. B. Kobak, Jr. *The New Patent Misuse Law*, 71 J. PAT. [& TRADEMARK] OFF. SOC'Y 859 (1989).

Moving yet further, the Federal Circuit – which has exclusive jurisdiction over patent appeals – ruled in 1992 that *all* use restrictions that do not fall "reasonably within the patent grant" will be adjudicated under the principles of the antitrust rule of reason unless the Supreme Court had previously ruled the restriction to be per se illegal.[81] The federal antitrust agencies would concur, arguing in the *1995 Joint Guidelines* that restraints in intellectual property are properly evaluated under a rule of reason with a "comprehensive inquiry into market conditions."[82] With the evidentiary difficulty of establishing a defendant rule of reason, these events strengthen the hand of patent and copyright owners.

The Chicago Defense

[80]J. Hoerner, *Patent Misuse: Portents for the 1990s*, 59 ANTITRUST L.J. 687, 689-90 (1991); J.R. Bennett, *Patent Misuse: Must an Alleged Infringer Prove an Antitrust Violation*?, 17 AIPLA Q.J. 1, 2 (1989); R. Calkins, *The Impact of the 1988 Patent Misuse Reform Act and Noerr-Pennington Doctrine on Misuse Defenses and Antitrust Counterclaims*, 38 DRAKE L. REV 175, 196 (1988-89); J.M. Webb and L.A. Locke, *Intellectual Property Misuse: Developments in the Misuse Doctrine*, 4 HARV J.L. & TECH., 257, 266-67 (1991).

[81]Mallinckrodt, Inc. v. Medipart, Inc., 976 F. 2d 700, 708 (1992). See also J.B. Kobak, *Contracting Around Exhaustion: Some Thoughts about the CAFC's Mallinckrodt Decision*, 75 J PAT [& TRADEMARK] OFF. SOC'Y 550 (1993); Windsurfing Int'l Inc. v. AMF, Inc., 782 F. 2d 995, 1001-02 (Fed. Cir. 1986) ("To sustain a misuse defense involving a licensing arrangement not held to have been *per se* anticompetitive … the license [must] tend to restrain competition unlawfully.")

[82]U.S. Department of Justice and Federal Trade Commission, *Antitrust Guidelines for the Licensing of Intellectual Property*, Sect. 3.4, Issued April 6, 1995, Washington, D.C. " Intellectual property law bestows on the owners of intellectual property certain rights to exclude others. These rights help the owners to profit from the use of their property. An intellectual property owner's rights to exclude are similar to the rights enjoyed by owners of other forms of private property. As with other forms of private property, certain types of conduct with respect to intellectual property may have anticompetitive effects against which the antitrust laws can and do protect."

While antitrust standards rose to primary importance in patent tying cases, these standards themselves were challenged by Chicago economists since, at least, 1956.[83] In a seminal article in 1957,[84] Ward Bowman argued that two goods tied in fixed proportions would lead to "single monopoly profits"; i.e., a monopoly provider of a tying good could expropriate no more profits from tied sales of a complement, all else held equal. However, when use intensity varied among consumers, Bowman drew distinctions regarding tying strategies under "counting" and "variable proportions"; the former simply metered intensity of tying use while the latter leveraged tying markets for greater profits in the tied goods.[85]

Regarding counting, the sale of tied products to individual buyers correlates with demand intensity and is a way of metering uses when actual technology is not available.[86] The two outcomes are perfectly equivalent from an economic perspective. Under tying, competitive inputs are sold noncompetitively with a profit margin fixed per unit sold. If metered, the same inputs could be sold competitively (i.e., at marginal cost) and the profit

[83]A. Director and E. Levi, *Law and the Future: Trade Regulation*, 51 N.W. U. L. REV. 281, 290, 292 (1956). "The Chicago critique of classical tying doctrine rested on three main ideas. First, tying could provide convenience for customers and lower transaction costs. Second, … a firm with monopoly power over one good might have the ability to monopolize the market for another good, but doing so could not increase profits and could reduce them … Third, bundling could result in lower prices for some customers and higher level of output." Hylton and Salinger, supra note 4, 485. see also R. Bork, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1978); R.A. Posner, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE (1979), Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696 (1986).

[84] W. Bowman, *Tying Strategies and the Leverage Problem*, 67 YALE L. J. 19 (1957).

[85]Id., 23-36. In counting, the tying product was sold at cost (at 23-4), while one tied product was priced above to meter use (at 32-36; see *Button Fastener*, supra note 20). Under variable proportions, producers tied in many products, any one of which would have been sufficient to meter user intensity. (at 32-36; see A.B. Dick, supra note 25) and levered to price the tying good above cost. See also M. Burstein, *A Theory of Full Line Forcing*, 55 N.W. U. L REV. 62 (1960).

margin recovered through usage charges registered on the meter. This equivalence holds *regardless* of the degree of market power in the market.

In 1982, Judge Posner drew less of a distinction regarding the inefficiency of "variable proportions". Based on the volume of use, tying with different user sizes is a form of price discrimination. Moreover, "since … there is no principle that patent owners may not engage in price discrimination,[87] it is unclear why one form of discrimination, the tie-in, alone is forbidden." [88] Posner advocated that per se illegality of tying be eliminated, a point that Justice O'Connor would follow in a concurrence in *Jefferson Parish*. [89]

Based on theoretical literature written in 1981,[90] two part pricing enabled by tying can be beneficial at times. Without tying, a patentee will price her new good (e.g., camera) at monopoly levels that exceed marginal cost. However, if she can profitably tie films to the sale, she would willingly lower the price of the camera – possibly below marginal cost[91] -- to attract more customers to buy tied film. If able to buy cameras at lower

[86] W.S. Bowman, Jr. PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC PARADIGM 101 (1973).

[87] Sourcing in original Bela Seating v. Poloron Prods. Inc., 438 F. 2d 733, 738 (7th Cir. 1971).

[88] USM Corporation v. SPS Technologies, 694 F. 2d 505, 511 (7th Cir. 1982). sourcing *Button Fastener* (supra note 20) at 296.

[89] O'Connor conc. in *Jefferson Parish*, supra note 42, 34, 150, 27. The per se doctrine "calls for the extensive and time consuming analysis characteristic of the rule of reason, but then may be interpreted to prohibit arrangements that economic analysis would show to be beneficial". The time had come to "abandon the per se label and refocus the inquiry on the adverse economic effects, and the potential economic benefits, that the tie may have."

[90] R. Schmalensee, "Monopolistic Two Part Pricing Arrangements", BELL JOURNAL OF ECONOMICS (Autumn, 1981).

[91] Id.

prices, smaller users will be better off under tying, while larger users will be worse off. If nothing else, the tying outcome seems a more equitable way of sharing the costs of developing a new product.

Since patentee profits necessarily increase under two part pricing, tying could also increase the incentive for market innovation. The potential for a greater profit can then hasten the rate of development for some inventions, while determining whether others result at all. As a practical matter, it is impossible to quantify the economic tradeoffs that may exist between possible short-run efficiency losses and long-run incentives to innovate. Depending on demand elasticities and the response of innovative effort to greater potential profits, economic efficiency might actually increase in the long run.

A number of additional considerations may sometimes strengthen the case for tying yet more. With the possibility of joint ventures and licensing, patent owners may tie to complementary goods by contracting with the most effective or aggressive providers of the tied product. We then may see *ex ante* competition "for the field", as distinguished from competition for market share "in the field". Competition "for the field" can sometimes be more efficient, particularly when suppliers of tying or tied goods must undertake significant fixed investments before producing. That is, competition "in the field" that dissipates ex post profits may be problematic, as no such investments may be forthcoming without guarantees of earning a reasonable return.[92]

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[92]H. Demsetz, *Why Regulate Utilities?*, 11 J. L. & ECON. 55 (1968).

Alternatively, tying arrangements may reasonably incorporate vertical restraints that incorporate geographic and other non-price restrictions that actually may enhance efficiency.[93] Moreover, without the need for full vertical integration, tying producers may share proprietary production technology with tied producers in a manner that might not result under an open platform with unrestricted competition.[94] This kind of efficiency of shared knowledge may complement any additional technical efficiency that may be inherent in physical bundling, packaging, or engineering synergies.[95]

The ability of tying to encourage new innovations can also be related to possible scale economies or network effects made possible through greater market penetration. When patented products implicate costly development and necessary investments in production machinery, ex post unit costs may actually decrease as more products are produced. Faster market penetration or more R&D can result as a consequence. Complementarities may also result from the demand side as consumers share a common platform that accommodates faster build out of tied goods by encouraging the production of yet more complementary components (e.g., application software), repair manuals, consulting services, and training courses.[96]

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[93]Continental T.V. Inc., v. GTE Sylvania, Inc. 433 U.S. 36 (1977).

[94]For a critical discussion, see H. W. Chesbrough and D. Teece, *When is Virtual Virtuous*?, HARVARD BUSINESS REVIEW, Jan-Feb. 1996.

[95]Hylton and Salinger, supra note 4.

[96]See J. Farrell, *Standardization and Intellectual Property*, 30 JURIMETRICS JOURNAL, 35, 45-9 (1989); M.L. Katz and C. Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93 (1994).

Differentiated Products and Network Goods

Tying arguably becomes more problematic when the tied goods are themselves differentiated innovations and the results of considerable investment in R&D. Here, tying in the platform market may reduce competitive innovation in the tied market. Curiously (by standards of patent laws), the problematic tied goods may be nonstaples produced specifically for use with the tying good and most protected for the patentee under Section 271(c).

To my mind, a choice product to examine the implications of tying with a differentiated nonstaple tied good appeared in a 1993 copyright case, *Sega Enterprises Ltd. v. Accolade, Inc.*[97] Sega developed and marketed video consoles and games, while Accolade independently manufactured competing game cartridges. Although Sega licensed access to the copyrighted code in its console to enable interoperability of other games, Accolade chose instead to "reverse engineer" Sega's programs by temporarily copying and reproducing the source code embedded in Sega game cartridges.[98]

Though the specific matters at bar concerned the legitimacy of Accolade's copying under prevailing copyright law (and not antitrust), the facts of the case can be used to illustrate the dynamics of tying arrangements with differentiated tied goods. While the Circuit

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[97] 977 F. 2d 1510 (9th Cir. 1993).

[98] To achieve reverse engineering, Accolade purchased a Sega console and three game cartridges, and wired a decompiler to transform the machine-readable object code of the cartridges into human-readable source code. The disassembled source code was loaded back into a computer and used to discover the interface specifications of the Sega console.

Court upheld Accolade's temporary copying as a fair use to enable reverse engineering,[99] the Court also recognized the benefits of product differentiation and consumer choice, and the fact that the two game producers engaged in a more complex interaction that simultaneously exhibited both competition and complementarity.[100]

There are three possible surplus losses that may distinguish markets in video games from those with nondifferentiated staples, such as salt tablets. First, Accolade's software products were new innovations that widened improved product quality and consumer choice. To deny access to the console platform then would reduce consumer surplus. Second, Accolade engineered its games back to a common standard; users could choose a wide selection of games without needing to buy a second console. The presence of more software may increase consumer demand for platform hardware through network effects,[101] thereby driving down unit costs and consequently increasing further the demand for both platform and software.

[99]Supra note 98, 1518-20, sourcing 17 U.S.C. 102(b). "If disassembly of copyrighted object code is per se an unfair use, the owner of the copyright gains a de facto monopoly over the functional aspects of his work – aspects that were expressly denied copyright protection by Congress." The Court here reversed earlier judgments that held that temporary copying to enable reverse engineering was a violation of copyright. Apple Computer, Inc. v. Franklin Computer Corp., 714 F. 2d 1240, 1253 (3d Cir. 1983); Digital Communications Assoc. v. Softklone Distrib. Corp., 659 F. Supp. 449, 462-63 (N.D.Ga 1987).

[100]Supra note 98, 1523. "By facilitating the entry of a new competitor … Accolade's disassembly of Sega's software undoubtedly 'affected' the market … in an indirect fashion. We note, however, that … video game users typically purchase more than one game. There is no basis for assuming that Accolade's 'Ishido' has significantly affected the market for Sega's 'Altered Beast', since a consumer might easily purchase both; nor does it seem unlikely that a consumer particularly interested in sports might purchase both Accolade's 'Mike Ditka Power Football' and Sega's 'Joe Montana Football", particularly if the games are, as Accolade contends, not substantially similar."

[101]Farrell, supra note 97.

Third, the tied goods are intellectual property that can be advanced further in the long run by having access to a popular platform. Unlike salt tablets, video games can be perceived as an innovation market, per the *1995 Joint Guidelines* of the FTC and DOJ.[102] "A licensing [or tying] arrangement may have competitive effects on innovation that cannot be adequately addressed through the analysis of goods or technology markets."[103] Barring vertical breakup of integrated platforms into "consoles" and "games", a conceivable solution to a closed platform may be compulsory licensing or the obligatory sharing of source code.[104]

However, if scale economies and network effects are not overbearing, competing suppliers who lack access to a popular platform product may actually come to devise their own platform good. Thus heightens competition in the short run, and enhances product variety and quality in the long run.[105] Indeed, some Chicago economists argue followup producers of superior platforms would eventually tip

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[102]"An innovation market would consist of the R&D needed to develop new or improved goods or processes, and the relevant substitutes for that R&D that significantly constrain the exercise of market power with respect to the relevant research and development, for example by limiting the ability and incentive of a hypothetical monopolist to retard the pace of research and development that do not yet exist." *Guidelines*, supra note 83.

[103] Id.

[104] D. S. Karjala, *Copyright Protection of Operating Software, Copyright Misuse, and Antitrust*, 9 CORNELL J. L & PUB. POL'Y 161 (1999); but see Hovenkamp, supra note 54, 236-45

[105]From a Chicago point of view, producers who stop platform compatibility would create a healthy competition among contending standards, see A.Clapes, *Confessions of an Amicus Curiae: Technophobia, Law and Creativity in the Digital Arts*, 19 U. DAYTON L. REV. 903, 934 (1994); A. Miller, *Copyright Protection for Computer Programs, Databases, and Computer Generated Works: Is Anything New since CONTU*? 106 HARV. L. REV. 977, 1029-32 (1993); D. Friedman, *Standards as Intellectual Property: An Economic Approach,* 19 U. DAYTON L. REV. 1109, 1110-11 (1994); K. Dam, *Some Economic Considerations in the Intellectual Property Protection of Software*, 24 J. LEGAL STUD. 321, 338 (1995).

networks to overcome first mover advantages that might initially favor an incumbent.[106] Alternatively, the key determinant of an efficient outcome may depend on the industry's ability to negotiate interconnection standards among different platforms, avoiding the need for more direct intervention.

Refusal to Deal

The *Sega* discussion considered consumer platforms that can be rendered incompatible with competitive tied goods. We now consider a closely related matter, the refusal to license or deal a patented input to producers who would compete with the patentee in a number of downstream markets, including some that would implicate the use of the patented good in question to provide final output or service.

Refusals to deal or license access to patented inputs have appeared often in maintenance markets for computers or copiers, where original equipment manufacturers (OEMs) may compete with independent service organizations (ISOs) to provide competitive service. These ISOs may sometimes need access to patented diagnostic software or parts produced by the OEM. While the Supreme Court has disallowed refusals to deal by firms with monopoly power when no legitimate business reason can be identified,[107] Courts have generally upheld rights to refuse to deal or license rights to a patented good.[108]

[106]S.J. Liebowitz and S. E. Margolis, *The Fable of the Keys*, 33 J. L & ECON. 1 (1990); S. J. Liebowitz and S. E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSP., Spring, 1994.
[107]Aspen Skiing Co. v. Aspen Highlands Skiing Corp. 472 U.S. 585, 600 (1985); accord U.S. v. Colgate & Co. 250 U.S. 300, 307 (1919).

[108]Supra note 6.

From a Chicago perspective, a refusal to deal or license to downstream competitive ISOs would be nonprofitable unless efficient. That is, a producer of a patented input – if used in fixed proportions with hours or visits for maintenance in competitive markets – would be better off dealing to competitors and extracting profits through its sales price. This can be achieved by pricing the input at its marginal production cost plus the profit margin that it would earn if maintenance were monopolized. If downstream competitors are undifferentiated, the patentee will recover profits equally under competition and monopoly.

The congruence weakens when patented inputs are used in variable proportions and/or downstream maintenance services are priced above marginal cost (i.e., imperfectly competitive). It may implode more seriously if royalties cannot be recovered on the basis of sold units. For if royalties are recovered only in a flat payment, downstream prices for maintenance service will be pushed toward actual marginal cost of supply. With thin profit margins, resulting downstream net revenues might not sufficiently cover the additional costs of the R&D investment specific to the patent. Unless resale price maintenance or some other vertical commitment can be established, competition here can damage the going-forward incentive to undertake R&D in the first place. Enabled through refusal to deal, a user interface that enforces monopoly in the maintenance market can earn more profits downstream and better recover the costs of R&D.

A countering problem may occur if downstream service providers also compete in a number of profitable markets where the specific patented parts or software are not needed. Here, patent holders may gainfully refuse to deal an important input needed in *some* markets with hope to drive competitors out of *all* markets. A necessary condition for strategic foreclosure of market competitors would be the presence of scale economies that these companies would otherwise enjoy by serving demand in multiple markets.[109] This refusal to deal is an example of monopoly leveraging of a patented good to eliminate competition in an unrelated competitive marke Monopoly leveraging into a competitive market is not regarded as anticompetitive behavior.

To date, elaborate microeconomic analysis of leveraging has not been necessary to resolve refusal cases, where courts have upheld the right of a patentee to refuse to deal or license rights. In *Data General Corporation v. Grumman*,[110] Grumman countered a copyright infringement suit by contending that DG's refusal to license diagnostic software to competitors led to a 90% market share in maintenance and violated both Sections 1 and 2 of the Sherman Act. On appeal, the Circuit Court dismissed per se claims under Section 1; Grumman failed (1) to demonstrate the market separateness of DG's diagnostic support service from related computer maintenance needed for DG's machines, and (2) to demonstrate sufficient evidence of the use of market power to impose the tie.[111] Regarding Section 2, DG's exercise of its legitimate copyrights was a

[109] One illustrative model appears in M. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 827 (1990).

[110] 36 F. 3d 1147 (1st Cir. 1994).

[111] Id., 1179-80.

presumptively valid business justification for a unilateral refusal to license;[112] "the owner of the copyright, if [it] pleases, may refrain from vending or licensing and content [itself] with simply exercising the right to exclude others from using its property ."[113]

In *CSU v. Xerox*, [114] the Federal Circuit imputed the same principle to reaffirm the status of patented goods. As a maintenance provider for its photocopiers, Xerox refused to continue to make *patented* parts available to competitive ISOs, although it did sell directly to end-users. The Circuit Court upheld a summary judgment -- barring the use of patent fraud or sham litigation,[115] "antitrust laws do not negate the patentee's right to exclude others from patented property".[116] The ruling differs significantly from the *Kodak* cases, [117] where Kodak -- without legitimate business justification -- refused to continue to make *all* replacement parts available to independent service operators.[118]

Although both cases were resolved judiciously in the domain of exclusive patent rights established in statutory and common law, an alternative analysis might have been less

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[112]Id., 1186-1189; rejecting Aspen Skiing, supra note 109.

[113]Id. 1187, see also supra note 6.

[114]203 F. 3d 1322 (Fed. Circ. 2000).

[115]Walker Process Machinery, Inc. v. Food Machinery & Chemical Corp. 382 U.S. 172, 174 (1965), Handgards, Inc. v. Ethicon, Inc., 743 F. 2d 1282, 1294 (9th Cir. 1984).

[116]Supra note 116, 1362, quoting Intergraph, supra note 6.

[117]Infra notes 128 and 133-4.

[118]The distinction is made in M.M. Burtis and B.H.Kobayashi, *Why an Original can be Better than a Copy: Intellectual Property, the Antitrust Refusal to Deal, and ISO Antitrust Litigation*, 9 S. CT. ECON. REV 143 (2001). See also M. Lao, *Unilateral Refusals to Sell or License Intellectual Property and the Antitrust Duty to Deal*, 9 CORNELL J L & PUB POLICY 193, 202-03 (1999); M. R. Patterson, *When is Property Intellectual? The Leveraging Problem*, 73 SO. CAL. L. REV. 1133 (2000).

favorable. Both Data General and Xerox had the capability of implementing variable royalty schemes that could have captured a fair bit of downstream profits from competitive maintenance providers that used their patented inputs in specific applications. Moreover, both Data General and Xerox also were downstream providers of other maintenance services that did not need patented parts. Refusal to deal not only kept competitive providers from providing directly the implicated part, but rather impaired to some degree their financial wherewithal to deal in all competitive markets.

In more general applications, post-Chicago theory[119] considers how producers may leverage market power through tying. That is, secondary producers of competitive products or inputs that are "tied out" from access to a patented platform or input may lose access to a crucial downstream market and consequently exit all markets. The patent owner then is left to serve these vacated markets as a monopolist. Tying can be a profitable strategy if sales of the "tied out" products are profitable and therefore useful in defraying fixed costs in the competitive company. This requires that the " tied-out" product is sold in an imperfectly competitive market where prices exceed marginal cost, and that the fixed costs of downstream competitors are positive.

Aftermarkets and Policy

[119]L. Kaplow, *Extension of Monopoly Power Through Leveraging*, 85 COLUM. L. REV. 515 (1985); T. G. Krattenmaker and S.C. Salop, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 YALE L. J., 209 (1986); Whinston, infra note 111 and surrounding text.

A prevailing concern in tying markets is the possible anticompetitive effects of aftermarkets that entail a series of tied sales that occur after purchase of the platform good. Competitive difficulties may result if migrations to new platforms present switching costs.

The aftermarket issue involving intellectual property appeared in a Section 1 case, *Digidyne v. Data General*,[120] which considered the tied sales of DG's copyrighted operating system RDOS (the tying good) and its competitive central processor units (CPUs). The court ruled that original equipment manufacturers of computers that initially bought the "distinctly attractive" RDOS necessarily made subsequent investments in application software needed to operate with the installed system.[121] Because application software is costly to port to new operating systems, the defendant could uneconomically tie sales of CPUs to subsequent sales of its RDOS.

Holding (per *Loews*) that the "requisite economic power is presumed when the tying product is patented or copyrighted",[122] the tying arrangement was held to be a per se violation under Section 1 of the Sherman Act and Section 3 of the Clayton Act.[123] The Court explicitly rejected the idea that anticipated "lock-in" does not contribute to market power because OEMs were aware of the potential lock when selecting an operating

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[120] 734 F. 2d 1336 (1984).

[121] Id., 1343.

[122] Id., 1341, citing Loews, supra note 59, 45.

[123] Id., 1342, citing Jefferson Parish, supra note 42, 1560.

system for their equipment.[124] Nonetheless, the Digidyne decision under Section 1 is quite problematic from a jurisprudential perspective, as a number of intermediate Courts had previously conditioned *Loews* to a narrower context that was not relevant to the matter at hand.[125]

In *Eastman Kodak v. Image Technical Services*,[126] the Supreme Court considered aftermarket issues under Section 2, which forbids actual or purposeful monopolization through unilateral or concerted action.[127] As a producer of photocopying equipment, Eastman Kodak refused to make *all* of its replacement parts available to competitive maintenance suppliers with whom it had once dealt.[128] The Supreme Court held that aftermarkets were a legitimate competitive domain in which market power can be unlawfully exercised through forced purchases at higher prices that may also be discriminatory.[129] Moreover, it stated, in famous footnote 29, that copyright and patent owners may incur antitrust liability should they exploit "a dominant position in one market to expand [the] empire into the next."[130]

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[124] Id.

[125] Supra note 64.

[126] 504 U.S. 451; 112 S. Ct. 2072; 119 L. Ed. 2d 265 (1992).

[127] 15 U.S.C. 2 (1994). A monopolization case requires the "possession of monopoly power in the relevant market", and "the willful acquisition or maintenance of that power", as distinguished from the consequences of a "superior product, business acumen, or historic accident." U.S. v. Grinnell Corp. 384 U.S. 563 (1966). The second element, the necessary conduct, requires a showing of the use of power to gain a competitive advantage, or to destroy or foreclose competition. To prevail on conduct, the plaintiff must show (1) specific intent to control prices or limit competition, (2) predatory or anticompetitive conduct to that end, (3) the dangerous probability that monopoly power may result, and (4) causal injury. Rebel Oil Co. v. Atlantic Richfield Oil Co., 51 F. 3d 1421, 1434 (9th Cir. 1995).

[128] Supra note 128, 482-3, 2090, 294.

[129] Id., 479, 2089, 292.

On remand, a jury in the District Court held Kodak guilty of attempted monopolization in Section 2,[131] which the Ninth Circuit subsequently upheld.[132] Despite the Supreme Court's footnote 29, no Court considered the substantive implications of tying of patented goods alone, a key distinction from Xerox.[133] Furthermore, the Circuit Court actually expressed some concern about an overly broad sweep in the Supreme Court's famous pronouncement.[134]

Section 1 claims for tying exited inauspiciously in *U.S. v. Microsoft*,[135] which considered the deep technological integration of the company's Internet Explorer browser in the capabilities of its Windows operating system. The Circuit Court vacated and remanded a District Court opinion[136] that found that Microsoft's contractual and technological bundling of Explorer and Windows were per se unlawful under Section 1. While not disputing the potential demand for separate browsers, the Court found that the separate markets test,[137] as applied by the District Court, was backward-looking and inappropriate

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[130]Id., 479, 2089, 292, n. 29.

[131]Image Technical Serv. Inc. v. Eastman Kodak Co., 1988 U.S. Dist. LEXIS 17218 (N.D. Cal.)

[132]Image Technical Serv. Inc. v. Eastman Kodak Co., 125 F. 3d 1195 (9th Cir. 1997).

[133]Burtis and Kobyashi, supra note 121.

[134]"After [the Supreme Court's] Kodak, unilateral conduct by a manufacturer in its own aftermarkets may give rise to liability, and in one brand market, monopoly power created by patents and copyrights will frequently be found … Without bounds, claims based on unilateral conduct will proliferate." Id., 1217-1218.

[135]U.S. v. Microsoft Corp., 253 F. 3d 34 (2001).

[136]U.S. v. Microsoft Corp., 97 F. Supp. 2d 59, 64-5 (D.D.C. 2000).

[137] Supra note 48.

for judging the market efficiencies made possible by technological integration.[138] The District Court was directed to reconsider the case under a rule of reason that considered the possible efficiencies of technological bundling.[139]

Regarding Section 2, the Circuit Court refuted Microsoft's defense that its license restrictions that hindered the distribution of competitive browsers were protected by copyright law.[140] Rather, the Circuit Court found that Microsoft was leveraging its dominant position in one antitrust market to raise barriers to entry in another, in a manner that preserved the dominant position of the Windows operating system.[141] The license restrictions were not within the proper copyright grant; indeed, "Microsoft's primary copyright argument borders upon the frivolous."[142] The Microsoft decision was the first successful bid when the specific scope of a patent or copyright grant for a tying product was conditioned as a matter of law under Section 2.

Conclusion

I summarize the discussion by listing a number of considerations that may be implicated in tying arrangements and refusals to deal in patented products:

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[138] Supra note 137, 89.

[139] Supra note 137, 94.

[140] Id., 62-3.

[141] Id., 58-9.

1. Courts must recognize that tying arrangements of functionally related components can produce operational synergies and technical efficiencies.

2. Tying may present a cost-effective way of imposing metering charges on customer usage.

3. In presenting a means of monetizing revenues from usage, tying can drive down the initial prices of access goods and consequently promote greater penetration of a new platform.

4. R&D for a patented access good may be more forthcoming if greater profits result from a tying strategy that widens the penetration of its platform.

5. Tying to different producers is possible through joint ventures and cross-licensing agreements that preserve competition "for the field".

6. Tying may be more problematic if tied-out complements are differentiated or innovative, since consumer losses may result from reduced product variety and the loss of long-run incentive for more R&D.

7. An untied platform could enable network externalities that could benefit ultimate users and third-party producers.

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[142] Id., 63.

8. Conceivable anti-competitive dangers may result when the foreclosed market is imperfectly competitive and downstream competitors have positive fixed costs that must be defrayed.

9. The modified "per se" rule of Jefferson Parish should be changed to the Rule of Reason suggested in Justice O'Connor's concurring opinion. The evidentiary requirements – which involve considerations of differentiation, platforming, and leveraging -- appear difficult, and deservedly so.

ABOUT THE AUTHOR

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In the technology sector, Dr. Einhorn worked at Bell Laboratories and the U.S. Department of Justice (Antitrust Division) and consulted to General Electric, AT&T, Argonne Labs, Telcordia, Pacific Gas and Electric, and the Federal Energy Regulatory Commission. He has advised parties and supported litigation in matters involving patent damages and related valuations in semiconductors, medical technologies, search engines, e-commerce, wireless systems, and proprietary and open source software.

Litigation support involving media economics and copyright damages has involved music, movies, television, advertising, branding, apparel, architecture, fine arts, video games, and photography. Matters have involved Universal Music, BMG, Sony Music Holdings, Disney Music, NBCUniversal, Paramount Pictures, DreamWorks, Burnett Productions, Rascal Flatts, P. Diddy, Nelly Furtado, Usher, 50 Cent, Madonna, and U2.

Matters involving trademark damages have included the Kardashians/BOLDFACE Licensing, Oprah Winfrey/Harpo Productions, Madonna/Material Girl, CompUSA, Steve

Madden Shoes, Kohl's Department Stores, *The New York Observer*, and Avon Cosmetics. Matters in publicity right damages have involved Zooey Deschanel, Arnold Schwarzenegger, Rosa Parks, Diane Keaton, Michelle Pfeiffer, Yogi Berra, Melina Kanakaredes, Woody Allen, and Sandra Bullock.

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