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Dominance, Innovation, and Efficiency: Modifying Antitrust and Intellectual Property Doctrines to Further Welfare

Daniel J. Gifford

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DOMINANCE, INNOVATION, AND EFFICIENCY: MODIFYING ANTITRUST AND INTELLECTUAL PROPERTY DOCTRINES TO FURTHER WELFARE

*Daniel J. Gifford**

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I. INTRODUCTION

This Article examines a number of problematic areas in which the antitrust and intellectual property laws fail, or have failed, to attain the efficiency and welfare goals that underlie them. Although some of the areas in question have been separately analyzed in the literature, this Article focuses on them as a unitary group: one whose existence presents

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a challenge to the antitrust and intellectual property laws to develop a common approach by explicitly recognizing the maximization of aggregate social welfare as the goal of both sets of laws. This recognition would help courts resolve apparent conflicts in the applications of these laws, would probably produce better overall decisional results, and would increase overall predictability. It would also help the public to better understand the roles of these laws, and the significance of the legal issues underlying their applications.

Although the antitrust revolution of the late 1970s sought to adopt efficiency as the sole goal of the antitrust laws, that revolution was thwarted by residual legal doctrines that have taken years to refashion.¹ Moreover, it is unclear that efficiency has in fact triumphed or whether it has been replaced by the goal of maximizing consumer welfare, a different goal that generates tension with the avowed efficiency goals of antitrust.² Antitrust doctrine appears to have adjusted to meet the needs of dynamically competitive industries, but it remains unclear whether an expansion of the intellectual property laws is required for those industries. Intellectual property laws are designed to foster innovation, but their goals have been impeded by the patent misuse doctrines and an excessive reliance on property theory.³ This Article considers the extent to which our existing set of laws and legal doctrines require modification in the interest of furthering social welfare.

First, in Part II, this Article discusses the patent system and price discrimination. It argues that, consonant with the improvement of social welfare underlying the patent system and the efficiency goals of the antitrust laws, the policy goals of the patent system require the system permit price discrimination where possible. That system is built upon exclusive rights which provide the incentive to invent but also generate allocative inefficiencies. But the allocative inefficiencies can be reduced when the patentee is permitted to discriminate. In Part III, this Article addresses the relation of intellectual property laws to antitrust laws in dynamically competitive industries. To what extent should the law favor private networks as opposed to industry-shared networks? Does the

1. See Sedona Conference Working Grp. on the Role of Econ. in Antitrust Law, *The Sedona Conference Commentary on the Role of Economics in Antitrust Law*, 7 SEDONA CONF. J. 69, 77-78 (2006) [hereinafter *Sedona Conference Commentary*] (describing the movement towards an economics approach in antitrust law and the remaining impediments towards attainment of that goal).

2. See ROBERT H. BORK, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF* 90-91 (1978).

3. Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 996-99 (1997); see Christina Bohannon, *IP Misuse as Foreclosure*, 96 IOWA L. REV. 475, 487 (2011); Emir Aly Crowne, *The Utilitarian Fruits Approach to Justifying Patentable Subject Matter*, 10 J. MARSHALL REV. INTEL. PROP. L. 753, 756-57, 756 n.9 (2011).

answer involve a choice between fostering dynamic efficiency and static efficiency? In Part IV, this Article addresses the Williamson tradeoff. The conventional understanding of the tradeoff is that its use depends on a resolution of the conflict between an efficiency approach to the antitrust laws and a wealth-transfer approach. This Article raises the question of whether this issue could be avoided by the imposition of a tax or other monetary penalty on mergers that would meet the conditions of the Williamson tradeoff. In Part V, this Article addresses social welfare broadly conceived as extending beyond pure economic enrichment, to embrace areas where the market fails to provide accurate guidance. Social welfare calculated in this way includes areas affected by market externalities, such as the environment and those raising collective-action problems, like fishing regulation. This Article, however, focuses narrowly on the pharmaceutical industry, noting (1) the successes of the patent system to generate new pharmaceutical products, (2) its failures to make these drugs widely available to the poor of the developing world, and (3) the imposition of a larger share of that industry's development costs on the American public than a global welfare standard might indicate. In this part of the analysis, this Article uses a global (rather than a national) conception of welfare and makes the assumption that certain noneconomic values, such as extending access to important life-saving drugs to the world's poor, would be widely accepted as embraced within that broad conception.

II. PATENT LAW AND PRICE DISCRIMINATION

A. The Patent System's Tradeoff Between Innovation and Market Power

As the conventional wisdom has it, the patent system incorporates a tradeoff between innovation and market power.⁴ The exclusive rights which the patent system bestows on the inventor create market power in the inventor, which, in turn provides him with the incentive to devote his skills and resources to invention.⁵ The public benefits from the availability of the invention immediately (albeit on terms consonant with the inventor's exclusive rights), and, upon the expiration of the patent term, gets the further benefit of the invention's availability on

4. Richard S. Vermut, *A Synthesis of the Intellectual Property and Antitrust Laws: A Look at Refusals to License Computer Software*, 22 COLUM.-VLA J.L. & ARTS 27, 28-29 (1997); see also Lemley, *supra* note 3, at 993-94, 996-99 (discussing the tension between incentives to invent and encouraging competition in the market).

5. Lemley, *supra* note 3, at 994, 1000-02.

competitive-market terms: price and output at marginal cost, at least in theory.⁶

This conventional wisdom, however, obscures as well as describes. Let's examine the operation of the patent system in more detail. First, only some patents generate market power in any significant sense. These are patents on major technological advances or new products for which there are no satisfactory substitutes.⁷ In *Westinghouse v. Boyden Power Brake Co.*,⁸ the U.S. Supreme Court described a pioneer invention as a major technological advance.⁹ The economics literature similarly distinguishes between major and minor inventions.¹⁰ Major inventions are those that reduce cost drastically, resulting in a price below the previous production cost.¹¹ Major inventions then are unconstrained by competition from substitutes.¹² Minor inventions, by contrast, involve technology that provide modest cost-savings in the use of existing production techniques.¹³

A patent on a minor invention normally does not engender market power in a legal sense and little power in an economic sense (as measured by the Lerner index).¹⁴ This kind of patent generally involves an improvement in the technology used to produce an end product, reducing costs.¹⁵ An economically rational patentee holding rights over such a minor invention would charge producers a royalty that was just

6. See Bohannon, *supra* note 3, at 516-17; Daniel J. Gifford, *How Do the Social Benefits and Costs of the Patent System Stack Up in Pharmaceuticals?*, 12 J. INTELL. PROP. L. 75, 81-82 (2004).

7. See *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 561-62 (1898) (noting that a patent on a "pioneer" invention was extremely valuable to the public); Gifford, *supra* note 6, at 83-84.

8. 170 U.S. 537 (1898).

9. *Id.* at 561-62 (internal quotation marks omitted). In *Westinghouse*, the Court provided this description of a "pioneer" invention:

This word [pioneer], although used somewhat loosely, is commonly understood to denote a patent covering a function never before performed, a wholly novel device, or one of such novelty and importance as to mark a distinct step in the progress of the art, as distinguished from a mere improvement or perfection of what had gone before. Most conspicuous examples of such patents are: The one to Howe of the sewing machine; to Morse, of the electrical telegraph; and to Bell, of the telephone.

Id.

10. Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 621-22 (1962); W. KIP VISCUSI ET AL., ECONOMICS OF REGULATION AND ANTITRUST 868-71 (4th ed. 2005); see also Gifford, *supra* note 6, at 94-97 (discussing the Arrow analysis if dividing inventions into two categories).

11. VISCUSI ET AL., *supra* note 10, at 870-71.

12. See *id.* at 870-71.

13. See *id.* at 868 n.8, 870; Gifford, *supra* note 6, at 84.

14. See VISCUSI ET AL., *supra* note 10, at 294-95, 870 (noting that the market price is unaffected for minor inventions).

15. See *id.* at 868-70, 868 n.7; Gifford, *supra* note 6, at 84-85.

slightly less than the cost savings that the new technology made possible.¹⁶ In this way, such a patentee can capture the entire cost saving that his invention makes available at the pre-existing level of output for the end product.¹⁷ But in the output of the end product nothing changes. Measured by that pre-existing output level, there is no deadweight loss and no effect on market prices.¹⁸ Moreover, the patentee's exercise of his rights over the improved technology are constrained by the continued availability of the older technology.¹⁹

From the viewpoint of the higher level of technology that incorporates the invention, however, there is a deadweight loss: it consists of the difference between the current price and output levels, and the levels that the newly invented technology would make possible in the absence of the inventor's license fees.²⁰ Another way of saying this is that, from this perspective, the patentee possesses a limited market power, limited by actual or potential competition from the pre-existing technology. In the case of a typical patent on a minor invention, this deadweight loss is small compared to the production-cost savings that it brings about.²¹ In Figure 1, the deadweight loss from the minor invention that reduces cost from C_1 to C_2 , the deadweight loss is the area represented by the triangle ABD, which is small in comparison to the cost savings that it brings about represented by the rectangle C_1ADC_2 . In the case of a major invention, the dynamics are different. A patentee that must charge a single uniform price to all of its customers will charge the optimum monopoly price; to do this, it must restrict production, thus generating a deadweight loss.²² That deadweight loss will be significant in relation to the patentee's royalties.²³ In the case of linear demand, the deadweight loss would be equal to one-half of the royalties.²⁴

16. See VISCUSI ET AL., *supra* note 10, at 868-70; Gifford, *supra* note 6, at 95-97, 96 n.5.

17. See Arrow, *supra* note 10, at 620; Gifford, *supra* note 6, at 95-96.

18. VISCUSI ET AL., *supra* note 10, at 870 ("For minor inventions, market price is unaffected."); Gifford, *supra* note 6, at 111.

19. Gifford, *supra* note 6, at 96-97, 96 n.95.

20. See *id.* at 82, 85 & n.44.

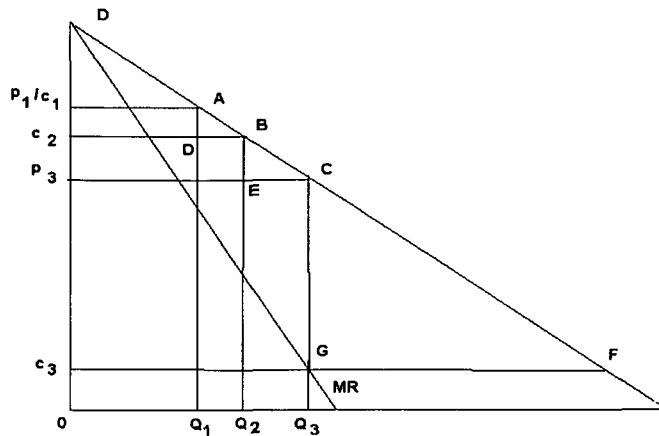
21. See VISCUSI ET AL., *supra* note 10, at 869 fig.24.1, 870 (illustrating the relationship between the price and quantity of the invention versus its production cost); Gifford, *supra* note 6, at 95-97.

22. See ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 347-48 (5th ed. 2001) (defining deadweight loss in relation to monopolies); VISCUSI ET AL., *supra* note 10, at 83 & fig.4.2, 870-71, 871 fig.24.2; Gifford, *supra* note 6, at 85, 97.

23. See Arrow, *supra* note 10, at 622; see also VISCUSI ET AL., *supra* note 10, at 868 & n.9, 870-71, 871 fig.24.2; Gifford, *supra* note 6, at 85, 94, 97 (noting that pioneer inventions are likely to generate high ratios of deadweight loss compared to improvement inventions).

24. See Gifford, *supra* note 6, at 110.

Figure 1: Patentee Returns on Major and Minor Inventions



Prior to the invention, the industry operated on an aggregate marginal cost curve represented by C_1 . The invention lowered the production cost curve to C_2 . The patentee would charge a royalty just slightly below the difference between C_1 and C_2 . From the viewpoint of the pre-existing technology, nothing has changed. Output remains at Q_1 . From the viewpoint of the higher level of technology brought about by this (minor) invention, there is a deadweight loss represented by the area in the triangle above C_2 and to the right of Q_1 or the area of the triangle ABD. That deadweight loss is small in relation to the cost savings that it made possible, which is the entire area between C_1 and C_2 to the Q_1 output level or the area of the rectangle C_1ADC_2 . Figure 1 also depicts a major invention that brings cost down to C_3 . Because of the absence of alternatives for the major invention, the patentee charges a monopoly price for its use. The deadweight loss generated by this invention is represented by the triangle CFG.

The following discussion is directed to major inventions. Those best fit the model in the popular description because they generate monopoly power and a significant deadweight loss.²⁵ Figure 1 shows a major invention that reduces cost to C_3 and (at the new level of technology that the invention brings about) generates a deadweight loss. This deadweight loss results from the mechanics of the patent system.²⁶ It is the price that society pays for the advance in technology brought about by the patented invention. Yet in some circumstances, some of that

25. See VISCUSI ET AL., *supra* note 10, at 870-71; Gifford, *supra* note 6, at 85, 97.

26. Gifford, *supra* note 6, at 85.

deadweight loss may be avoidable. If the patentee can discriminate in price, then he may be able to maximize his profits by replicating (to the extent feasible) the behavior of a perfectly discriminating monopolist. A well-known example of this behavior is the method employed by the IBM Corporation ("IBM") during the 1930s in marketing its early computers.²⁷ That company offered to lease²⁸ its machines at relatively low prices (which presumably reflected marginal cost), while requiring users to obtain computer cards from the company.²⁹ The company made its profit from the sale of the computer cards which it sold at prices substantially over marginal cost.³⁰ Since intense users would buy more cards and less intensive users would buy fewer, the sale of cards would track the value that each user would place on the machine.³¹ Thus, IBM, by tying the cards to the machines, was able to extract from each purchaser an amount that approximated that purchaser's reservation price.³² Let's explore the legal constraints surrounding such behavior.

B. Section 271 of the Patent Act

1. *Illinois Tool Works Inc. v. Independent Ink, Inc.*³³ and the Patent Misuse Doctrine

In 2006, the Supreme Court decided *Independent Ink, Inc.* discarding the presumption that a patent necessarily produced market power.³⁴ In so deciding, the Court eliminated a presumption that lacked an empirical base.³⁵ After all, most patents do not create market power in any meaningful sense.³⁶ That decision thus took its place in a series of recent antitrust decisions rationalizing antitrust law by bringing its

27. See *IBM v. United States*, 298 U.S. 131, 132-33 (1936).

28. Leasing (rather than selling) the machines was an important part of IBM's pricing strategy because leasing prevented arbitrage. See *id.* at 134. If the machines had been sold at discriminatory prices, purchasers in the lower-priced market would profit by reselling them in the higher-priced market. See *id.* at 139 (noting that absent the provisions of IBM's lease, competitors would produce an equal or better quality product offered at the same or lower price).

29. *Id.* at 134; Michael J. Meurer, *Vertical Restraints and Intellectual Property Law: Beyond Antitrust*, 87 MINN. L. REV. 1871, 1891 (2003).

30. See *IBM*, 298 U.S. at 136.

31. See Keith K. Wollenberg, Note, *An Economic Analysis of Tie-In Sales: Re-examining the Leverage Theory*, 39 STAN. L. REV. 737, 751 & n.93 (1987); see also Meurer, *supra* note 29, at 1891 (noting that punch card purchases measured frequency of use).

32. See Wollenberg, *supra* note 31, at 751 & n.93 (noting that tying allowed IBM to identify its heaviest users and charge those users a higher price as they valued the machine more).

33. 547 U.S. 28 (2006).

34. See *id.* at 42-46.

35. *Id.* at 42-45.

36. *Id.* at 44.

content more in line with its purported goals of efficiency and the maximization of (consumer or aggregate) welfare.³⁷

In deciding that case, the Court relied in part on the history of the patent misuse doctrine.³⁸ That doctrine originated in the courts, which had incorporated into patent law the public policy that they had found in the Clayton Act's provisions targeting tying arrangements.³⁹ Although the patent misuse doctrine ultimately grew to encompass other attempts to extend patent power beyond its statutory boundaries,⁴⁰ the core of the doctrine was centered on the use of patents as tying products.⁴¹ Applying the misuse doctrine, the courts would refuse to enforce patents during periods in which a patentee was using his patent as a tying product in a tying arrangement.⁴² When the judicial decisions applying the misuse doctrine broadened its scope to undermine the traditional understanding of contributory infringement,⁴³ Congress stepped in to reinforce contributory infringement and limit patent misuse.

In 1952, Congress spelled out what would, and would not, constitute contributory infringement and patent misuse in Section 271 of the Patent Act.⁴⁴ Behavior that would constitute infringement if performed by another without the patentee's consent would not constitute misuse, if performed by the patentee.⁴⁵ In its 1988 amendment, Congress further limited misuse by allowing a patentee to tie staples to its patent, so long as the patentee lacked market power.⁴⁶ In *Independent*

37. See, e.g., *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 889-92 (2007); *Indep. Ink, Inc.*, 547 U.S. at 45; *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 19-21 (1979).

38. *Indep. Ink, Inc.*, 547 U.S. at 38.

39. *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 509-11 (1917) (describing how the Court established the patent misuse doctrine); see also *Indep. Ink, Inc.*, 547 U.S. at 37-38 (noting that the patent misuse doctrine originated in *Motion Picture Patents Co.*).

40. See *Brulotte v. Thys Co.*, 379 U.S. 29, 30-33 (1964) (condemning use of patents to extend royalty payments beyond the patent's term).

41. See *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 490-91 (1942); *Motion Picture Patents Co.*, 243 U.S. at 509, 517.

42. See *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 139 (1969) ("There is nothing in the right granted the patentee to keep others from using, selling, or manufacturing his invention which empowers him to insist on payment not only for use but also for producing products which do not employ his discoveries at all.").

43. See *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 668-69 (1944) ("The result of this decision, together with those which have preceded it, is to limit substantially the doctrine of contributory infringement. What residuum may be left we need not stop to consider.").

44. Patent Act of 1952, Pub. L. No. 593, § 271, 66 Stat. 792, 811 (codified as amended at 35 U.S.C. § 271 (2006 & Supp. IV 2011)).

45. See *id.* § 271(d), 66 Stat. at 811.

46. Patent Act of 1988, Pub. L. No. 100-703, § 201, 102 Stat. 4674, 4676 (codified as amended at 35 U.S.C. § 271(d)(4)-(5)); see also Kenneth J. Burchfiel, *Patent Misuse and Antitrust Reform: "Blessed Be The Tie?"*, HARV. J.L. & TECH., Spring 1991, at 1, 5-8.

Ink, Inc., the Court relied on this provision as showing that, in enacting Section 271, Congress intended to make the presence (or absence) of market power a matter of proof; market power (for purposes of the patent misuse doctrine) could not be presumed from the mere existence of a patent.⁴⁷

Independent Ink, Inc. carries over the congressional approach to market power for purposes of the patent misuse doctrine into antitrust law.⁴⁸ This is an eminently reasonable approach, as the patent misuse doctrine is designed to incorporate antitrust concerns in patent law.⁴⁹ If Congress believes that a patentee is not behaving anti-competitively when it ties a specially made component to a patented product, that determination ought to govern antitrust law as well, since the same policy concerns are involved.⁵⁰ But from the perspective of an ideal relationship between intellectual property law and antitrust law, the premises of Section 271 need to be reconsidered and drastically revised.

Section 271 permits a patent owner to tie to the patented product a component of the patented invention; it also permits a patentee to tie staple articles of commerce to the patented product so long as the patent owner lacks market power in the relevant market.⁵¹ Let's examine these provisions. Section 271(c) is designed to confirm the Supreme Court's decision in *Leeds & Catlin Co. v. Victor Talking Machine Co. (Leeds & Catlin Co. II)*,⁵² and reject its decision in the *Mercoird Corp. v. Mid-Continent Investment Co.*⁵³ and *Mercoird Corp. v. Minneapolis-Honeywell Regulator Co.*⁵⁴ cases (collectively the "*Mercoird cases*"). In *Leeds & Catlin Co. II*, the Court upheld the rights of the patentee of the phonograph to capture the market for phonograph records.⁵⁵ In the *Mercoird cases*, the Court disallowed a patentee of a heating system to capture the market for thermostats especially designed for the patented

47. See *Ill. Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 42-43 (2006).

48. See *id.* at 42.

49. See *id.* at 31.

50. Scholars debate the extent to which the misuse doctrine should be concerned with policy issues beyond antitrust. Compare Bohannon, *supra* note 3, at 486, with Thomas F. Cotter, *Four Questionable Rationales for the Patent Misuse Doctrine*, 12 MINN. J. L. SCI. & TECH. 457, 474-75 (2011). Under the current rulings of the U.S. Court of Appeals for the Federal Circuit, however, the misuse doctrine applies when a patentee leverages its patent to extend its control beyond the powers conferred in its patent grant and when doing so produces an anticompetitive effect. See *Princo Corp. v. Int'l Trade Comm'n*, 616 F.3d 1318, 1328 (Fed. Cir. 2010); *Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1001 (Fed. Cir. 1986). The requirement of an anticompetitive effect ensures that misuse policy is consistent with antitrust policy. See *Princo Corp.*, 616 F.3d at 1351.

51. See 35 U.S.C. § 271.

52. 213 U.S. 325 (1909).

53. 320 U.S. 661 (1944).

54. 320 U.S. 680 (1944).

55. *Leeds & Catlin Co. II*, 213 U.S. at 335, 337.

heating system.⁵⁶ The initial version of Section 271 was also designed to confirm the Court's decision in *Carbice Corp. v. American Patents Development Corp.*,⁵⁷ where the patentee of a refrigeration package was not permitted to tie the sale of dry ice to a license for the refrigeration package.⁵⁸

Let's examine the situations in which these decisions would apply. *Leeds & Catlin Co. II* represents the situation in which the patented machine embraces a particular component and in which the owner of the machine expects to purchase an indefinite number of similar (and almost physically identical) components.⁵⁹ In this situation, there are two markets: a market for the machine (the phonograph) and a market for the components (the records).⁶⁰ In the language of economists, tying here involves variable proportions between the tying and tied products.⁶¹ The *Mercoid* cases represent the situation in which there is only one market.⁶² Purchasers want the heating system and obtain it by purchasing a component (the thermostat) and thereby receive a license to construct the system.⁶³ *Carbice Corp.* represents the case in which the patentee finds it convenient to earn its profit through the sale of staple articles.⁶⁴

In 1952, Congress legislatively provided that a patentee would not be guilty of misuse by selling a component of a patented device.⁶⁵

56. *Mid-Continent Inv. Co.*, 320 U.S. at 662, 667-69; *Minneapolis-Honeywell Regulator Co.*, 320 U.S. at 682, 684.

57. 283 U.S. 27 (1931).

58. *See id.* at 30-31, 33-34.

59. *Leeds & Catlin Co. II*, 213 U.S. at 332.

60. *See id.* at 330-31.

61. *See* Bohannon, *supra* note 3, at 493, 502.

62. *See Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 666-67 (1944); *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 682-83 (1944).

63. *Mid-Continent Inv. Co.*, 320 U.S. at 663-64; *Minneapolis-Honeywell Regulator Co.*, 320 U.S. at 682-83.

64. *See Carbice Corp. v. Am. Patents Dev. Corp.*, 283 U.S. 27, 29-30, 33-34 (1931).

65. *See* Patent Act of 1952, Pub. L. No. 593, § 271, 66 Stat. 792, 811 (codified as amended at 35 U.S.C. § 271 (2006 & Supp. IV 2011)). The relevant provisions of the 1952 legislation are paragraphs (c) and (d) of Section 271:

(c) Whoever sells a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in 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.

(d) No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one 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

Largely ignoring economic distinctions, the legislation incorporated a doctrinal distinction, drawn from prior decisional law, which turned on whether the component was a staple article suitable for other uses or was specially made for the patented invention.⁶⁶ Under the 1952 version of Section 271, the Carbice Corporation's sale of dry ice was not contributory infringement because dry ice is a staple article.⁶⁷ Under the structure of the legislation, the patentee's tie-in sale of that staple was not exempted from misuse.⁶⁸ Under the prevailing misuse doctrine, tying was the major form of misuse. Thus, as of 1952, Congress reaffirmed *Carbice Corp.*

When Congress revisited this provision in 1988, it added subsections 4 and 5 to paragraph (d).⁶⁹ Clause 5 specifically addresses the *Carbice Corp.* situation.⁷⁰ Section 271, as revised in 1988, permits a patentee to tie other products to the patent, so long as the patentee lacks market power in the relevant market.⁷¹ The "ties" permitted under the 1952 version reflected the patent's scope: the records and the thermostat were components of the patented invention—in asserting exclusive rights over the components, the patentee was grounding itself on its exclusive right to "make" the patented invention.⁷² Since these components had no use other than in constructing the invention, any person who used those components to construct the invention without the permission of the patentee was engaged in direct infringement and the person who supplied those parts to the direct infringer was engaged in contributory infringement. The ties permitted under the 1988 amendment broadened the power of patentees to tie staples, extending their power to "tie" beyond specially made components.⁷³

The 1988 revision reflected the growing consensus that ties were not inherently anticompetitive.⁷⁴ That legislation was also roughly

infringement of the patent; (3) sought to enforce his patent rights against infringement or contributory infringement.

Id.

66. See *id.* § 271(c).

67. See *id.*; *Carbice Corp.*, 283 U.S. at 29-30, 34-35; see also Burchfiel, *supra* note 46, at 15, 20-21 (discussing patent misuse regarding ties to staples).

68. See *Carbice Corp.*, 283 U.S. at 33-34; Burchfiel, *supra* note 46, at 20-21.

69. Patent Act of 1988, Pub. L. No. 100-703, § 201, 102 Stat. 4674, 4676 (codified as amended at 35 U.S.C. § 271(d)(4)-(5) (2006)).

70. See *id.* (codified as amended at 35 U.S.C. § 271(d)(5)); *Carbice Corp.*, 283 U.S. at 33-34; Burchfiel, *supra* note 46, at 20-21.

71. Patent Act of 1988 § 201, 102 Stat. at 4676.

72. See Patent Act of 1952, Pub. L. No. 593, § 271, 66 Stat. 792, 811 (codified as amended at 35 U.S.C. § 271 (2006 & Supp. IV 2011)); *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 663-64 (1944); *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 682-83 (1944); *Leeds & Catlin Co. II*, 213 U.S. 325, 330, 335, 337 (1909).

73. Patent Act of 1988 § 201, 102 Stat. at 4676.

74. See Burchfiel, *supra* note 46, at 23-24. The 1988 legislation added subsections (4) and (5)

contemporaneous with the Supreme Court's decision in *Jefferson Parish Hospital District No. 2 v. Hyde*.⁷⁵ In *Jefferson Parish Hospital District No. 2*, the Court significantly relaxed the antitrust treatment of tying arrangements.⁷⁶ There, the Court strengthened the market power requirement for per se condemnation of ties⁷⁷ and a four Justice concurrence proposed abolishing the per se rule entirely.⁷⁸ Under the 1988 version of Section 271, the only ties that could be treated as misuse were those of staples imposed by a patentee that possessed market power.⁷⁹ Market power thus was the critical element for both patent misuse and per se antitrust treatment.

2. A Tentative Economic Evaluation of Section 271

a. The Economics of Section 271

Section 271's disapproval of the *Mercoïd* cases carried a number of economic consequences. First, it meant that Congress decided to allow a patentee freedom in collecting revenue from its patent in circumstances that are described by the single-monopoly-profit theorem.⁸⁰ That

to paragraph (d) which provided:

(d) No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one 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; (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 relevant market for the patent or patented product on which the license or sale is conditioned.

Patent Act of 1988 § 201, 102 Stat. at 4676 (codified as amended at 35 U.S.C. § 271(d)).

75. 466 U.S. 2 (1984).

76. *Id.* at 16-18, 29, 31-32; see Burchfiel, *supra* note 46, at 50-51.

77. See *Jefferson Parish Hospital District No. 2*, 466 U.S. at 15-18.

78. *Id.* at 32, 35 (O'Connor, J., concurring).

79. Patent Act of 1988, 35 U.S.C. § 271 (1988) (current version at 35 U.S.C. § 271); see Burchfiel, *supra* note 46, at 5-10.

80. See David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. CHI. L. REV. 73, 77-78 (2005). As Evans and Padilla have explained:

Economic theory shows that, under some assumptions, in a vertical chain of production, there is fixed potential for monopoly profit. A firm with a monopoly at one level of the chain gets all of the monopoly profit if it charges a monopoly price and everyone else in the chain charges a competitive price. Indeed, it serves the monopolist to encourage competition at every other level because any monopoly profit earned by others will reduce its own. Variants of the single-monopoly-profit theorem have been

theorem applied to the transactions in the *Mercoid* cases as the tie involved a fixed one-on-one ratio between the patent license and the thermostat. Second, Section 271's approval of *Leeds & Catlin Co. II* meant that Congress also decided to allow a patentee to engage in some variable-proportion ties when they involved specially made components.⁸¹ Thus in *Leeds & Catlin Co. II*, users of the patented phonograph were required to obtain their records from the patentee.⁸² Section 271 accordingly authorized the use of specially made components such as metering devices when practicable, thus enabling a patentee to discriminate between high- and low-intensity users.⁸³ The congressional approval in 1952 and its subsequent disapproval in 1988 of *Carbice Corp.* means that Congress, after first objecting to the practice, now has recognized the legitimacy of a patentee without market power engaging in price discrimination between high- and low-intensity users involving staples.⁸⁴ This is not surprising, since sellers of unpatented goods lacking market power can similarly use ties to discriminate in this way.⁸⁵ Indeed, the marketplace offers many examples of manufacturers that sell their goods at low prices and earn their profits from the sale of staples, albeit staples that are specially crafted to physically interconnect with the primary good.⁸⁶ (Manufacturers of computer printers, for example, commonly construct them so that users will have to obtain replacement ink cartridges from the manufacturer, who earns additional profit from a mark-up of the cartridges. The arrangement thus works as a rough metering device, charging intensive users more than occasional users.)⁸⁷

applied to tying, essential facilities, and, more broadly, to the analysis of vertical integration.

Id. at 77 (footnote omitted).

81. See *Leeds & Catlin Co. II*, 213 U.S. 325, 332-33, 335, 337 (1909) (describing the various elements and combinations between patented and unpatented elements); see also Burchfiel, *supra* note 46, at 69-73 (distinguishing between variable proportion ties that "merely maximize profit" and those that "unlawfully extend monopoly power").

82. *Leeds & Catlin Co. II*, 213 U.S. at 330-33.

83. See Patent Act, 35 U.S.C. § 271(c) (2006); Meurer, *supra* note 29, at 1889 (noting that sellers discriminate prices based upon buyers' frequency of using a certain product); Wollenberg, *supra* note 31, at 743, 750-51 ("By selling the monopolized good only in combination with another good that meters how intensely the consumer uses the monopolized good, the monopolist effectively price discriminates." (footnote omitted)).

84. Compare Patent Act of 1952, Pub. L. No. 593, § 271, 66 Stat. 792, 811 (excluding subsections (4) and (5) of paragraph (d)), with Patent Act of 1988, Pub. L. No. 100-703, § 201, 102 Stat. 4674, 4676 (current version at 35 U.S.C. § 271(d)(4)-(5)) (establishing subsections (4) and (5)). See *Carbice Corp. v. Am. Patents Dev. Corp.*, 283 U.S. 27, 31-33 (1931); Bohannon, *supra* note 3, at 492-94, 494 n.77.

85. See Bohannon, *supra* note 3, at 501-02, 504-05; Wollenberg, *supra* note 31, at 744, 753.

86. See Bohannon, *supra* note 3, at 501-04; Wollenberg, *supra* note 31, at 747-48, 747 n.81.

87. See Bohannon, *supra* note 3, at 502; Einer Elhauge, *Tying, Bundled Discounts, and the*

What requires explanation, however, is why patentees with market power are treated as misusing their patents when they institute ties involving staple articles. Ties here could be used as metering devices, much as IBM tied punch cards to its computers.⁸⁸ As many commentators have pointed out, when IBM tied the cards to its machines, it probably was attempting to replicate (as far as possible) the behavior of a “perfectly discriminating monopolist.”⁸⁹ It would therefore capture increased consumer surplus, but it would also increase its computer output to a level approximating the intersection of its marginal cost curve with demand: a perfectly discriminating monopolist produces the competitive output and generates no deadweight loss.⁹⁰

Of course, the misuse rules governing patentees with market power are the same as the per se rules governing ties in general.⁹¹ Any supplier with market power that employs tying arrangements runs afoul of the per se rule.⁹² In *Jefferson Parish Hospital District No. 2*, Justice Sandra Day O'Connor argued in her concurrence that the time had come to abolish the per se rule.⁹³ This Article contends that although Justice O'Connor's arguments are persuasive, there is more reason to allow a patentee with market power to engage in tying than non-patentees because the policy behind patent law is focused on encouraging innovation. The availability of tying as a marketing mechanism carries the potential for increasing the patentee's economic rewards, as well as creating the potential for reducing the resource misallocation that is an accepted part of the patent system's way of fostering invention.

Death of the Single Monopoly Profit Theory, 123 HARV. L. REV. 397, 432-33 (2009).

88. See *IBM v. United States*, 298 U.S. 131, 134, 136 (1936); Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55, 121-22 (2001).

89. See Meurer, *supra* note 88, at 121-22; *Sedona Conference Commentary*, *supra* note 1, at 80.

90. Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697, 702-03, 703 n.19 (1975); Daniel J. Gifford, *The Antitrust/Intellectual Property Interface: An Emerging Solution to An Intractable Problem*, 31 HOFSTRA L. REV. 363, 382-83 (2002) (discussing how monopolists capture all of the consumer surplus as a result of perfect price discrimination); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1833 n.50 (1984) (describing how perfect price discrimination generates no deadweight loss); Mark Klock, *Unconscionability and Price Discrimination*, 69 TENN. L. REV. 317, 327-28 (2002) (noting that under perfect price discrimination, the marginal revenue curve equals the demand curve); Meurer, *supra* note 88, at 90-91, 98-99.

91. See Bohannon, *supra* note 3, at 487 & n.47; Cotter, *supra* note 50, at 460-62, 461 n.17.

92. See *Sedona Conference Commentary*, *supra* note 1, at 79-80.

93. *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 35 (1984) (O'Connor, J., concurring) (“The time has therefore 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.”).

b. The Case of the Perfectly Discriminating Monopolist

Section 271 allows patentees to tie specially made components to a patented invention.⁹⁴ Where the components are used in variable proportions with the invention, a tie of the components carries the potential for the type of price discrimination that resembles those employed by IBM: selling to each buyer at his reservation price and thus replicating the behavior of a perfectly discriminating monopolist.⁹⁵ Perfect price discrimination, in this circumstance, enables the patentee to capture the entire value of the invention and eliminates the deadweight loss.⁹⁶ Of course, perfect price discrimination is a theoretical ideal that can only be approximated in the real world. IBM approximated that ideal—it did not achieve it. But it was able to allow the inventor to capture most (rather than all) of the value of its invention while producing computers at an output level that approximated the competitive one.⁹⁷

In the *IBM* case, IBM was not allowed to tie the computer cards to the lease of its machines.⁹⁸ The result was that output moved from a competitive level to the single-price monopoly level, with a concomitant loss of allocative efficiency marked by a large deadweight loss.⁹⁹ Thus, IBM changed from replicating the behavior of a perfectly discriminating monopolist to replicating the behavior of a single-price monopolist.¹⁰⁰

94. See Patent Act, 35 U.S.C. § 271 (2006 & Supp. IV 2011).

95. See *IBM v. United States*, 298 U.S. 131, 134-36 (1936); Daniel J. Gifford, *Antitrust's Troubled Relations with Intellectual Property*, 87 MINN. L. REV. 1695, 1703-04 (2003); *Sedona Conference Commentary*, *supra* note 1, at 80.

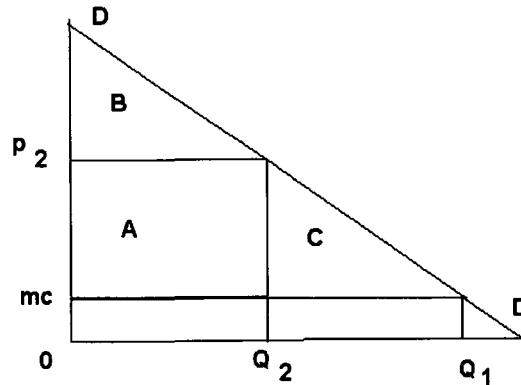
96. Kaplow, *supra* note 90, at 1833 n.50 (“If perfect price discrimination were possible, there would be no deadweight loss from the patent system . . .”); Klock, *supra* note 90, at 327-28.

97. See *IBM*, 298 U.S. at 135-36, 139; Gifford, *supra* note 95, at 1703-04; Meurer, *supra* note 88, at 122.

98. See *IBM*, 298 U.S. at 139-40. The government and the Court thought that the arrangement violated Section 3 of the Clayton Act as tending to create a monopoly. *Id.* at 132, 134-35, 140. It is not clear where the monopoly would be—IBM already had a monopoly on electronic computers. *Id.* at 133, 136. The tying arrangement did not reduce competition from the mechanical computers produced by Remington Rand, Inc. *Id.* at 136. Perhaps the government and the Court thought that IBM was trying to obtain a monopoly in the tabulating cards themselves.

99. Gifford, *supra* note 95, at 1703-04; *infra* fig.2 and accompanying text.

100. Gifford, *supra* note 95, at 1703-04; *infra* fig.2 and accompanying text.

Figure 2: IBM's Pricing

IBM had originally attempted to set the price for each user at that user's reservation price. Its objective was to capture as profits the area composed of A, B, and C. Under its original approach, its computer output would extend to Q_1 . It was forced by the Court to set a single price for its product. In that case, its output would fall to Q_2 and it would charge a single price, identified here as P_2 . Its profits would be confined to the area A. Area B would then represent consumer surplus. Area C represents a social loss: buyers who were willing to pay more than the costs of providing the machines would be unable to acquire them. The Court's ruling resulted in bestowing consumer surplus on customers paying the monopoly price, but at the cost to society of the waste represented by area C. Restated, the Court's decree produced a distributional transfer of benefits from the producer to consumers, but at the cost of social waste.

The lesson that should be drawn from the IBM experience is that tying (in variable proportions) can facilitate a patentee using price discrimination to eliminate the deadweight loss that is associated with the way the patent system fosters invention. Of course, this route will also eliminate the consumer surplus that would be generated by a patentee following the single-price monopolist pattern, but on balance and as explained in more detail below, this use of price discrimination seems most consonant with the combined objectives of the antitrust and patent laws.

As Section 271 is written, it allows a patentee to tie specially made components and thus try to replicate the behavior of a perfectly discriminating monopolist, but it does not allow a patentee with market

power to tie staple articles.¹⁰¹ When IBM tied computer cards to its computers, the issue arose as to whether the cards were part of the patented device.¹⁰² The Court decided this issue against IBM, ruling that the cards were constituent parts of the device only in their punched version.¹⁰³ The Court therefore ruled that the un-punched cards were not covered by the patent¹⁰⁴—in today’s discourse this would be tantamount to ruling that the un-punched cards were staple articles. But how would that issue be resolved under today’s version of Section 271? Although the cards were useful in IBM’s electronic computer, they were probably also useful in Remington Rand Inc.’s contemporary mechanical computer as well.¹⁰⁵ Or if the shape of the cards used by the two machines differed, a court might consider those differences insubstantial. If so, then the cards would be staples and Section 271 would bar IBM from tying cards to its computer.¹⁰⁶

In another more recent case, the Rohm and Haas Company (“Rohm & Haas”) was allowed to tie the sale of the chemical propanil to the use of its patented herbicide process.¹⁰⁷ Rohm & Haas’s practice fit under Section 271 because propanil was not a staple article, as it had no known uses other than in conjunction with the patented process.¹⁰⁸ Suppose, however, that another use was discovered for propanil. Then propanil would become a staple. In such a case the ability of Rohm & Haas to impose its tie would depend on whether it possessed market power.¹⁰⁹

Ideally, Section 271 should be written to allow tying by all patentees, with no exception for patentees with market power. Such a rewriting would reconceptualize Section 271, substituting a modern economic approach for the doctrinal concepts in which it was originally written. Section 271 distinguishes between products that are staples and those that are patent components—a distinction drawn from patent doctrine and traditional analyses of contributory infringement.¹¹⁰ The proposed revision of that section would draw from economic analyses of tying arrangements and of price discrimination. The original version of Section 271 was intended both to confirm traditional contributory

101. Patent Act, 35 U.S.C. § 271 (2006 & Supp. IV 2011); see Burchfiel, *supra* note 46, at 5.

102. *IBM*, 298 U.S. at 136.

103. *See id.*

104. *Id.*

105. *See id.* at 133.

106. *See* 35 U.S.C. § 271; *IBM*, 298 U.S. at 133-34; Gifford, *supra* note 90, at 386.

107. *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 179, 182-84, 223 (1980).

108. *Id.* at 184, 199.

109. *See id.* at 201-02 (noting that Rohm & Haas’s behavior was protected in this instance).

110. *See* Patent Act of 1952, Pub. L. No. 593, § 271(c)–(d), 66 Stat. 792, 811 (codified as amended at 35 U.S.C. § 271); Mark Bartholomew & Patrick F. McArdle, *Causing Infringement*, 64 VAND. L. REV. 675, 688 (2011).

infringement doctrine and to bring patent misuse doctrine into line with prevailing antitrust approaches to tying.¹¹¹ Its later amendment was intended to continue the correspondence between patent misuse and antitrust approaches to tying—the amendment being necessary because of changes in antitrust that had taken place in the years between the Patent Act’s enactment in 1952 and the amendment in 1988.¹¹² The proposal would replace the doctrinal underpinnings of that provision with economic ones.

III. DYNAMIC COMPETITION: ANTITRUST AND INTELLECTUAL PROPERTY

For most of the past decade and a half, antitrust scholars have engaged in a vigorous debate about the proper role of antitrust and intellectual property in knowledge-based industries that exhibit network effects.¹¹³ Microsoft Corporation (“Microsoft”) is the paradigm example. The pharmaceutical industry provides an enlightening counterpoint.

Shortly before the U.S. Court of Appeals for the D.C. Circuit issued its decision in *United States v. Microsoft Corp. (Microsoft Corp. II)*,¹¹⁴ David Evans and Richard Schmalensee wrote a paper arguing that for a set of (knowledge-based) industries (identifiable by a convergence of certain characteristics) the then-prevailing antitrust rules operated perversely to impede innovation.¹¹⁵ According to Evans and Schmalensee, the relevant industries displayed many or most of the following characteristics (although none were essential): their products are protected by intellectual property; they incur high fixed costs and low marginal costs; they employ labor intensively while making less intensive use of capital; they generate network effects; they are involved in competition to create or replace an existing product through drastic

111. See Giles S. Rich, *Infringement Under Section 271 of the Patent Act of 1952*, 21 GEO. WASH. L. REV. 521, 525, 535, 543-44 (1953).

112. Compare Patent Act of 1952 § 271, 66 Stat. at 811, with Patent Act of 1988, Pub. L. No. 100-703, § 201, 102 Stat. 4674, 4676 (codified as amended at 35 U.S.C. § 271). See also Gifford, *supra* note 90, at 385-87 (discussing the 1988 amendment to the Patent Act and how “the approach of section 271 to misuse is largely consistent with section three’s approach to antitrust evaluation”).

113. See, e.g., Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 BERKELEY TECH. L.J. 535, 538-39, 542-43, 543 n.17 (2001).

114. *United States v. Microsoft Corp. (Microsoft Corp. II)*, 253 F.3d 34 (D.C. Cir. 2001).

115. See generally David S. Evans & Richard Schmalensee, *Some Economic Aspects of Antitrust Analysis in Dynamically Competitive Industries*, in 2 INNOVATION POLICY AND THE ECONOMY 1 (Adam B. Jaffe et al. eds., 2002) (discussing the economics of antitrust in a variety of industries that are experiencing a significant change in technology). The Author of this Article has discussed the Evans and Schmalensee article in a comparative law context. See generally Daniel J. Gifford & Robert T. Kudrle, *Antitrust Approaches to Dynamically Competitive Industries in the United States and the European Union*, 7 J. COMPETITION L. & ECON. 695 (2011) (referring to the innovation in technological industries discussed in the Evans and Schmalensee article).

innovation (this often involves “winner-take-all races”); and industry leaders reap substantial amounts (viewed ex post) of supra-competitive profits.¹¹⁶

Underlying their contentions was the idea that knowledge-based industries follow a developmental pattern that resembles the path taken by the pharmaceutical industry: pharmaceutical products are protected by intellectual property (patents); pharmaceutical companies expend substantial sums on initial product development; and compared to the sums spent on research and development, pharmaceutical companies’ marginal costs on production are low (and benefit from scale economies and learning curves).¹¹⁷ Successful pharmaceutical products command prices exceeding marginal costs.¹¹⁸ These companies often produce products that dominate their markets and sometimes these companies compete with rivals for dominance in the market in which their drug is sold.¹¹⁹

Although Evans and Schmalensee seem to have been inspired by the pharmaceutical industry’s development path, their paper sets forth a model for knowledge-based industries that extends the pharmaceutical model beyond that industry to embrace firms like Microsoft that market computer operating systems and office software.¹²⁰ In the process of this expansion, Evans and Schmalensee added network effects to the package of characteristics identifying the knowledge-based industries that they contended were being stymied by existing antitrust laws.¹²¹ With this additional characteristic, their model fits Microsoft like a glove.

116. Evans & Schmalensee, *supra* note 115, at 5, 8-13; Gifford & Kudrle, *supra* note 115, at 699.

117. See Evans & Schmalensee, *supra* note 115, at 8 (noting that the pharmaceutical industry spends relatively lower amounts on material expenses); Gifford & Kudrle, *supra* note 115, at 700-01 (discussing how industry giants primarily handle research and development and have the resources to put the products on the market, as well as how the pharmaceutical industry exists in an environment where patent law protects innovators).

118. See Evans & Schmalensee, *supra* note 115, at 6-7 tbl.1.2, 8, 14 (noting the expenses and revenues of pharmaceuticals as a new-economy industry and discussing the general principle of high rates of return when prices are higher than marginal cost).

119. See *id.* at 17.

120. See *id.* at 5, 9, 11; Gifford & Kudrle, *supra* note 115, at 708. Microsoft’s Windows operating system, and most of the products of Microsoft Office generate network effects. See Evans & Schmalensee, *supra* note 115, at 9; Gifford & Kudrle, *supra* note 115, at 708. Network effects add value to the product as the user base increases. Evans & Schmalensee, *supra* note 115, at 9, 11. Once these products had attained a large volume, network effects ensured that their volume would continually increase. See *id.* at 11. Network effects thus explain why Microsoft’s operating system and Microsoft Office products dominate their respective fields. See *id.* at 9, 19 tbl.1.3 (graphing Microsoft’s ninety-four percent market share worldwide in personal computer operating systems).

121. See Evans & Schmalensee, *supra* note 115, at 2, 9 (describing network effects and stating that unless small firms come up with a way to “defeat the natural advantage that network effects bestow on the industry leaders,” they have little hope of overtaking those leaders).

The critical difference between Microsoft and the firms of the pharmaceutical industry lies in the availability of patent protection to the latter. Because the development path of the pharmaceutical firms proceeds under the umbrella of patent protection, they are able to expend substantial sums on research and development because they know that successful product development can generate supra-competitive returns which will cover these costs.¹²² And the exclusive rights provided by the patent system ensure that these supra-competitive revenues will not be eroded away by competition from copycat rivals.¹²³ A company like Microsoft, by contrast, incurs similar upfront research and development costs but lacks the protection that the patent law provides the pharmaceutical companies.¹²⁴

Microsoft, despite its lack of patent protection, follows a similar development path as pharmaceutical companies. It is able to do so because its revenues are also protected from imitators, but through a mechanism different from patent law.¹²⁵ Of course, copyright protects Microsoft's software products from identical copying by rivals but does not bar rivals from copying the ideas embodied in those products as patent law would.¹²⁶ Indeed, copyright is a form of intellectual property designed for competition among differentiated products and it assumes that any copyright-protected product will be subject to competition from other similar (but not identical) products.¹²⁷ But the "combination of copyright, trade secret law, and network effects" creates the protection that Microsoft needs.¹²⁸

The software products produced and marketed by Microsoft (operating systems and office products) generate network effects, that is, their value to users increases as others also use the products.¹²⁹ Once Microsoft attained a significant sales lead in such a product, network effects helped ensure that its lead over its rivals would grow.¹³⁰ And the two types of normally weak intellectual property protection provided by copyright and trade secret law ensure that the network effects generated

122. See, e.g., *id.* at 5, 6-7 tbl.1.2 (listing "the leading industrial firms whose expenditures on [research and development] accounted for more than 10% of their sales in 1997," of which pharmaceutical firms accounted for three of the top four). "Firms in new-economy industries tend to have high fixed costs and low marginal production costs. They often must invest a great deal to develop their products . . . because they must make substantial investments in [research and development]" *Id.* at 5.

123. See Gifford, *supra* note 6, at 81-82, 87.

124. See Gifford & Kudrle, *supra* note 115, at 701-02.

125. *Id.* at 707-09.

126. *Id.* at 707-08.

127. See *id.* at 707.

128. *Id.* at 707-08.

129. *Id.* at 708; see Evans & Schmalensee, *supra* note 115, at 9.

130. Evans & Schmalensee, *supra* note 115, at 6 tbl.1.2, 9, 12.

by its software products remain with those products.¹³¹ Given network effects, in order to overcome Microsoft's lead and compete on an even level, rival products would have to compete in the same network.¹³² To compete in the same network, rival products would need to use the same application program interfaces ("APIs") as the Microsoft products.¹³³ These APIs are not legally protected by copyright, but because copyright protects the Microsoft products from simple copying (which would copy the APIs as well as all the other aspects of the Microsoft programs), and because Microsoft carefully guards the APIs as trade secrets, rivals who want to compete in the same network are compelled to obtain the APIs by reverse engineering.¹³⁴ This is a burdensome task and one that IBM found too costly when it was attempting to compete with Windows in the 1990s.¹³⁵ Thus network effects—combined with the intellectual property protection supplied by copyright and trade secret law—are playing the role that patent protection plays for pharmaceuticals: they protect the product from competition by imitators. This combination is in effect a new and strong form of intellectual property protection. In so protecting Microsoft's products, it enables that company to generate the supra-competitive revenues that are necessary, *inter alia*, to cover its research and development costs.¹³⁶

Evans and Schmalensee appreciate the role of network effects in facilitating a company like Microsoft to develop new knowledge-based products (involving high upfront costs and supra-competitive revenues) without patent protection.¹³⁷ Their article argues that antitrust rules should bend in cases like Microsoft in order to facilitate the development of new technology where patent protection is unavailable.¹³⁸

The principal antitrust rules that Evans and Schmalensee saw as in need of modification for knowledge-based industries were those

131. Gifford & Kudrle, *supra* note 115, at 707-09; *see* Evans & Schmalensee, *supra* note 115, at 9, 13 (discussing how new-economy industries have few large firms with the bulk of sales as a result of network effects).

132. *See* Evans & Schmalensee, *supra* note 115, at 9-10 (noting that in order to overcome Microsoft's lead, rival products would have to be a major innovation in that same network).

133. Gifford & Kudrle, *supra* note 115, at 708; *see also* *Microsoft Corp. II*, 253 F.3d 34, 53 (D.C. Cir. 2001) (providing additional background on how software developers might use APIs to write their own applications).

134. *See* *United States v. Microsoft Corp. (Microsoft Corp. I)*, 84 F. Supp. 2d 9, 22, 24 (D.D.C. 1999) (detailing IBM's "attempt to reverse-engineer, or 'clone,' part of the Windows API set"); Gifford & Kudrle, *supra* note 115, at 708 (noting that due to "the costly prospect of reverse engineering" IBM abandoned the field to Microsoft).

135. *See* *Microsoft Corp. I*, 84 F. Supp. 2d at 22, 24; Gifford & Kudrle, *supra* note 115, at 708.

136. *See* Evans & Schmalensee, *supra* note 115, at 12-13.

137. *See id.* at 9-13 (discussing in greater detail network effects, competitive innovation, and the process of achieving profits in high-risk technology industries).

138. *See id.* at 2, 13-14, 22, 33 (discussing the challenges posed by current antitrust rules).

governing tying arrangements and predatory pricing.¹³⁹ Evans and Schmalensee viewed tying as a concern because they saw software development in the computer industry largely taking the path of one kind of program incorporating functions already being performed by another program.¹⁴⁰ This would be especially likely for operating systems. This developmental path would increase the efficiencies of the operating system, as the users would have a growing range of functions at their fingertips, but that path could be described in antitrust language as involving a series of technological ties. Under the law as it was at the time Evans and Schmalensee wrote their article, technological ties imposed by a firm with market power would be per se illegal.¹⁴¹ The ruling by the D.C. Circuit in the *Microsoft Corp. II* antitrust case to create an exception to the otherwise applicable per se rule for platform software has largely solved this problem.¹⁴² Evans and Schmalensee were also concerned that the antitrust rules governing predatory pricing would impede the development of firms like Microsoft.¹⁴³ They feared that the courts would take the offering of applications or middleware without charge as sales below cost for purpose of predatory pricing analysis.¹⁴⁴ This fear has turned out to be unfounded, as the courts rejected that contention in the *Microsoft Corp. II* antitrust case.¹⁴⁵

Although antitrust developments can be seen as accommodating Microsoft's development path, the larger issue raised by Evans and Schmalensee is whether knowledge-based industries in general contribute so much to technical advancement that in other cases the antitrust, intellectual property, or other laws should bend to their needs. Because the innovation model used by Evans and Schmalensee was based on the pharmaceutical industry, it incorporated the patent system and its requirements, such as non-obviousness.¹⁴⁶ In extending their patent-like innovation model to Microsoft, they embraced a different kind of innovation—innovation that could not meet the patent system's non-obviousness requirement.¹⁴⁷ This extension, however, worked in that particular case because Microsoft was the beneficiary of strong

139. See generally *id.* (describing the need for modification with regards to predation and tying law).

140. See *id.* at 30-31.

141. *Id.* at 15.

142. *Microsoft Corp. II*, 253 F.3d 34, 84-85, 89-95 (D.C. Cir. 2001).

143. See Evans & Schmalensee, *supra* note 115, at 21-22.

144. See *id.* at 26-28.

145. See *Microsoft Corp. II*, 253 F.3d at 68.

146. See Patent Act, 35 U.S.C. § 103(a) (2006); see also Evans & Schmalensee, *supra* note 115, at 3, 5, 8, 10.

147. See Gifford & Kudrle, *supra* note 115, at 709.

network effects.¹⁴⁸ Further extension of their innovation model may not be warranted. Knowledge-based industries that are neither protected by patent law nor receive the benefit of network effects are unable to follow the development path of the pharmaceutical industry: they cannot cover their development costs by generating supra-competitive profits.¹⁴⁹ This result seems consistent with the economic policies that Congress has built into the patent law—only a technological advance that is beyond the capabilities of ordinary professionals in the field warrant the exclusive rights accorded by the patent law.¹⁵⁰

IV. THE WILLIAMSON TRADEOFF

A. *The Antitrust Controversy*

In a landmark article in 1968, Oliver Williamson proposed that evaluating mergers from an antitrust perspective would allow the government and the courts to take into account not only the increased market power produced by the merger, but any efficiencies generated by the merger as well.¹⁵¹ Increased market power would produce a restraint on output, which would be reflected in a misallocation of resources (earlier referred to in this Article as a deadweight loss).¹⁵² Williamson proposed that, as a matter of antitrust analysis, this deadweight loss be deemed to be offset by the merger-generated efficiencies.¹⁵³ The result would show the impact of the merger on aggregate social welfare.¹⁵⁴

Ten years later Robert Bork wrote *The Antitrust Paradox: A Policy at War with Itself*, one of the books widely recognized as symbolizing the so-called “antitrust revolution.”¹⁵⁵ During the late 1970s, the antitrust literature was the setting for a vigorous debate on the role of efficiency in the administration and interpretation of the antitrust laws.¹⁵⁶ In his book, Robert Bork argued forcefully on behalf of the position that

148. See *id.* at 710; Evans & Schmalensee, *supra* note 115, at 9.

149. See Gifford & Kudrle, *supra* note 115, at 701-02, 706-07.

150. See 35 U.S.C. § 103(a); Gifford & Kudrle, *supra* note 115, at 701, 709.

151. See generally Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18, 18-19, 23-24, 26, 29, 33-34 (1968) [hereinafter *The Welfare Tradeoffs*]. See also Oliver E. Williamson, *Allocative Efficiency and the Limits of Antitrust*, 59 AM. ECON. REV. 105, 105-07, 110 (1969) (discussing the approaches to allocative efficiency, including the balance between market power and economic efficiencies); Oliver E. Williamson, *Economies as an Antitrust Defense Revisited*, 125 U. PA. L. REV. 699, 701, 703-05 (1977) (raising Williamson's previous discussion on the balance of efficiency and economy, and the operationality of this model).

152. See *The Welfare Tradeoffs*, *supra* note 151, at 21-22, 21 fig. 1.

153. See *id.* at 22 n.4.

154. See *id.* at 22-23.

155. See generally BORK, *supra* note 2.

156. See *id.* at 70.

antitrust should be grounded solely on the furtherance of efficiency.¹⁵⁷ He argued that recognition of efficiency as the single goal of the antitrust laws would provide them with needed coherence, increased predictability for the business community, and would supply decisional standards for judges applying them, constraining their discretion.¹⁵⁸

Unfortunately, however, Bork cast the argument of his book in language that was inappropriate to his analysis and its goals. He defined efficiency and aggregate welfare as the furtherance of “consumer welfare,” justifying this usage on the ground that everyone (including a producer) is a consumer.¹⁵⁹ Thus in Bork’s usage, the furtherance of consumer welfare means the furtherance of aggregate welfare.¹⁶⁰ But his phrasing was prone to misunderstanding.¹⁶¹

In the usage of economists, “efficiency” connotes the deployment of resources in a way that furthers aggregate welfare.¹⁶² Economists do not generally use the phrase “consumer welfare”; in their usage, welfare normally means the total welfare of society without taking account of distributional effects.¹⁶³ In performing microeconomic analysis, however, economists do distinguish between consumer surplus, producer surplus, and total surplus.¹⁶⁴ Consumer surplus is the difference between buyers’ reservation prices and market price (that is, the difference between the value of a purchased product to the buyer and the generally lower price that the buyer pays).¹⁶⁵ Producer surplus is the seller’s profit.¹⁶⁶ And total surplus is the combination of consumer and producer surplus.¹⁶⁷ The total surplus is the amount that the transaction contributes to the furtherance of the general or aggregate welfare of society.¹⁶⁸

It is an easy step from assessing how a given transaction furthers consumer surplus to equating the transaction’s effect on consumer surplus with its contribution towards consumer welfare. This is a concept

157. *See id.* at 28.

158. *Id.* at 69-72.

159. *See id.* at 109-10. Bork makes it clear that “consumer welfare” in his usage is equivalent to aggregate welfare where he states that the owners of a newly created monopoly “are also consumers” so that the higher prices buyers pay for the product merely causes “a shift in income between two classes of consumers.” *Id.* at 110.

160. *See id.*; Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The True Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336, 347 & n.28 (2010).

161. *See id.*

162. *See BORK, supra* note 2, at 7-8, 107-11.

163. *See* Ariel Ezrachi, *Buying Alliances and Input Price Fixing: In Search of a European Enforcement Standard*, 8 J. COMPETITION L. & ECON. 47, 63 n.81 (2012).

164. *See* PINDYCK & RUBINFELD, *supra* note 22, at 288-89, 289 fig.9.1.

165. *Id.* at 123, 288.

166. *See id.* at 289 & fig.9.1.

167. *See id.* at 288-89, 289 fig.9.1.

168. *See id.* at 289, 294.

that, as noted, plays no role in standard economic analysis but that was popularized by Bork. Such a step would be based on the analogy of the contribution of a transaction's total surplus to aggregate welfare. Bork's choice of language is prone to this misinterpretation. Shortly after the appearance of Bork's *The Antitrust Paradox: A Policy at War with Itself*, Chief Justice Warren E. Burger, writing for the Court in *Reitner v. Sonotone Corp.*,¹⁶⁹ embraced Bork's language, referring to the antitrust laws as a "consumer welfare prescription," referencing that book's discussion of the phrase.¹⁷⁰ Thus, Chief Justice Burger both adopted Bork's language and Bork's understanding of consumer welfare as equivalent to aggregate welfare.¹⁷¹ Almost all of the subsequent judicial equations of consumer welfare with the purpose of the antitrust laws are traceable, directly or indirectly, to Chief Justice Burger's *Sonotone Corp.* opinion.¹⁷² Thus, the ambiguity of Bork's language affected judicial discourse.

Within five years of the publication of Bork's *The Antitrust Paradox: A Policy at War with Itself*, Robert Lande, challenging its contention that the antitrust laws should be grounded on efficiency, argued that the primary purpose of the antitrust laws should be the prevention of wealth transfers from consumers to producers.¹⁷³ Lande's proposal was to use the antitrust laws to prohibit any reduction of consumer surplus.¹⁷⁴ This would make any transaction resulting in a price increase an antitrust violation.¹⁷⁵ Under Lande's proposal, there would be no room for the Williamson tradeoff.¹⁷⁶

169. 442 U.S. 330 (1979).

170. *Id.* at 343 (internal quotation marks omitted).

171. *See id.*

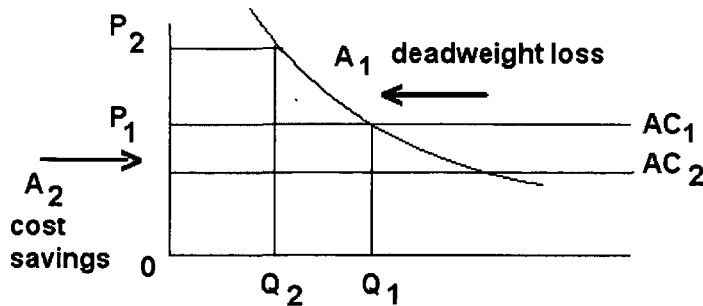
172. *E.g.*, *Nat'l Collegiate Athletic Ass'n v. Bd. of Regents*, 468 U.S. 85, 107 (1984); *Arizona v. Maricopa Cnty. Med. Soc'y*, 457 U.S. 332, 367 (1982) (Powell, J., dissenting). *See* Gifford, *supra* note 95, at 1700-01.

173. *See generally* Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 *HASTINGS L.J.* 65 (1982).

174. *See id.* at 76, 142, 144-45, 145 nn.296-97.

175. *See id.* at 146 & nn.300-01.

176. *See id.* at 75-76, 146-47; *see infra* fig.3.

Figure 3: The Tradeoff As Presented by Both Williamson and Bork

Williamson and Bork contend that the overall impact of a transaction from an antitrust perspective is the combination of the two shaded areas: the area A1 (deadweight loss) reduces social welfare, while the area A2 (cost savings) increases social welfare. If the cost savings exceed the deadweight loss, then the transaction increases social welfare.

Lande, of course, understood that Bork had used the consumer welfare phrase as equivalent to aggregate welfare. Indeed, the very title of his 1982 article reveals the conflict between his proposal and the efficiency concept that underlied the antitrust revolution of the preceding decade.¹⁷⁷ Nonetheless, Lande's proposal to safeguard consumer surplus was easily translatable into the language of maximizing consumer welfare. Now that the courts had accepted the antitrust laws as a consumer welfare prescription, the likelihood increased that consumer welfare as used by Bork and Chief Justice Burger would be confused with Lande's proposal of safeguarding consumer surplus. That confusion ensued and by the turn of the new century, many courts began to equate the purposes of the antitrust laws as both the fostering of efficiency and the maximizing of consumer welfare, but were attributing the Landean (non-Borkian) meaning to the latter term.¹⁷⁸ This became evident through the growing judicial insistence that merger-generated efficiencies be "passed on" to consumers and the judiciary's disinclination to consider offsetting efficiencies in evaluating mergers generating increased levels of concentration.¹⁷⁹ The Landean interpretation of consumer welfare appears to have been accepted by the

177. See *id.* at 65.

178. Daniel J. Gifford & Robert T. Kudrle, *Rhetoric and Reality in the Merger Standards of the United States, Canada, and the European Union*, 72 ANTITRUST L.J. 423, 432-33, 446-48 (2004).

179. See *id.* at 447-48.

U.S. Department of Justice (“DOJ”) and the Federal Trade Commission (“FTC”) (collectively the “Enforcement Agencies”) which have incorporated it into their Merger Guidelines (the “Guidelines”).¹⁸⁰

This controversy over the role of efficiency in the application of the antitrust laws and the role (and interpretation) of consumer welfare raise fundamental questions about how far should society’s interest in minimizing the cost of the goods and services it produces give way to distributional concerns. Does it matter if aggregate welfare is furthered at the expense of consumer welfare (in the Landean sense)? Can the courts continue to maintain that the antitrust laws are grounded in the pursuit of efficiency while they subordinate efficiency to the quite different goal of maximizing consumer welfare? While the ultimate answers to these questions remain unresolved, it appears that the Landean approach has made significant headway in both the courts and the enforcement authorities.¹⁸¹ This issue is whether society will tolerate the generation of market power with the concomitant deadweight loss that accompanies market power as the price of furthering (productive) efficiency.¹⁸² So described, the issue is analogous to the patent tradeoff: the patent system accepts a deadweight loss as the price for technological advance, which equates with an increase in dynamic efficiency.¹⁸³ The Williamson tradeoff accepts a deadweight loss as the price for greater static efficiency.¹⁸⁴

B. Resolving the Issue with a Tax

Economists evaluating the desirability of a public expenditure (say, building a bridge) assess the impact of the expenditure on aggregate welfare. Their assessment is made without regard to distributional concerns.¹⁸⁵ Distributional concerns are dealt with through mechanisms that are better designed to this task, such as the income tax.¹⁸⁶ This

180. See HORIZONTAL MERGER GUIDELINES §§ 9.3–10, at 29–30 (2010), available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> (describing entry sufficient to counteract the anticompetitive effects of a merger as rendering a price increase by a merged firm unprofitable and cognizable efficiencies as preventing price increases and the importance of passing through efficiencies to customers).

181. See *supra* notes 178–80 and accompanying text.

182. See David W. Barnes, *Nonefficiency Goals in the Antitrust Law of Mergers*, 30 WM. & MARY L. REV. 787, 855–58 (1989).

183. See Gifford, *supra* note 6, at 82.

184. See *The Welfare Tradeoffs*, *supra* note 151, at 21–23, 21 fig.1, 22 n.4, 25.

185. See Robin Boadway & Maurice Marchand, *The Use of Public Expenditures for Redistributive Purposes*, 47 OXFORD ECON. PAPERS 45, 45–46 (1995) (noting that an economic analysis of redistribution purposes is unnecessary for public expenditures); Ken Heyer, *Welfare Standards and Merger Analysis: Why Not the Best?*, COMPETITION POL’Y INT’L, Autumn 2006, at 29, 41.

186. See Heyer, *supra* note 185, at 50.

approach has been followed since the 1930s where it was pioneered by J. R. Hicks and Nicholas Kaldor.¹⁸⁷ Thus, on the Williamson tradeoff issue, the mainstream economics approach would be to allow an efficiency-generating merger and to rely on the income tax to correct for distributional inequities produced by any increased market power of the merged company.

The issue arises, however, because the Enforcement Agencies appear to have abandoned the pure efficiency goals of antitrust in favor of the Landean-endorsed policy of barring wealth transfers from producers to consumers.¹⁸⁸ They thus are construing the case law—and in particular, Chief Justice Burger’s opinion in *Sonotone Corp.*—as basing antitrust policy on the furtherance of “consumer welfare” as narrowly understood (meaning the welfare of just consumers, qua consumers), despite Chief Justice Burger’s citation of Bork’s *The Antitrust Paradox: A Policy at War with Itself*, where Bork had defined consumer welfare as aggregate social welfare on the rationale that all people (including producers) are consumers.¹⁸⁹

In the case of a merger that produces both increased market power and offsetting efficiencies, the current policy of the Enforcement Agencies is to oppose the merger if the increased market power is likely to produce a price increase.¹⁹⁰ Their objection (following Lande) is to the price increase.¹⁹¹ In the case of such a merger (*Federal Trade Commission v. H.J. Heinz Co.*¹⁹² is a good example) it is no defense that the resource misallocation is compensated for by production efficiencies.¹⁹³ Yet, even on the narrow version of the consumer welfare approach, the Enforcement Agencies are over-enforcing by barring the merger entirely, depriving society of the merger’s contribution to welfare. At least in theory, the Enforcement Agencies should be satisfied as long as the merger was permitted subject to the constraint that the merged firm would not raise prices over the pre-merger level. Such a

187. J. R. Hicks, *The Foundations of Welfare Economics*, 49 *ECON. J.* 696, 712 (1939); Nicholas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 *ECON. J.* 549, 550-51, 551 n.1 (1939).

188. See HORIZONTAL MERGER GUIDELINES §§ 9.3–10, at 29-31 (2010); *supra* notes 178-80 and accompanying text.

189. See *Reitner v. Sonotone Corp.*, 442 U.S. 330, 343 (1979); BORK, *supra* note 2, at 110; *supra* notes 159-61, 169-80 and accompanying text.

190. See HORIZONTAL MERGER GUIDELINES § 10, at 30-31, 30 n.14.

191. See *id.* § 10, at 30-31, 31 n.15 (“[T]he Agencies consider whether cognizable efficiencies likely would be sufficient to reverse the merger’s potential to harm customers in the relevant market, e.g., by preventing price increases in that market.” (footnote omitted)).

192. 246 F.3d 708 (D.C. Cir. 2001).

193. *Id.* at 720-21 (requiring that there be significant proof of extraordinary efficiencies that are “merger-specific”); HORIZONTAL MERGER GUIDELINES § 10, at 31 (“Efficiencies almost never justify a merger to monopoly or near-monopoly.”).

merger would contribute to aggregate welfare without transferring wealth from consumers to producers, thus satisfying the Landean approach to antitrust.¹⁹⁴

Consider a carefully designed tax as an answer to this problem. The tax is equal to the difference between the pre-merger price and the post-merger price.¹⁹⁵ As applied to the Williamson/Bork model, the merged company would have an incentive to avoid the tax so far as possible, and thus to drop its price to the pre-merger level and to expand its output to the pre-merger level. But the merged firm would keep the benefit of the merger-induced efficiencies, thus preserving the incentives to merge when efficiencies would result.

Over time, economic conditions are bound to change. Perhaps the tax should be equal to the difference between the merger firm's price and the pre-merger price or the difference between the merged firm's price and its marginal cost—whichever is less. In a practical version of this proposal, average variable cost would be an acceptable substitute for marginal cost. This would properly reduce the burden on the merged firm should its costs rise in the future. Under this revised formulation the tax would never impose a loss on the merged firm. Rather, the firm would be pressured to price at the pre-merger level, except when its marginal cost rose above that level, when it would be pressed to price at a competitive level.

Merger-induced efficiencies fall into two broad categories: a reduction in variable cost and a reduction in fixed cost.¹⁹⁶ The Guidelines suggest that the latter is less likely to be approved because a reduction in fixed cost is unlikely to affect the merged firm's pricing.¹⁹⁷ So a merger that increases market concentration is likely to restrict output and to raise price, and a fixed-cost savings is unlikely to offset

194. See Lande, *supra* note 173, at 71, 75-77, 142, 150.

195. The tax is equivalent to a court order barring the merged company from raising its price, but it has two advantages over a court order. First, the tax has an inherent flexibility. See Heyer, *supra* note 185, at 50. As pointed out in the text, the tax adjusts to changes in economic conditions, so that when the firm's costs rise sufficiently, the tax adjusts so that it never imposes a loss on the firm. See PINDYCK & RUBINFELD, *supra* note 22, at 280-81, 281 fig.8.18. Second, courts are extremely reluctant to supervise prices, as they lack the time, resources, and competence to do so. See, e.g., *United States v. Trenton Potteries Co.*, 273 U.S. 392, 397-98 (1927). The tax can be designed in a way that the firm self-reports to the enforcement authorities its prices, the prices before the merger, and the difference. This information is not complex and is readily available to the firm. Normally, the difference will be zero and no tax will in fact be imposed. A court would intervene only when the enforcement authorities contended that the firm misreported. Since the information required is straightforward, the burden imposed on the court would likely be minimal.

196. See Heyer, *supra* note 185, at 35-37, 35 n.14.

197. See HORIZONTAL MERGER GUIDELINES §§ 2.2.1, 10, at 4 & n.3, 31 & n.15; Heyer, *supra* note 185, at 36-37, 36 n.17; PINDYCK & RUBINFELD, *supra* note 22, at 209.

these effects.¹⁹⁸ A reduction in variable cost, however, necessarily reflects a reduction in marginal cost; and it is marginal cost that determines a firm's price and output decisions.¹⁹⁹ For this reason, the Guidelines are more open to efficiencies that reduce variable (or marginal) cost,²⁰⁰ although even here the efficiencies have to be sufficiently great such that the merged firm would lack an incentive to raise prices.²⁰¹ As the foregoing discussion makes evident, however, the proposed tax would render these Guideline approaches obsolete. It would make the distinction between variable cost and fixed cost reductions unimportant for merger enforcement and ensure that society received the benefits of all merger-generated cost reductions.

Finally, it is necessary to say a word about nomenclature and mechanics. The proposed monetary penalty on the kind of mergers to which the Williamson tradeoff analysis applies does not have to be called a tax nor does it have to be a tax-in-fact. The most straightforward implementation of the proposal would be for Congress to enact a tax, as described above. But it is also possible for the Enforcement Agencies to bargain (on behalf of the public) with the merging companies.²⁰² Indeed, it is standard procedure for the Enforcement Agencies to withhold their approval of a proposed merger until the parties agree to spin off certain assets.²⁰³ In such cases, the antitrust evaluation of the merger changes when the assets in question are no longer part of the merged company.²⁰⁴ So here, when the merged company's incentives are so changed that it is in its interest to expand output to the competitive (or to the pre-merger) level, then the antitrust evaluation of the merger would change. Were the Enforcement Agencies to bargain for a penalty structured in the way described above, that could be understood as insurance that the merged company would not act anti-competitively. Indeed, under the current

198. See HORIZONTAL MERGER GUIDELINES §§ 1, 2.1.3, 10, at 2-3, 31.

199. PINDYCK & RUBINFELD, *supra* note 22, at 208-09.

200. See HORIZONTAL MERGER GUIDELINES § 10, at 30-31, 30 n.14. Here the Guidelines refer to "efficiencies resulting from shifting production among facilities formerly owned separately"; these efficiencies would involve variable costs. *Id.* § 10, at 31. The Guidelines expressed concern that the efficiencies prevent price increases also necessarily involving variable costs. *See id.*

201. *See id.* § 10, at 30-31, 31 n.15. *Federal Trade Commission v. H.J. Heinz Co.* is an example of a proposed merger that would have produced operating efficiencies, but which was still blocked because the court did not believe the efficiencies were sufficiently great. *See* 246 F.3d 708, 721-22 (D.C. Cir. 2001). The court also thought that the merger would enhance the likelihood of tacit co-operation between the merged company and its one major rival. *See id.* at 724-25. Had the proposed tax been available, the merger could have gone through with no unilateral effects danger and no threat of oligopolistic coordination.

202. See HORIZONTAL MERGER GUIDELINES § 1, at 1 (noting that the Enforcement Agencies "seek to identify and challenge competitively harmful mergers").

203. *See id.* §§ 7, 9, at 24-25, 28.

204. *See id.* §§ 9, 9.2, 11, at 28-29, 32.

practice of evaluating mergers under a wealth-transfer standard, in the absence of the merger partners accepting the penalty, the merger would be disapproved, despite its contribution (through merger-generated efficiencies) to aggregate welfare. At least in theory, all of the parties (the merger partners and the Enforcement Agencies) would benefit from the merger partners accepting the penalty. The merger partners would be able to consummate the merger and to capture the benefits of merger-generated efficiencies. The Enforcement Agencies would bring about an expansion of efficiency with no adverse effect on “consumer” welfare.

V. BEYOND THE PATENT SYSTEM

The genius of the patent system as an engine of innovation is its combination of the patent law’s specially created rights of exclusivity with economic incentives generated by the market. The theory underlying the patent system is that the exclusive rights provided by the patent system provide an inventor with the stimulus to invest time and resources in inventive activity.²⁰⁵ But the inventor’s reward depends on the market’s demand for his product.²⁰⁶

Inventive activity thus is guided by the collective knowledge inhering in the market and is directed towards those inventions on which society places the highest value.²⁰⁷ Inventive activity for which demand is lacking goes unrewarded, regardless of the inventor’s creativity. The market’s ability to collect and synthesize information is generally superior to all other systems.²⁰⁸ Its information sources include all persons staking their own money on their estimates of value and its synthesizing abilities arise from the collective inputs of the participants.²⁰⁹ No person or group or institution can muster equivalent resources.

Yet, despite the market’s advantages, it has its weaknesses; weaknesses that (because of the patent system’s incorporation of the market) affect the patent system. These weaknesses involve the capacity of the market to identify social needs.²¹⁰ In general, and for the reasons already set forth, the market does a superb job on this score. But there are social values that the market fails to reflect because these values are not currently reflected in costs and prices of products and services (externalities, including collective-action problems), or because many of the would-be consumers of the relevant products and services lack the

205. See Gifford, *supra* note 6, at 83-84.

206. *Id.* at 81-84.

207. See *id.* at 83-84.

208. See *id.*

209. See *id.*

210. See *id.* at 82.

resources to buy them and so their needs also are not reflected in market outcomes.²¹¹ Similarly, the market fails to register pharmaceutical products that provide benefits to those afflicted by rare medical conditions.²¹² Because of the quantitative smallness of the need, the market largely ignores it, despite the fact that society understands that need to be qualitatively significant.²¹³

The patent system, incorporating the market as it does, produces non-optimum results in these cases where the market fails or otherwise generates outcomes that do not correspond with social welfare. Moreover, because the patent system operates in part by generating an overlay of intellectual property rights that adhere to physical property, global commerce in patented products are subject to World Trade Organization (“WTO”) free trade rules that, *inter alia*, have the effect of protecting discriminating sellers from arbitrage transactions.²¹⁴ And it is the prospect of arbitrage that inhibits the pharmaceutical manufacturers from engaging in the price discrimination that would make pharmaceuticals more available to the lower-income populations of developing and under-developed countries.²¹⁵ These shortcomings of the patent system particularly affect the pharmaceutical industry. The question thus arises as to whether there are alternative means for generating the innovation that society requires which are superior to the patent system for any identifiable class of products—especially for any identifiable subset of pharmaceuticals.

There is such a class. It consists of pharmaceutical products for the treatment of well-known diseases for which there is no known cure.²¹⁶ Two decades ago products that could treat HIV/AIDS fell into such a class.²¹⁷ Currently, treatments for most forms of cancers fall into that class. Also, there is no known cure for Ebola Hemorrhagic Fever (Ebola HF)/Ebola Virus Disease (EVD), and pharmaceuticals that could do this are needed.²¹⁸ But there may be no attractive market for such a drug,

211. *See id.*

212. *Id.* at 82, 86-87.

213. *See id.* at 86-87, 213.

214. *See id.* at 81, 116-17.

215. *See id.* at 115-17. “Article XI of the General Agreement on Tariffs and Trade (GATT), incorporated into the WTO Agreement prohibits any party to the Agreement from imposing quantitative restrictions on imports or exports.” *Id.* at 117. A literal reading of Article XI of the GATT thus would bar governments from interfering with arbitrage that is a major deterrent to international price discrimination by pharmaceutical manufacturers. *Id.* at 117-18. However, there are a number of avenues for avoiding arbitrage despite the terms of Article XI of the GATT. *See id.* at 116-24 (discussing the WTO issues as well as the global financing proposal).

216. *See id.* at 118-19.

217. *See id.*

218. U.S. DEP’T OF HEALTH & HUMAN SERVS., CTRS. FOR DISEASE CONTROL & PREVENTION, EBOLA HEMORRHAGIC FEVER INFORMATION PACKET 2 (2010), *available at* <http://www.cdc.gov/>

because most of the affected population is poor and would not be able to pay the prices that would provide the needed stimulus under the patent system.²¹⁹

Where the need is widely recognized, society has no need for the unique capabilities of the patent system to collect and synthesize information. But the patent system also directs the funding of research.²²⁰ Are there superior alternatives to the patent system for funding pharmaceutical research? Of course, government could fund such research, but government would be prone to distortion through lobbying and possibly even corruption. But if we limited government funding to drugs targeting a small number of identified illnesses whose cure or treatment are widely recognized public needs, then we would have minimized the danger.

An advantage of public funding is that the resulting pharmaceuticals would be produced at marginal cost.²²¹ And output would not be restricted as the patent system contemplates.²²² Of course, the public would pay the cost of the research through taxes, but the resulting product would be freely available, both in the United States and abroad. Not only would the domestic market be free from the deadweight loss generated by the patent system, but the impact of the WTO agreements on the incentives of the patentees to engage in price discrimination with the accompanying problems of arbitrage would no longer be relevant issues.

These considerations lead to a further issue connected with financing. Currently the American public pays for most of the world's pharmaceutical research, through taxes and high drug prices.²²³ Pharmaceutical prices in other nations are often regulated or otherwise depressed through government action.²²⁴ Because the benefits of pharmaceutical research are worldwide, ideally the financing properly should be worldwide as well. Recognition of the world's different income levels might suggest that nations contribute to pharmaceutical research through a formula based on each nation's gross domestic product.

Let's take a global welfare approach to this issue. Disease knows no national boundaries. The development of products by the pharmaceutical

nccidod/dvrd/spb/mnpages/dispages/Fact_Sheets/Ebola_Fact_Booklet.pdf (stating that there is no standard treatment for the Ebola Hemorrhagic Fever).

219. See Kristina M. Lybecker & Robert A. Freeman, *Funding Pharmaceutical Innovation Through Direct Tax Credits*, 2 HEALTH ECON. POL'Y & L. 267, 275-77 (2007).

220. See Gifford, *supra* note 6, at 81.

221. See Lybecker & Freeman, *supra* note 219, at 270-71.

222. See *id.* at 271.

223. Gifford, *supra* note 6, at 124.

224. *Id.* at 115.

industry is a costly process.²²⁵ The potential beneficiaries of this development are everywhere. The suggestion of this Article is that, for a limited range of pharmaceuticals, the nations of the world adopt a system of new product development and distribution different from the current one based on the patent system. Under the alternative model, pharmaceutical research for a carefully limited selection of potential drugs would be commissioned by an international organization. The necessary funds would come from the world's governments. Because nations vary widely in their wealth and income,²²⁶ the world's governments should contribute the necessary amounts according to a formula based on gross domestic product. Further adjustment might be made on a progressive income tax model, with higher-income nations paying a higher percentage of their gross domestic product than nations with lower gross domestic product. In this way, the drugs that the world needs would be produced and made universally available at their production cost.

VI. CONCLUSION

This Article has identified four areas where changes in the law or legal arrangements could improve welfare or (in the case of dynamically competitive industries) have already improved welfare. Sadly, most of the changes proposed here are unlikely to take place. The changes proposed for Section 271 are unlikely because congressional action on such a technical matter is difficult, and the issues are complex, impeding public understanding. Similarly, the tax on mergers that are *prima facie* problematic from an antitrust standpoint would be unlikely to command congressional support. Despite the fact that such a tax would ease merger approvals, many would likely see it as undue government intervention in the economy. Moreover, although the tax would not in fact be collected (since its purpose would be to create behavioral incentives), many in Congress that are philosophically opposed to any new taxes would object as a matter of principle. The issues, again, are complex and not conducive to public debate. The proposal for an alternative funding of certain pharmaceutical products probably is even more unlikely to be adopted, since it calls for action not only by the U.S. government, but by the other governments of the world. So its adoption would be impeded by immense forces of governmental inertia.

By contrast, the change in antitrust law that appears to accord with the needs of so-called dynamically competitive industries worked

225. See Lybecker & Freeman, *supra* note 219, at 268.

226. See *id.* at 280; *GDP (Current US\$)*, WORLD BANK, <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (last visited Apr. 20, 2012).

because it was the result of judicial decision-making. The courts are accustomed to technical issues and their insulation from politics and political institutions enables them to deal with complex issues analytically on their merits.
