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LOOK BEFORE YOU “LOCK”: STANDARDS,
TIPPING, AND THE FUTURE OF PATENT MISUSE
AFTER *PRINCO*[†]

Christopher A. Suarez*

*In network industries, consumers do not always prefer single standards. Setting aside antitrust principles, the Federal Circuit implicitly assumed in *Princo* that consumers preferred a single standard in the CD-R/RW industry when it held that a patent suppression agreement did not constitute patent misuse. But some network industries can—and do—converge toward multiple standards, and antitrust analyses can be informative in this context. As this Article shows, patent suppression agreements may still “leverage” existing patents in ways that unlawfully expand their scope. This Article argues that courts must consider consumers’ demand-side preferences when they analyze patent misuse claims in network industries, and it proposes a quid-pro-quo rule that incentivizes demand-side analyses by the private sector. This rule would render suppression agreements per se legal in exchange for a commitment to release suppressed technologies into the public domain after a short time-frame, but would also support thorough patent misuse scrutiny in cases where firms refuse to make such a commitment. This rule could move us toward better empirical understandings of consumers’ preferences in network industries, preserve judicial economy in the patent misuse area, and better ensure that superior standards prevail in the marketplace.*

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INTRODUCTION

In the late 1880's, Thomas Edison battled Nikola Tesla and George Westinghouse in the battle of the currents.¹ After Edison had built an electrical empire spanning cities from Chicago to New York using his DC current system,² Edison was worried that his patent monopoly in electricity would be challenged by the emerging AC current system pioneered by Tesla and Westinghouse.³ And justifiably so, as "[o]nly the AC system could send electricity cheaply and efficiently over long distances."⁴ To Edison, it "was total war."⁵ His efforts to suppress AC current included sensational public claims, experiments on animals to show the "dangers" of

1. See Tom McNichol, AC/DC: The Savage Tale of the First Standards War 84 (2006).

2. *Id.* at 67.

3. *Id.* at 84.

4. *Id.* at 155.

5. *Id.* at 107.

AC, and aggressive legislative lobbying.⁶ While Edison prolonged the battle, he ultimately lost it.

Today, the standards wars continue. Most recently, a standards battle was waged between Blu-Ray and HD DVD: two high-definition DVD standards that, while quite similar, have distinct advantages and disadvantages.⁷ Similarly deemed a “huge war,”⁸ the electronics industry initially favored Blu-Ray while the film studios aligned with HD DVD.⁹ Ultimately, Blu-Ray emerged as the winner because HD DVD failed to exploit its pricing advantage, lost its initial support from the movie studios, and relied too heavily on Microsoft to ensure its competitive success.¹⁰

Once it became clear that Blu-Ray had taken an unassailable lead over HD DVD, one industry leader noted that “[t]he consumers [were] sending us a message. I can’t ignore what I’m seeing.”¹¹ Consumers sent a similar message to Edison after the capabilities of AC Current were put on display at Niagara Falls.¹² While some may ultimately question our adoption of the DC current system, and others may speculate on the superiority of HD DVD as an emerging technology that can be used to watch movies, the common link between these two scenarios—in both the nineteenth and twenty-first centuries—is that they allowed consumers to choose a standard that would ultimately dominate a particular industry.

Sometimes, however, consumers could be completely foreclosed from making that choice themselves. A recent case, *Princo Corp. v. International Trade Commission*,¹³ concerned a standards battle that

6. *See id.* at 107–08.

7. While the HD DVD standard (and supporting players) can be produced more cheaply, the Blu-Ray DVDs are capable of holding greater capacities. *See* McNichol, *supra* note 1, at 182. In addition, Blu-Ray “stores the data on a thin layer on top of the disk, which means it can be easily scratched and currently needs to be protected by a cartridge . . .” Nick Flaherty, *Battle of the Blues*, *Inst. Elec. Eng. Rev.*, Apr. 27, 2004, at 48, 49. HD DVD, meanwhile, is backwards compatible with the traditional DVD format. *Id.* at 49.

8. Flaherty, *supra* note 7, at 49.

9. *Id.* at 50.

10. *See* Robin Harris, *HD DVD post-mortem: why did Toshiba fail?*, *Storage Bits* (Feb. 19, 2008, 1:04 PM PST), <http://www.zdnet.com/blog/storage/hd-dvd-post-mortem-why-did-toshiba-fail/294?tag=rbxccnbzd1>.

11. Robin Harris, *Blu-ray vs. HD DVD: game over*, *Storage Bits* (June 20, 2007, 12:01 PM PDT), <http://www.zdnet.com/blog/storage/blu-ray-vs-hd-dvd-game-over/149> (quoting Matthew Smith, Senior Vice President of Merchandising, Blockbuster Video).

12. *See* McNichol, *supra* note 1, at 141 (noting that “Niagara became the model for the way electrical power would be generated and consumed in the twentieth century and beyond”).

13. *Princo Corp. v. International Trade Commission*, 616 F.3d 1318 (Fed. Cir. 2010) (en banc), *cert denied*, 131 S. Ct. 2480 (2011).

never occurred. Philips and Sony patented two competing methods of encoding data position information on CD-R/RW discs—Philips’ patent used an analog method and Sony’s used a digital method.¹⁴ Instead of competing over the prospective standards, Sony agreed to allow Philips’ analog encoding method to become the official “Orange Book” industry standard.¹⁵ Philips included Sony’s patent in a patent pool that enabled its licensees to create Orange Book compliant discs,¹⁶ and in exchange Sony agreed to suppress any competition that could have arisen from its digital (Lagadec) patent.¹⁷ The *en banc* Federal Circuit held that Philips’ efforts to suppress the patent did not—and could not—constitute patent misuse.¹⁸

The Federal Circuit based its *Princo* decision in part on the assumption that standardization “can have decidedly procompetitive effects” and promote “positive network effects.”¹⁹ Indeed, as technology evolves and social media explodes in our interconnected world, conversations about “network industries” are becoming increasingly relevant in the antitrust frame.²⁰ Standardization in such networked industries is important because it ensures the interoperability of products (for example, those that can read CDs and DVDs) and facilitates the sharing of information across social networks such as Twitter and Facebook.²¹

But standardization is not a panacea. In some contexts, a rush to crown a dominant standard within a particular industry may impede meaningful innovation within that industry. This is particularly true when natural market forces are not given an ample

14. *Id.* at 1322.

15. *Princo Corp. v. Int’l Trade Comm’n*, 563 F.3d 1301, 1306 (Fed. Cir. 2009), *en banc reh’g granted*, 583 F.3d 1380 (Fed. Cir. 2009) (“Philips and Sony ultimately chose to define the Orange Book Standard using the analog Raaymakers ATIP approach, not the digital Lagadec method.”).

16. *Id.*

17. The pooled licenses “did not allow the use of Lagadec to produce discs competitive with the Orange Book Standard” and “there [was] evidence that could [have] support[ed] a finding that Sony granted Philips an exclusive license to Lagadec for CD-R purposes, and that Philips agreed not to license the patent . . . except for the manufacture of Orange Book compliant discs.” *Id.* at 1319.

18. *Princo*, 616 F.3d at 1326 (noting that “the conduct alleged in this case is not the type of conduct that could give rise to the defense of patent misuse”).

19. *Id.* at 1335.

20. In network industries, a substantial portion of the value of a particular good derives from its connections to other elements of a network. A software DVD, for example, loses much of its value if it cannot be executed on multiple different computers. And Facebook would be worth little if it only contained a couple hundred members.

21. See, e.g., Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 Cal. L. Rev. 1889, 1896 (2002).

opportunity to crown a superior standard. The market may be preempted when (1) an industry “tips” towards a particular standard prematurely, effectively foreclosing competition against the standard; or (2) before “tipping,” market forces cannot adequately challenge a newly created standard despite the potential that the standard may be inferior to other options.

And there may also be instances where it may not be preferable to have a dominant standard in a particular market for some time—if at all. In our haste to develop a standard, we may entrench a standard that is far less desirable than the optimal market outcome, which may include two or more coexisting standards.²²

In this Article, I critique the Federal Circuit’s categorical approach in narrowing the scope of the patent misuse doctrine in *Princo*. Noting that patent misuse doctrine is, at minimum, meant to be coextensive with antitrust law, I note that, in the absence of empirical understandings about the demand-side behaviors of consumers in networked industries, consumers should be accorded the *possibility* of variety in emergent markets for new technological standards. While the market may not produce optimal outcomes in a given standards war,²³ enabling natural market forces is more desirable from both a patent misuse and antitrust standpoint than a regime that allows for suppression. Suppression, in and of itself, does not seem to provide any procompetitive benefits to consumers, especially in industries where the procompetitive benefits of “network effects” in those industries are minimal or unknown.

This brings me to my additional critique of *Princo*—and antitrust law generally—which has failed to appreciate (or even consider) the relative orders of magnitude of “network effects” within specific industries. The degree to which a particular industry truly has meaningful demand-side network effects determines how virtuous efforts to standardize may be. But to the extent that meaningful network effects are not present in a particular industry, antitrust and patent misuse doctrine should not overstate the degree to which joint standardization efforts are construed as “procompetitive conduct.”

22. Cf. McNichol, *supra* note 1, at 179. (“So it is with standards wars; all victories are provisional, all defeats subject to revision. Advances in technology, changes in the marketplace, in the way people live, and most important, in what they value, can overturn the most entrenched technical standard.”).

23. Optimal outcomes may not be produced, for example, due to consumers’ inability to distinguish between the technological merits of a given standard. See, e.g., Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. Econ. Persp. 93, 96 (1994) (suggesting that when consumers are “imperfectly informed about the market,” consumers may have some understandable difficulties in predicting market outcomes).

The argument proceeds as follows. In Part I, I provide more detail on the underlying controversy in *Princo* and the Federal Circuit's failure to consider demand-side network effects in its analysis of patent misuse. Part II discusses the nature of network industries—including relevant economic theory—and emphasizes that consumer demand is what ultimately shapes the market in such industries. Depending on the nature of a particular network industry, a network industry may converge toward one or more standards along continuums of network effects and standardization. Part III then addresses the lock-in problem associated with network industries and notes that, while lock-in may be procompetitive in some cases, the network achieved by Philips and Sony through their suppression agreement may not have been desirable if consumer demand would have otherwise dictated multiple CD-R/RW encoding standards in the market for CD-R/RW technology.

Finally, Part IV returns to *Princo* and discusses future applications of the patent misuse doctrine in the patent suppression context. It explains that, based on a demand-side network effects analysis, the suppression agreement between Philips and Sony may have unlawfully expanded the scope of Philips' patent monopoly. But because there has not been an adequate demand-side analysis of the nature of consumer demand in the CD-R/RW market, we cannot be sure. Accordingly, patent misuse doctrine should incentivize industry to further examine demand-side effects in network industries more generally. In particular, companies should be incentivized to "look" at the demand-side characteristics of their industries before engaging in activities that will "lock-in" specific standards. These incentives can be promoted by encouraging courts to engage in demand-side network analyses when addressing patent misuse claims in this context. Such demand-side analyses can be further incentivized *within* the private sector if courts move towards a "quick look" analysis of suppression agreements. Because standardization can have procompetitive effects, however, suppression agreements should be considered *per se* legal from an antitrust and patent misuse standpoint if firms are willing to release suppressed patents into the public domain. A willingness to release such patents into the public domain, as I will argue, suggests that firms have indeed "looked before they locked,"²⁴ and they should be rewarded accordingly.

24. This is because, based on a demand-side market analysis, they will be confident that (1) they have the superior technology; and (2) that consumers demand that the market converges toward a single standard. *See infra* Subsection IV.B.1.

I. *PRINCO* AND THE ANTITRUST/IP BOUNDARY

In this Part, I outline the basic contours of the patent misuse doctrine using *Princo* as a frame of reference. First, I outline the most controversial factual points of contention, as well as the conduct that raised the alleged misuse, in *Princo*. Second, I provide the reader with a basic overview of the traditional use and purpose of the patent misuse doctrine. With this background, I explain the theory of patent misuse that guided the Federal Circuit majority’s analysis in *Princo*.

A. *The Princo Controversy*

As noted above, the controversy in *Princo* arose from an agreement between Sony and Philips to adopt Philips’ analog standard (the Orange Book Standard) for encoding data on CD-R/RW discs.²⁵ The Orange Book Standard was chosen over Sony’s Lagadec patent, which used a digital encoding method. *Princo* made two patent misuse claims: “first, that Philips conditioned the license of Philips patents essential to the production of [the Orange Book Standard] upon the purchase of a license to an allegedly-nonessential Sony patent (the Lagadec patent), and second, that Philips allegedly agreed with Sony not to license the Lagadec patent as competing technology to the Orange Book.”²⁶

The first concern, that Philips added an allegedly nonessential patent to its patent pool, was disposed of by the Federal Circuit in a panel holding. While pooling nonessential patents with essential patents *could* constitute patent misuse on a tying theory,²⁷ the court pointed out that the procompetitive benefits associated with patent pooling are significant.²⁸ Most importantly, given the facts of the case, “it would have been reasonable for a manufacturer to believe a license under [the allegedly nonessential patent] was necessary” to create discs under the Orange Book Standard.²⁹ Where a patent

25. See *supra* notes 13–18 and accompanying text.

26. *Princo Corp. v. Int’l Trade Comm’n*, 563 F.3d 1301, 1302 (Fed. Cir. 2009), *en banc reh’g granted*, 583 F.3d 1380 (Fed. Cir. 2009).

27. See *Motion Picture Patents Co. v. Universal Film Co.*, 243 U.S. 502 (1917) (holding that conditioning the license of patent film projector on the purchase of unpatented films from the same provider constituted patent misuse); see also *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488 (1942) (holding that a tying arrangement where the patent license was condition upon the purchase of salt tablets amounted to patent misuse); *Princo*, 563 F.3d at 1307 (“Much of the Supreme Court’s early patent misuse doctrine was developed in cases involving a challenge to some form of tying arrangement.”).

28. *Princo*, 563 F.3d at 1308.

29. See *id.* at 1310. The reason for this is that Claim 6 of Sony’s Lagadec patent, though for the digital CD-R encoding method, was arguably broad

in a pool is a necessary complement to the other patents in that same pool, patent pools can promote procompetitive ends that outweigh their anticompetitive harms.³⁰ Princo's second patent misuse claim, though, is much more controversial—and is the primary subject of this Article's attention.

1. Patent Misuse and Suppression: A Divided Federal Circuit

Princo's second misuse claim—that Philips unlawfully suppressed the digital Lagadec patent—illustrates the difficulty of productive economic analysis by courts attempting to assess potentially anticompetitive behavior in network industries. In *Princo*, the concern with suppressing the Lagadec patent is that it would not allow “the further development of the Lagadec technology and the possibility of competition between that technology and [the Orange Book Standard].”³¹ Thus, consumers could have been deprived of an alternative—and possibly better—CD-R/RW option.

Ultimately, the *en banc* Federal Circuit held that Philips' alleged suppression of the Lagadec patent did not constitute misuse.³² In so doing, however, the Court split into three separate opinions that would all analyze the issue in very different ways. Due to the novel nature of a suppression theory of patent misuse, it is unsurprising that the court lacked a clear—or coherent—method to address the issue. Moreover, because the issue implicated issues at the boundary between issues of antitrust and intellectual property, the court was divided over the theoretical justifications that should underlie its holding. I introduce these three theories in Section C of this Part.

enough to include the analog encoding method as well. *See id.*

30. Such procompetitive benefits include integrating complementary technologies, reducing transaction costs associated with procuring multiple patents, eliminating the “hold up” problems resulting from blocking patents, and avoiding the risk of costly infringement litigation. *See* 2 Herbert Hovenkamp et al., IP and Antitrust, § 34.4c, at 34-28—34-29 (2d ed. 2010); *see also Princo*, 563 F.3d at 1310-11 (listing the benefits of patent pools); U.S. Dep't of Justice & Fed. Trade Comm'n, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition 64-65 (2007) (noting that patent pools reduce “hold-out” problems, transaction costs, and eliminating infringement litigation). *But see id.* at 66 (noting, among other concerns, that patent pools with substitute patents that would ordinarily compete with each other are less welfare-enhancing).

31. *Princo*, 563 F.3d at 1313.

32. *See Princo Corp. v. Int'l Trade Comm'n*, 616 F.3d 1318 (Fed. Cir. 2010) (*en banc*), *cert denied*, 131 S. Ct. 2480 (2011).

2. Factual Matters

Beyond the theories behind antitrust and patent misuse, facts matter. And it was the judges’ assessment of the facts that resulted in the highly divergent rulings above. Thus, in the rest of this Section, I illustrate how the different judges approached some of the most crucial factual issues in the case. The disputes over these three factual questions, I submit, are vital to a meaningful analysis of *Princo*.

- To what extent was the standard-setting process a joint venture?
- To what extent was the Lagadec (Digital) Patent a viable competitor to the Orange Book Standard?
- To what extent was this case about whether or not Sony’s agreement with Philips was a mere refusal to license its Lagadec patent to certain individuals?

I address each of these disputes in turn.

Joint Venture Question

The reason why the Federal Circuit’s characterization of Philips’ and Sony’s standard-setting activities is so important is because the Court has traditionally deferred to joint ventures in the antitrust context—treating them almost like merged companies that are horizontally integrated.³³ Congress, moreover, has formally limited antitrust liability for the joint ventures of firms who are engaged in formal standard-setting organizations (SSOs).³⁴

33. See, e.g., *Broad. Music Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 23 (1979) (“Joint ventures and other cooperative arrangements are also not usually unlawful . . . where the agreement . . . is necessary to market the product at all.”). Here, the joint venture may have been construed as necessary to an effective standard-setting process in the CD-R/RW industry, just as the centralized music licensing scheme in *BMI* may have been necessary to effectively license music. Nevertheless, participation in joint ventures does not completely immunize firms from § 1 Sherman Act liability. See *American Needle, Inc. v. National Football League*, 130 S.Ct. 2201, 2215 (2010) (noting that sharing in profits from a joint venture could not presumptively immunize firms from liability, otherwise “any cartel could evade the antitrust law simply by creating a ‘joint venture’” (internal quotation omitted)).

34. This law formally codified the rule of reason standard to apply to activities pursuant to standard-setting by certain joint ventures. See Standards Development Organization Advancement Act of 2004, Pub. L. No. 108-237, 118 Stat. 661 (2004) (codified as amended at 15 U.S.C. §§ 4301-4305 (2006)). The law, however, excludes from its definition of joint venture any parties who engage in conduct that “restrict[s] or require[s] participation by any person who is a party

The majority opinion's framing of the facts in *Princo* leaves no doubt that the two firms engaged in a joint venture: It states that "Philips and Sony acted legitimately in choosing not to compete against their own joint venture."³⁵ In its recitation of facts, the opinion asserts that the "CD-R/RW technology was developed principally by Philips and Sony Corporation, working in collaboration."³⁶ The opinion, therefore, emphasizes that "joint ventures such as the one between Philips and Sony can have significant pro-competitive features."³⁷ This means that, even if antitrust scrutiny were to attach to Philips' suppression agreement, the agreement is likely to get broad deference under the rule of reason. The opinion distinguishes between the joint venture between Philips and Sony and joint ventures that could illegally "facilitate collusion among competitors,"³⁸ but does so with little analysis.

In the dissent, the supposed joint venture is cast in a different light. First, the dissent emphasized Philips' role as the driving force behind the supposed "joint venture." It notes that "Philips initially acted alone in attempting to develop a technology for recordable CDs," and that "Philips [was] the sole company responsible for administering the CD-R/RW licensing programs"³⁹ Indeed, "Philips' employees conceded that Sony employees 'were more observers than real active developers of the CD-RW format.'"⁴⁰ It further noted that "the record [was] clear that the Lagadec technology was separately developed by Sony."⁴¹ Moreover, "[e]ven *after* the Lagadec technology was rejected for the Orange Book Standard, Sony continued to pursue the technology, and applied for a U.S. patent over seven months after [Philips' analog encoding method] was adopted for the Orange Book"⁴² This suggests that, far from a joint venture, Sony had been trying to indepen-

to such venture, in any unilateral or joint activity *that is not reasonably required to carry out the purposes of such venture.*" 15 U.S.C. § 4301(b)(8) (2006) (emphasis added). This appears to be a rule against "naked restraints" that are created pursuant to an agreement between alleged joint venturers, since only legally defined "joint ventures" are given "rule of reason" treatment under the statute. § 4302.

35. *Princo*, 616 F.3d at 1334.

36. *Id.* at 1322.

37. *Id.* at 1335.

38. *Id.* at 1334-35; see *NCAA v. Bd. of Regents of the Univ. of Okla.*, 468 U.S. 85, 113, 120 (1984) (holding that a collusive NCAA television plan violated the Sherman Act).

39. *Princo*, 616 F.3d at 1343-44. (Dyk, J., dissenting).

40. *Id.* at 1345 (Dyk, J., dissenting) (quoting testimony of Dr. Jacques Heemskerk); see also *id.* (noting other testimony explaining that the CD-RW format was written in close cooperation with Ricoh and with "the *passive* support of Sony" (emphasis added)).

41. *Id.* at 1355 n.19 (Dyk, J., dissenting).

42. *Id.* (Dyk, J., dissenting) (emphasis added).

dently compete using the Lagadec patent. It suggests that Sony only stopped competing once Sony received a nice offer from Philips to suppress its digital patent.

Both of the opinions make legitimate points about whether or not Philips and Sony made efforts that were pursuant to a joint venture. On the one hand, one could argue that the firms' negotiation and patent pooling efforts were a desirable—and procompetitive—form of voluntary standard-setting. On the other hand, one could argue that these were two firms that were competing against each other virtually the entire time the standards were developed, the firms were wary of a standards war, and they therefore used the patent pool as a way of colluding to fix prices.⁴³ As I argue below, however, both opinions—in emphasizing the importance of these facts—gloss over important qualities of industry analysis.

Viable Competitor Issue

Another debate between the opinions is over the degree to which the digital Lagadec Patent was—or could have been—a meaningful competitor against the Orange Book Standard. Again, the opinions paint very different pictures of this issue.

The majority opinion cited findings of the International Trade Commission suggesting that “the record does not support a finding that the Lagadec ‘565 patent competes with the [Orange Book] patents, and that Princo failed to identify evidence that, absent the pooling arrangements, the pool licensors would have competed in the technology licensing market.”⁴⁴ It, moreover, highlighted evidence that “the Lagadec approach is prone to errors and did not provide a scheme that would work and was reliable.”⁴⁵ It argued that the findings “were not limited to the unsuitability of using Lagadec to produce Orange-Book-compliant discs,” but instead were more general findings about the technical problems associated with the Lagadec technology.⁴⁶ Because the “commercial viability” of the method was “doubtful,”⁴⁷ Princo failed to show “that there was a ‘reasonable probability’ that the Lagadec technology, if avail-

43. See, e.g., *id.* at 1344–45 (Dyk, J., dissenting) (noting that, “[i]n return for a minimal contribution to the Orange Book patent pool,” “Sony received 36% of the royalties under the CD-RW patent pool”).

44. *Id.* at 1324 (internal quotations omitted).

45. *Id.* at 1337 (internal quotations omitted) (quoting the International Trade Commission in *Certain Recordable Compact Discs and Rewritable Compact Discs*, USITC Inv. No. 337-TA-474, (February 5, 2007) (Commission Opinion)).

46. *Princo*, 616 F.3d at 1337.

47. *Id.*

able for licensing, would have matured into a competitive force in the storage technology market.”⁴⁸

Judge Dyk’s dissent, in contrast, argued that “Sony did in fact develop a *potential* alternative to . . . the Orange Book technology . . .”⁴⁹ It notes that “[t]here is great difficulty in predicting commercial viability in the early stages of technological development,”⁵⁰ and that there are “numerous examples of technology that in the early stages of development were thought likely to fail but which eventually matured into successful commercial applications, including the electric light bulb, telephone, radio, telegraph, and television.”⁵¹ And, the record contained some evidence of Lagadec’s potential: “A 1986 Sony memorandum described the Lagadec proposal and indicated that potential solutions existed to some of the problems identified by Philips’ expert,” and that the “Lagadec patent as issued reflected these solutions.”⁵²

Once again, one’s interpretation of this factual dispute bears heavily on one’s perception of the anticompetitive character of Philips’ conduct. But once again, both opinions ignore an analysis of the nature of demand or competition in the CD-R/RW market. The opinions seem to assume that a single standard in this industry is inevitable, and they fail to consider the magnitude of network effects in the relevant market. Understanding the character of the market would have helped both the majority and the dissent better analyze the degree to which the competing technology could have been viable.

A Mere Refusal to License?

The final major factual issue that divided the panel was the extent to which Sony’s actions constituted a mere refusal to license its Lagadec patent. Indeed, by choosing to license the Lagadec patent to Philips while agreeing to the condition that it would not license the patent to anyone else, Sony was arguably making a decision that it was refusing to license the Lagadec patent to anyone other than Philips. Given that a mere refusal to license patent rights cannot justify a patent misuse defense,⁵³ the degree to which Sony’s conduct can be framed in this way bears on the patent mis-

48. *Id.* at 1338 (citing *United States v. Penn-Olin Chem. Co.*, 378 U.S. 158, 175-76 (1964) (requiring a finding that there was a reasonable probability that the competing companies would have “entered the market” or “remained a significant potential competitor”).

49. *Id.* at 1344 (Dyk, J., dissenting).

50. *Id.* at 1356 (Dyk, J., dissenting).

51. *Id.* (Dyk, J., dissenting).

52. *Id.* at 1357 (Dyk, J., dissenting).

53. *See* 35 U.S.C. § 271(d).

use question. This factual issue, of course, was viewed differently in each of the three opinions in *Princo*.

The majority opinion, first, noted the broad power that comes with a patent grant. In particular, the patent grant confers “substantial rights . . . –‘includ[ing] the right to suppress the invention while continuing to prevent all others from using it, to license others, or to refuse to license’”⁵⁴ Because one could construe Sony’s action as a mere choice not to license its patents to certain parties, one may argue that it was impossible for Philips to have misused its patent.

This, indeed, was the factual issue that was dispositive for Judge Prost. Her concurring opinion noted that “Philips owned the Raaymakers patents, Sony the Lagadec patent. Philips and Sony were thus presumably free to license their patents to everyone-or no one.”⁵⁵ In her view, the dissent did not adequately address “how a patent owner’s right to *exclude* others from using the invention could, and possibly should, affect the calculus in the antitrust and patent misuse contexts.”⁵⁶ Given that both of the technologies at issue were already patented, the respective patent owners were acting well within their traditionally conferred patent rights. Thus, it was not clear to Judge Prost why the Philips-Sony agreement was problematic.

The dissent, however, viewed the agreement as problematic because this was not an instance where Philips merely decided not to practice an invention (or to refuse to license its patent). Instead, Philips *agreed* with Sony that it would not license the Lagadec patent.⁵⁷ There was collusion and their actions sniffed of cartel behavior, since “Philips and Sony . . . agreed not to grant manufacturers licenses to practice Lagadec in competition with the Orange Book.”⁵⁸ To Judge Dyk, this sort of agreement “clearly lies outside the bounds of the patent owner’s right to exclude others from using his or her invention.”⁵⁹

On this question, then, the ultimate issue is whether there is a meaningful difference between a patent-holder’s right to refuse licensing and a patent-holder’s affirmative choice to suppress an invention in agreement with another patent holder. Whether this

54. *Princo*, 616 F.3d at 1328 (quoting *United States v. Studiengesellschaft Kohle, m.b.H.*, 670 F.2d 1122, 1127 (D.C. Cir. 1981)).

55. *Princo*, 616 F.3d at 1340 (Prost, J., concurring).

56. *Id.* at 1340–41 (Prost, J., concurring).

57. *See id.* at 1349 n.11 (Dyk, J., dissenting).

58. *Id.* (Dyk, J., dissenting).

59. *Id.* (Dyk, J., dissenting); *see also* 7 Paul Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 1478a, at 318 (2d ed. 2003) (“Obviously, the most significant competitive threats arise when joint venture participants are actual or potential competitors.”).

distinction makes a difference, however, depends on analysis that was not engaged in by the majority, concurrence, or dissent.

B. Traditional Understandings of the Antitrust/IP Boundary

The factual disputes described in Part I.A above shed some light on the contested issues in the case and the degree to which Philips and Sony may have engaged in behavior in violation of the patent misuse doctrine.

Before proceeding further, however, it is important to understand the basics of patent misuse doctrine and its relationship with antitrust law. Patent misuse is derived from the “unclean hands” doctrine in contract law, which asserts that a “party cannot seek equitable relief or assert an equitable defense if that party has violated an ethical principle, such as good faith.”⁶⁰

It is a defense for patent infringers who seek to challenge the hypocrisy of patent holders who abuse their patent grants. The scope of the doctrine has both expanded and narrowed in recent years: However, there is a general consensus that application of the patent misuse doctrine is to be informed by antitrust principles.⁶¹

A judicially created doctrine, patent misuse began with the Supreme Court’s 1917 *Motion Picture Patents* decision.⁶² In that case, a producer of motion picture projectors sought to tie the sale of patented projectors to that same producer’s unpatented films. To the Court, this act constituted misuse of the patent because requiring all customers to purchase the tied films expanded the scope of the patent grant by “creat[ing] a monopoly in the manufacture and use of moving picture films, wholly outside of the patent in suit”⁶³ While the Court was concerned with competition, however, it emphasized that its ruling was grounded in both the “scope and purpose of our patent laws”⁶⁴ and the Progress Clause of the Constitution.⁶⁵

60. Black’s Law Dictionary (9th ed. 2009) (clean-hands doctrine).

61. See Brief of Amicus Curiae Fed. Trade Comm’n on Rehearing *En Banc* Supporting Neither Party at 1, *Princo Corp. v. Int’l Trade Comm’n*, 616 F.3d 1318 (Fed. Cir. 2010) (No. 2007-1386) [hereinafter FTC Princo Brief]; see also 1 Hovenkamp et al., *supra* note 30, § 3.1, at 3-2 (noting that “[m]isuse is closely intertwined with antitrust law, and most findings of misuse are conditioned on conduct that would also violate the antitrust laws.”).

62. *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502 (1917).

63. *Id.* at 518.

64. *Id.* at 519.

65. U.S. Const. art. I, § 8, Cl. 8; see also *Motion Picture Patents*, 243 U.S. at 510-11 (“Since *Pennock v. Dialogue* was decided in 1829, this court has consistently held that the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents, but is ‘to promote the progress of science and the useful arts’ . . .”).

The Court continued to apply patent misuse doctrine liberally to tying claims through the 1940's.⁶⁶ But after this string of *per se* patent misuse violations, both Congress and the Courts cut back on the scope of the patent misuse doctrine. Congress, for its part, passed acts in 1952 and 1988 that now codify express limitations on the Court's ability to apply the patent misuse doctrine.⁶⁷ Current statutory law does not allow patent misuse claims that are based on a patent-holder's failure to license a particular invention.⁶⁸ It also bars misuse claims for tying when the patentee fails to show market power in the tying product.⁶⁹ This principle—that a patented product should not be presumed to confer market power—was recently affirmed by the Supreme Court in *Illinois Tool Works*.⁷⁰

66. See, e.g., *Transparent-Wrap Mach. Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 640 (1947) (“[a]n owner of a patent may not condition a license so as to tie to the use of the patent the use of other materials, processes or devices which lie outside of the monopoly of the patent.”); *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 493 (1942) (“Where the patent is used as a means of restraining competition with the patentee's sale of an unpatented product . . . Equity may rightly withhold its assistance from such a use of the patent by declining to entertain a suit for infringement . . .”), abrogated by *Illinois Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28 (2006); *Int'l Salt Co. v. United States*, 332 U.S. 392 (1942) (holding that patents on machines for the utilization of salt products conferred no right to restrain the use of, or trade in, unpatented salt), abrogated by *Illinois Tool Works Inc. v. Indep. Ink, Inc.*, 547 U.S. 28 (2006); *Carbice Corp. v. American Patents Development Corp.*, 283 U.S. 27 (1931) (rejecting a licensing agreement in which the owner of a container for dry ice required purchases of that same owner's dry ice); see also *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661 (1944) (extending tying prohibition to an attempt to tie a patented domestic heating system to an unpatented combustion switch even though the switch was an integral part of the patented invention).

67. The U.S. Code provides in relevant part:

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: . . .

(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.

35 U.S.C. § 271(d) (2006).

68. See § 271(d)(4).

69. See § 271(d)(5).

70. See *Ill. Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 31 (2006) (holding that “the mere fact that a tying product is patented” does not support a presumption of market power in the antitrust context).

Ultimately, patent misuse doctrine is concerned about firms that expand the scope of a patent grant—either in time or space—beyond its initial bounds.⁷¹ This is why a patent-holder who has market power should not be allowed to “tie” unpatented products.⁷² Doing so expands the scope of a patent grant to a secondary market in which the patent-holder did not necessarily attain superior business acumen or skill.⁷³ Similarly, efforts to license patents beyond their expiration dates extend a patent’s statutorily prescribed bounds too far.⁷⁴ Forcing patent licensees to take nonessential patents as part of a package deal, as noted above, also expands the patent grant too far.⁷⁵

Prior to *Princo*, the Federal Circuit’s patent misuse jurisprudence suggested that the doctrine was, for the most part, coming into alignment with antitrust law. The Federal Circuit had identified three categories of misuse claims that were consistent with antitrust: those that were “illegal *per se*, a second group that are always permitted, and a middle group tested under the rule of reason.”⁷⁶ The Federal Circuit began expressing concerns that patent misuse would be broadened to many seemingly “wrongful” acts.⁷⁷ Thus, the Federal Circuit moved towards limiting patent misuse claims to instances where “a patentee [used] the patent to obtain market benefit beyond that which inheres in the statutory patent

71. See *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 136 (1969). Additionally, “the particular form or method by which the monopoly is sought to be extended is immaterial.” *United States v. Univis Lens Co.*, 316 U.S. 241, 251-52 (1942).

72. See cases cited *supra* note 66.

73. Much antitrust doctrine emphasizes the importance of rewarding superior business acumen. See, e.g., *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966) (noting that the Sherman act distinguishes between “the willful acquisition of maintenance of that power . . . [and] growth or development as a consequence of a superior product, business acumen, or historic accident.”).

74. See *Brulotte v. Thys*, 379 U.S. 29, 32-33 (1964) (holding that a patent license requiring royalty payments after the patent expired constituted misuse *per se* and that it was akin to tying the sale of patented products to unpatented ones).

75. See *supra* notes 62-65 and accompanying text; cf. *Zenith Radio*, 395 U.S. 100 (holding that package licensing agreements that force the licensee to pay royalties to the patent holder constituted patent misuse when many of the royalties were paid for unpatented products that did not use *any* of the patents in the package).

76. 1 Hovenkamp et al., *supra* note 30, § 3.2d, at 3-10.

77. See *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1373 (Fed. Cir. 1998) (“Although the defense of patent misuse indeed evolved to protect against ‘wrongful’ use of patents, the catalog of practices labeled ‘patent misuse’ does not include a general notion of ‘wrongful’ use.”).

right,”⁷⁸ as well as instances where the alleged misuse enlarged the patent grant with “anticompetitive effect.”⁷⁹

Antitrust law, then, seemed to provide a meaningful limit on the possible breadth of patent misuse claims. And indeed, many scholars have argued that antitrust analysis should guide patent misuse claims.⁸⁰ Nevertheless, some scholars continue to argue that patent misuse should maintain its own independence from antitrust law.⁸¹

As I will argue below, individuals on both sides of the argument make reasonable points. Insofar as patent misuse doctrine is judicially created, unwieldy, and guided by unbounded principles based on “patent scope,” it could become an unworkable doctrine that lacks judicially manageable standards.⁸² And insofar as antitrust principles are undeveloped and lack the tools to tackle problems in “innovation markets” involving emerging technologies,⁸³ it is fair to be concerned about antitrust law’s lack of bite in this area. Indeed, we are at a point at which the antitrust/patent misuse boundary is at a crossroads. When the *en banc* Federal Circuit heard *Princo*,

78. *Mallinckrodt, Inc v. Medipart, Inc.*, 976 F.2d 700, 704 (Fed. Cir. 1992).

79. *Windsurfing Int’l, Inc v. AMG, Inc.*, 782 F.2d 995, 1001 (Fed. Cir. 1986).

80. See, e.g., Mark A. Lemley, Comment, *The Economic Irrationality of the Patent Misuse Doctrine*, 78 Cal. L. Rev. 1599, 1631-32 (1990) (arguing that the patent misuse defense should be abolished to restore “economic rationality” to the law, even in areas “where the antitrust laws do not deter anticompetitive conduct sufficiently”); see also Note, *Is the Patent Misuse Doctrine Obsolete?*, 110 Harv. L. Rev. 1922, 1939 (1997) (arguing that although the substantive test for misuse should be subsumed under an antitrust analysis, the relaxed standing requirements of misuse should be maintained). Judge Posner has also made this argument. See *USM Corp. v. SPS Tech., Inc.*, 694 F.2d 505, 512 (7th Cir. 1982) (“If misuse claims are not tested by conventional antitrust principles, by what principles shall they be tested? Our law is not rich in alternative concepts of monopolistic abuse; and it is rather late in the day to try to develop one without in the process subjecting the rights of patent holders to debilitating uncertainty.”).

81. See, e.g., Robin C. Feldman, *The Insufficiency of Antitrust Analysis for Patent Misuse*, 55 Hastings L.J. 399, 431 (2003) (arguing that antitrust tests “cannot address the full range of patent policy concerns” and that patent misuse serves to promote invention in ways that the antitrust laws do not).

82. Cf. *Baker v. Carr*, 369 U.S. 186, 217 (1962) (noting the requirement that a legal rule be bounded by judicially manageable standards).

83. It is difficult to define an “innovation market” to analyze along standard antitrust principles because there is a general lack of information. See Alvin R. Chin, *The Misapplication of Innovation Market Analysis to Biotechnology Mergers*, 3 B.U. J. Sci. & Tech. L. 6, 28 (1997) (“[D]efining an innovation market is a speculative task, unlikely to yield a reliable delineation of the relevant market. The enforcement agencies are forced to define relevant assets and close substitutes for the products at issue with limited information.”). As one scholar has recently noted, “innovation market definition is a speculative venture that often defies precision where one is forced to define relevant assets and close substitutes with limited information.” Marshall Leaffer, *Patent Misuse and Innovation*, 10 J. High Tech. L. 142, 158 (2010). Antitrust law, therefore, has become too permissive by “enabling those who abuse licensing practices to escape liability.” *Id.*

therefore, it attempted to create a workable rule of patent misuse that would appease both of these camps. Unfortunately, however, it failed.

C. The Princo Court's Retooling of the Antitrust/IP Boundary

In *Princo*, the court attempted to retool the boundary between antitrust and patent misuse. It sought to create a clear principle for patent misuse—a theory of “patent leverage”—that should guide patent misuse inquiries moving forward.⁸⁴ In so doing, it departed from the rule that antitrust principles should necessarily guide patent misuse inquiries.

Its departure was explicit: “Even if [the Sony-Philips suppression agreement] . . . were shown to have anticompetitive effects, a horizontal agreement restricting the availability of Sony’s Lagadec patent would not constitute misuse of Philips’s Raaymakers patents or any of Philips’s other patents in suit.”⁸⁵

To the *Princo* majority, “patent misuse is about . . . ‘patent leverage,’ i.e., the use of the patent power to impose overbroad conditions on the use of the patent in suit that are ‘not within the reach of the monopoly granted by the government.’”⁸⁶ Patent leverage requires that the *patent in suit* significantly contributes to the practice under attack, and patent misuse is not appropriate when there is “no connection” between the patent right and the misconduct in question.⁸⁷ The opinion argues that “the use of funds from a lawful licensing program to support other, anticompetitive behavior is not the kind of ‘leveraging’ that the Supreme Court and this court have referred to in discussing the leveraging of a patent that constitutes patent misuse.”⁸⁸

For this latter proposition, the Federal Circuit cited *C.R. Bard, Inc. v. M3 Systems, Inc.*, and its admonition that, “[a]lthough the law should not condone wrongful commercial activity, the body of misuse law and precedent need not be enlarged into an open-ended pitfall for patent-supported commerce.”⁸⁹ Ironically, though, the *C.R. Bard* court also noted the traditional concerns of patent misuse: that patent misuse “relates primarily to a patentee’s actions

84. *Cf. Princo Corp. v. Int’l Trade Comm’n*, 616 F.3d 1318, 1330 (Fed Cir. 2010), *cert denied*, 131 S. Ct. 2480 (2011) (citing Senator Leahy’s statement expressing concern about the “lack of clarity and predictability in application of the patent misuse doctrine”).

85. *Id.* at 1331.

86. *Id.* (quoting *Zenith Radio Corp. v. Hazeltine Research*, 395 U.S. 100, 136–38 (1969)).

87. *Id.* at 1331.

88. *Id.* at 1332 (emphasis added).

89. *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1373 (Fed. Cir. 1998).

that affect competition in unpatented goods or that *otherwise extend the economic effect beyond the scope of the patent grant.*”⁹⁰

In making its final judgment, the *Princo* court applied its novel “patent leverage” theory to argue that, because Philips’ licensing payments to Sony “d[id] not place any conditions on the availability of *Philips’s* patents to any potential licensees, . . . it is not the power of Philips’s patent right that [wa]s being misused.”⁹¹ But this argument is both illusory and incorrect. Philips used the power of its patent grant to place a condition on the availability of its patent: the condition was that licensees, upon purchasing rights to the pooled licenses, were *required* to use Philips’ analog method to create Orange Book compliant discs. They could not use Sony’s digital method despite the fact that the Lagadec patent was included in the patent pool. Further, and as I will explain in Part IV, it is quite possible—based on an application of the economic theories of network industries—that Philips used the suppression agreement to expand the scope of its patent monopoly beyond the monopoly it would have had without that agreement. That is exactly what the patent misuse doctrine condemns.

* * *

In this Part, I have aimed to provide the reader with a basic background of the *Princo* decision. In so doing, I have illustrated three factual disputes, as well as the theoretical basis from which the Federal Circuit made its decision. As I will explain in Part IV, all of the court’s analyses—both the factual analyses and the theoretical ones—failed to consider the basic economics of network effects and the implications that could follow from those economics. In Parts II and III, I outline the important economic concepts and theories that will guide my critique of the Federal Circuit’s analysis. By glossing over these economic concepts, the Federal Circuit was unable to ground its *Princo* analysis in any discernible principle. Yet such a principle would be useful for the courts in future cases involving suppression of patented technologies in network industries.

II. THE NETWORK EFFECTS CONTINUUM

In recent years, the term “network effects” has been used extremely broadly. It has “become an expansive, all-inclusive term that appears to embrace almost any composite good or service

90. *Id.* at 1372 (emphasis added).

91. *Princo*, 616 F.3d at 1332 (emphasis added).

embodying complementary components.”⁹² The benefits of networks accrue from the positive externalities associated with the existence of many members on the same networks; that is, the economies of scale associated with maintaining a single network as opposed to several distinct networks with their own independent sets of fixed costs, compatibility, and standardization.⁹³ But network effects are not the same for all “network industries”: indeed, as I note in this Part, they vary along a continuum for different industries.

A. Network Effects: Consumer Driven and Context Dependent

One of the economic phenomena that eluded early antitrust doctrine was the natural monopoly. In some industries, such as public utilities, suppliers face declining average cost curves which allow them to achieve increasing returns to scale over the entirety of their production curve.⁹⁴ While it was more economically efficient for a single producer to sell the good, the resulting monopoly “mandated governmental intervention, most particularly in the form of price regulation.”⁹⁵ Although “the case for automatic price regulation in natural monopoly markets has weakened in recent years,”⁹⁶ one thing is certain about natural monopoly: it is a supply-side phenomenon that is entirely dependent on the “nature of the relevant market,” which supplies the very foundation of antitrust analysis under the rule of reason.⁹⁷

Network effects are different.⁹⁸ While they, like natural monopoly, “challenge . . . important tenet[s] of classical economic theory,”

92. Lawrence J. White, U.S. Public Policy toward Network Industries 2 (1999).

93. *Id.* at 8-11.

94. *See, e.g.*, Hal R. Varian, Intermediate Microeconomics: A Modern Approach 430 (Ed Parsons ed., 6th ed. 2003) (“Think of a gas company, for example. Here the technology involves very large fixed costs—creating and maintaining the gas delivery pipes—and a very small marginal cost to providing extra units of gas—once the pipe is laid, it costs very little to pump more gas down the pipe.”).

95. Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 Cal. L. Rev. 479, 484 (1998).

96. *Id.* As one scholar has noted, the introduction of competition in “natural monopoly” industries may now even be considered “welfare improving” in some instances. *See* Oz Shy, *The Economics of Network Industries* 8 (2001). Indeed, “[t]he deregulation of the airline industry in 1979, the 1982 break up of the world[s] largest telephone company, AT&T, in the United States, and the deregulation of these industries in Europe in the 1990s confirmed the view that the introduction of competition into these industries is welfare improving.” *Id.*

97. *See, e.g.*, *Copperweld Corp. v. Independence Tube Corp.*, 467 U.S. 752, 768 (1984) (equating the rule of reason with “an inquiry into market power and market structure designed to assess [a restraint’s] actual effect”).

they are entirely demand-side effects.⁹⁹ In a given industry with network effects, there are not necessarily the same economies of scale associated with natural monopolies. Unlike traditional antitrust analysis, therefore, an analysis of the “relevant market” that incorporates network effects would not merely consider the static nature of the product markets that exist within an industry. Rather, it would also consider the dynamic, demand-side behaviors of consumers within an industry.¹⁰⁰

The importance of understanding consumer behaviors cannot be underestimated. Because of the unique demand-side issues raised by compatibility, network externalities,¹⁰¹ switching costs,¹⁰² and potential economies of scale in networked industries, the relevant markets in these industries sometimes “cannot function as competitive markets, where by competitive we take the usual interpretation of price-taking behavior.”¹⁰³ The degree to which this is true, however, depends on our analysis of two factors: (1) the extent to which a particular market behaves as a natural network;¹⁰⁴ and (2) the extent to which consumers have had a meaningful opportunity to express their preferences within that market. These two factors inform each other. While the first describes the innate characteristics of a particular industry, the second informs our interpretation of the first factor by providing analysts with insights into demand-side consumer behavior and preferences within the industry.

98. See Daniel F. Spulber, *Consumer Coordination in the Small and in the Large: Implications for Antitrust in Markets with Network Effects*, 4 J. Comp. L. & Econ. 207, 252 (2008) (“Contrary to what is widely asserted, network effects do not create the conditions for a natural monopoly. Although network effects are by definition the benefits from joint consumption of network goods, this does not imply that there should only be one network.”).

99. Lemley & McGowan, *supra* note 95, at 484.

100. Indeed, to the extent that consumers act “irrationally” in networked industries, the meaningful incorporation of network effects analysis into antitrust doctrine will likely require movements into the behavioral economics arena. See generally Christine Jolls, Cass R. Sunstein, & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 Stan. L. Rev. 1471 (1998) (arguing that analyses at the intersection of law and economics should incorporate refinements to the rational actor model).

101. Network externalities are market effects “in which one person’s utility for a good depends on the *number* of people who consume the good.” Varian, *supra* note 94, at 631.

102. Switching costs refer to the costs of switching from one technological standard to another. See Katz & Shapiro, *supra* note 23, at 94 (“Once a certain system is chosen, switching suppliers is costly . . .”).

103. Shy, *supra* note 96, at 5–6 (emphasis added).

104. For a definition of natural network, see *infra* note 110 and accompanying text.

1. The Difficulties of Understanding Demand-Side Network Effects

Unfortunately, despite our need to understand the demand-side behavior of consumers in networked industries, the degree of “empirical data on the behavior of firms and consumers in network markets is scarce[].”¹⁰⁵ Thus, while we can hypothesize some of the factors that may influence consumers to “tip” towards a new standard,¹⁰⁶ we cannot be sure of which factors predominate. This is a critical reason why we should allow consumers, in the presence of multiple standards in a given networked industry, to have the opportunity to express their market preferences wherever possible.

Notwithstanding our lack of understanding of consumer behaviors in network industries, however, there are certain factors which could help give courts insight into the degree to which network effects are relevant. For example, one set of commentators has noted a concept of “synchronization value”—that is, the “additional value that results from the adoption of the same format by other consumers.”¹⁰⁷ This factor is highly influenced by the market share of a particular good. It also affects a consumer’s perception about whether or not other consumers would be willing to substitute to the new standard, which is another important demand-side factor.¹⁰⁸ Consumers may also be concerned about backwards compatibility when deciding whether or not to switch to different standards.¹⁰⁹ The more backwards compatibility there is, the lower the “switching costs” associated with moving towards a new standard.

2. The Desirability of Standards Depends on the Magnitude of Positive Network Externalities

The degree to which standardization is desirable depends on the degree to which a particular network exhibits the qualities of a natural network.¹¹⁰ Unfortunately, the assumption is often that, in a

105. Lemley & McGowan, *supra* note 95, at 485.

106. Oz Shy, for example, notes that factors such as network size, overall perceptions of other consumers’ willingness to substitute for a new technology, technology growth rates, and the degree to which a new technology is compatible with an old technology, considerations consumers weigh on the demand side. *See* Shy, *supra* note 96, at 84.

107. Stan J. Liebowitz & Stephen E. Margolis, *Winners, Losers & Microsoft: Competition and Antitrust in High Technology* 93 (2d ed. 2001).

108. *See* Shy, *supra* note 96, at 84.

109. *Id.*

110. I define a “natural network” as a network that appears well suited, based on consumer demand, to be a network that consumers hope will comprise all consumers in the relevant market and converge toward a single standard. Standards for the interconnectivity of the Internet, as well as the standards for

given networked industry, the only possible stable equilibria produce “winner-take-all result[s] . . . for standards and other increasing returns markets.”¹¹¹ But this assumption is incorrect because, “even with network effects, and even without differences in taste . . . it is still possible for a mixed-format equilibrium to exist.”¹¹² Indeed, “[t]he precise nature of the competitive equilibrium depends on how consumers form expectations about networks.”¹¹³ In the absence of such winner-take-all equilibria, there is less of a justification for standards that could stifle nascent technological innovations.¹¹⁴

This, for example, occurs in the “unremarkable case where each of two [competing] formats has a fairly large number of adherents who much prefer it.”¹¹⁵ Thus, while Microsoft may have a large proportion of the operating system market, those who favor Apple strongly prefer MacOS—the equilibrium, therefore, favors a situation where both have a significant market share. A small but substantial minority, meanwhile, uses Linux or Unix as their operating system.

The result in the operating system market is unsurprising. Such industries may “require a critical mass [of network participants] but are not much helped by participation beyond that level.”¹¹⁶ This is similar to the fact that “[c]ity size[s] are limited because urban agglomeration economies are exhausted” once a city reaches a certain population size.¹¹⁷ Once the gains a consumer may get from a larger network size are negligible in relation to the market as a whole, “[t]he choice of the ‘best’ network becomes one of choosing *the best set* of networks.”¹¹⁸ The network effects in the operating system market are strong, but not strong enough to eliminate consumers’ preferences for multiple choices in that market. Consumers, in these instances, would prefer multiple competing stan-

railroad track throughout the United States would arguably fall under this definition.

111. Liebowitz & Margolis, *supra* note 107, at 97-98.

112. *Id.* at 98-99.

113. Katz & Shapiro, *supra* note 23, at 96. Consumers do the best they can to form expectations regarding the nature of the particular networked industry.

114. *But see id.* at 99 (noting that when a network is a natural monopoly and exhibits characteristics of a natural network, “there is no benefit in trying to force it into a competitive structure with many small firms each having excessively high production cost structures and low synchronization values for consumers”).

115. *Id.* at 104.

116. S.J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. Econ. Persp. 133, 140 (1994).

117. *Id.* This is the idea of an *inframarginal externality*, which refers to those situations where the marginal benefits of network size have been exhausted. *Id.*

118. *Id.* at 141 (emphasis added).

standards—and multiple networks—over a single networked standard.¹¹⁹

This may be in contrast to the market for High Definition video, as exhibited in the recent standards battle between HD DVD and Blu-Ray. Whereas significant segments of the population are loyal to Microsoft and Apple, consumers had strongly preferred Blu-Ray over HD DVD. While the market shares of Blu-Ray and HD DVD were approximately equal as of April 2007,¹²⁰ HD DVD's market share had eroded to a mere 16 percent as of March 2008.¹²¹ In less than a year, HD DVD had lost 30% of its market share, and it seems reasonable to conclude that the market may have been headed towards a “winner-take-all” equilibrium. When Warner Brothers discontinued use of the HD DVD format, it suggested as much: Although Warner Brothers initially “produced both high-definition formats in an effort to provide consumer choice,” the existence of two formats “led to consumer confusion and indifference toward high definition.”¹²² Once Time Warner and other studios knew that “[c]onsumers ha[d] clearly chosen Blu-ray,”¹²³ they made the decision to hand the standards war victory to Sony.¹²⁴

These two examples illustrate that, depending on the particular context, consumers may push the market toward different equilibria depending on the magnitude of network effects in a particular industry.¹²⁵

119. Cf. 2 Hovenkamp et al., *supra* note 30, § 35.2a, at 35-9–35-10 (“In many, perhaps most industries, competition is best served by allowing different types of products to compete with each other. . . . In industries where there is no significant social benefit to standardization, standard-setting organizations may reduce nonprice competition by effectively excluding disfavored products from the market.”).

120. The market share “since inception” had been 56.2% for Blu-Ray and 43.8% for HD DVD. See *Blu-ray Disc Statistics – Historical Blu-ray Software Market Share vs. HD DVD*, Blu-rayStats.com, <http://www.blu-raystats.com/MarketShare/Historical.php> (last visited May 4, 2011).

121. *Id.*

122. Press Release, Time Warner, Warner Bros. Entertainment To Release its High-Definition DVD Titles Exclusively in the Blu-Ray Disc Format Beginning Later This Year (Jan. 4, 2008), http://www.timewarner.com/newsroom/press-releases/2008/01/Warner_Bros_Entertainment_to_Release_Its_HighDefinition_01-04-2008.php.

123. *Id.*

124. Because the HD DVD may be better-suited to having a better standard, the robust competition between Blu-Ray and HD DVD may have actually “slowed adoptions of either product by consumers unwilling to be stranded with an obsolete, non-standard device.” 2 Hovenkamp et al., *supra* note 30, § 35.2c, at 35-13.

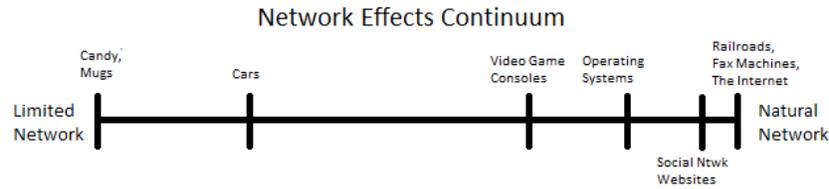


Figure 1. The Network Effects Continuum

To illustrate this point, Figure 1 illustrates the “Network Effects” continuum. Towards one end is an industry with little to no network effects, such as the candy industry. In equilibrium, there may be many different types of candy “standards,” and purveyors of candy are not (for the most part) concerned with the benefits associated with large swaths of the population consuming the exact same type of candy.¹²⁶ Towards the other end of the continuum, however, there are markets with more network effects, such as the Internet. While multiple Internet service providers exist, all of them provide access to the *same network* that employs the same *connectivity standards*. Because the Internet is a natural network, these providers would almost certainly go bankrupt if they did not provide access to the Internet as we know it.¹²⁷ Similarly, a manufacturer of railroad track would almost certainly go bankrupt if its track did not conform to the national standard. This is why, in such industries, competing firms would rather negotiate to form a single standard and compete within that standard than engage in competition between their different standards.¹²⁸

125. In *United States v. Microsoft Corp.*, the court failed to consider adequately the extent to which the network effects within the *operating system market* actually impacted consumers’ choices to buy the Windows operating system. See *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001). The court failed to consider that the network effects are segmented by different user tastes. See Liebowitz & Margolis, *supra* note 107, at 106 (noting that Apple’s continued existence is “based in part on its strength in publishing and entertainment markets that play to its historic strengths in graphics”). Other such user niches could be exploited by other possible operating system entrants.

126. Other examples include products like steak knives, coffee mugs, or couches. “It is not clear . . . why the world would need consistent rules” (or standards) for these sorts of products. 2 Hovenkamp et al., *supra* note 30, § 35.2a, at 35-9.

127. Cf. 2 Hovenkamp et al., *supra* note 30, § 35.2b, at 35-10 (“[I]n an important subset of standard-setting organizations—those that set standards in network markets, where *one standard* is likely to prevail in any event—the standard-setting organization may actually serve to expand competition relative to the alternatives.” (emphasis added)).

128. Cf. Stanley M. Besen & Joseph Farrell, *Choosing How to Compete: Strategies and Tactics in Standardization*, 8 J. Econ. Perspectives 117, 124 (1994) (“[i]f a standards battle will dissipate a large proportion of potential profits—then both firms

Towards the middle of this continuum, meanwhile, are other industries that fall somewhere in between. They have considerable network effects, but possibly not enough to warrant the adoption of a single standard. Examples of such industries include the operating system industry discussed above, the video game industry,¹²⁹ and the cellular phone market.¹³⁰

B. *The Standardization Continuum*

Many assume that, in the presence of a networked industry, it is preferable to have a single standard than no standard at all. Following the *Princo* decision, for example, some may say that it was preferable to have a consistent method for encoding data to CD-R/RW discs, regardless of whether or not that the particular method was necessarily the *best* method. As long as the Orange Book Standard correctly writes data to the disc, it may not matter exactly *how* the data is written. And it is better to know that all compatible CD-R/RW disk drives are able to read *any* disc than to have several types of discs that may not be interoperable.

Such a mindset, as discussed above,¹³¹ produces an all-or-nothing proposition that is inconsistent with basic economic theory. While the ideal marketplace *may* be suited to a single standard in particular contexts, that does not require the elimination of possible competing standards. Indeed, standardization is only efficient if the benefits that accrue from everyone being able to use the standard (including those who dislike the standard) outweigh the benefits of a competitive market that has not achieved standardization.¹³² In some contexts, therefore, a desirable economic equilib-

will prefer intra- to inter-technology competition.”).

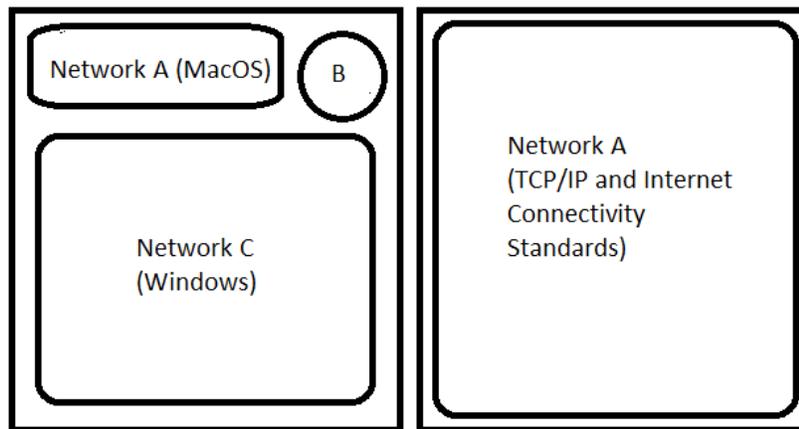
129. The video game industry has always had at least 2-3 major players at any given time (right now, for example, Sony, Nintendo, and Microsoft remain relevant players). In the 1990s, Nintendo, Sega, and Sony were all major players. While it would be difficult for a large number of video game providers to coexist in the market, given the degree of network effects, video game standards have historically *not* been interoperable. Yet there is a consistent market equilibrium with 2-3 key players. This suggests that collusive efforts to suppress standards in this area may have been desirable. A recent paper investigating the network effects of the video game industry notes that both *network size* and *network strength* plays a role in the equilibrium in that industry—the firm with the largest installed base is not automatically the “winner.” See Venkatesh Shankar & Barry L. Barry L. Bayus, *Network Effects and Competition: An Empirical Analysis of the Home Video Game Industry*, 24 Strategic Management J. 375 (2003).

130. See *id.* at 376 (noting that CDMA, TDMA, and GSM were the three relevant standards in the cellular phone market).

131. See *supra* Subsection I.A.1 (discussing the Federal Circuit’s factual analysis in *Princo* and its implicit assumption that a single standard was desirable in the CD-R/RW market).

rium may require variety.¹³³ This appears to be true in the market for personal computers where, despite compatibility issues between Apple Computers and IBM Compatible PCs, there are significant network effects associated with the use of each. As noted above, at least *three* viable standards have emerged in the Operating System market.

This is in contrast to the Internet, where a *single*, dominant standard has ultimately been preferable to several distinct networks. Prior to the modern internet, several Internet service providers—such as AOL, Prodigy, and CompuServe—attempted to create their own distinct “walled gardens” in which users could not interact with people who used other ISPs.¹³⁴ These were effectively attempts to have multiple communication “standards” on the Internet. The ISPs were not interoperable, and this strategy forced individuals to purchase access to multiple ISPs to expand their networks. Eventually, however, the Internet converged to a single standard after consumers realized the unique importance of network effects in this area.¹³⁵



Contrasting the Demand Side Market Structure of the Operating System and Internet Standards Markets

132. See Joseph Farrell & Garth Saloner, *Standardization and Variety*, 20 Econ. Letters 71, 72–73 (1986).

133. See *id.* at 71–74; see also Katz & Shapiro, *supra* note 23, at 106 (noting that, in some cases, “important variety benefits may be lost through standardization”).

134. See Tim Wu, *The Master Switch* 265 (2010) (noting that AOL refused its subscribers access to the Internet beyond its walled garden in the early 1990s).

135. See, e.g., *id.* at 265–66 (“[B]y 2000 AOL was less a destination in itself—the platform that it had been—than simply the most popular way to reach the Internet. . . . At most, AOL could recommend Time Warner content to anyone logging on, but it was almost immediately clear that that dividend was not worth much (not much more than a pop-up ad, actually).”).

Figure 2. Contrasting the Markets for Operating Systems and the Internet "Market"

Figure 2 illustrates the contrast between these two markets. In the "market" for operating systems on the left, three standards coexist with their particular market niches. Windows dominates the network market (C), but that market also has other major players such as MacOS (A) and Linux/Unix (B). Consumers, however, rejected the "walled gardens" of CompuServe and Prodigy for a single interconnected network called the Internet in the panel on the right. Thus, as a corollary to the "network effects" continuum, it follows that there is a standardization continuum that is willing to support more or fewer standards depending on the nature of consumer demand.

The interplay between the demand-side effects of networked industries and the degree of optimal standardization, simply put, illustrates the importance of allowing *natural* market forces to play out in these industries. If a particular market is suited to a single standard, the presence of multiple standards will ultimately converge to a single standard. And if the market is not so-suited, the market will bear out that prescription as well.

III. THE "LOCK-IN" PROBLEM

If natural market forces do not play out in networked industries, those industries may arrive at suboptimal equilibria along the standardization continuum. In the case of natural networks, they may converge towards a single, suboptimal standard. And, in other networked industries, they may not converge towards an ideal variety of standards to suit consumer preferences. This is at least partially a result of the "lock-in" problem in network industries, which is described below.

A. *The Nature of “Lock-In”*

In a networked industry, the positive externalities that result can lead to “tipping.”¹³⁶ As two technologies compete in the industry, the market may eventually “tip” towards a single, preferred option.¹³⁷ In some cases, the market tips toward the better technology; however, in other cases, an inferior technology may win out because of superior marketing, “inflated reviews” in a magazine, or some other factor that contributed to the technology’s positive network effects.¹³⁸ An analogue of “tipping,” as discussed in this Article—results from the effects of an industry converging toward a single standard when the market optimum would prefer multiple standards.¹³⁹

Generally speaking, there is not a problem with tipping itself. A problem does arise, however, when an inferior technology (or market equilibrium) becomes “locked in” as an industry standard where switching costs to a different (potentially superior) technology become too high.¹⁴⁰ Such a lock-in problem, for example, happened to the Japanese when they prematurely adopted an inferior standard for HDTV.¹⁴¹

Lock-in generally occurs as a result of investments (or sunk costs) that have occurred from consumers’ use of the standard.¹⁴² When a computer memory standard is set, for example, investments are undertaken in “(1) designing chips and products conforming to the standard; (2) testing and verifying the designs; (3) building, testing, and qualifying prototypes; and (4) ramping up production on a commercial scale.”¹⁴³ After such investments are made, switching to a new memory standard could cost “hundreds of millions of dollars.”¹⁴⁴ A similar phenomenon happens in other markets. After the market for video cassettes began tipping from the Sony Betamax to VHS, Betamax users “were stranded” because they had made investments in Betamax players and cas-

136. See David S. Evans & Richard Schmalensee, *A Guide to the Antitrust Economics of Networks*, 10 *Antitrust* 36, 36 (1996).

137. See Katz & Shapiro, *supra* note 23, at 106 (describing “tipping” as the “tendency of one system to pull away from its rivals in popularity once it has gained an initial edge”).

138. Evans & Schmalensee, *supra* note 136, at 37.

139. This is the case despite the fact that “[c]onsumer heterogeneity and product differentiation tend to limit tipping and sustain *multiple networks*.” Katz & Shapiro, *supra* note 23, at 106 (emphasis added).

140. See Katz & Shapiro, *supra* note 23, at 106.

141. See *id.*

142. See Michael A. Carrier, *Innovation for the 21st Century: Harnessing the Power of Intellectual Property and Antitrust Law* 329–30 (2009).

143. *Id.*

144. *Id.* at 330.

settes.¹⁴⁵ At least initially, Betamax users did not want to pay the costs necessary to switch to VHS.

B. Securing “Lock-In”

There are several ways that patentees like Philips could negate the benefits associated with standard-setting. First, they may encourage the adoption of standard-related patents by initially offering the standard royalty free to licensees only to enforce the royalties once the standard becomes “locked-in.”¹⁴⁶ Second, a patent-holder may engage in patent “hold-up,” where it announces that it holds a patent that is required to implement a standard only *after* that standard is set by an SSO.¹⁴⁷ The FTC has challenged these practices in several contexts,¹⁴⁸ and has secured consent decrees halting the practices in at least two of these cases.¹⁴⁹

A patent-holder may also promote the premature “lock-in” of a market standard by suppressing potential competing technologies, thereby artificially expanding the market power associated with a patent grant.¹⁵⁰ Similarly, “SSOs could restrict product diversity and consumer choice by creating an *unnecessary* standard and

145. *See id.* at 323–24.

146. This is referred to as the “bait-and-switch” strategy. *See* Robert P. Merges & Jeffrey M. Khun, *An Estoppel Doctrine for Patented Standards*, 97 Cal. L. Rev. 1, 1 (2009).

147. This is also known as the “snake-in-the-grass” strategy. *Id.* at 10, 14–15. Rambus employed this strategy when it refused to disclose its patents prior to the development of an industry standard for computer memory. Once the standard had become entrenched, it became virtually impossible to abandon the standard. *See* Carrier, *supra* note 142, at 329. The FTC held that Rambus engaged in exclusionary conduct under the Sherman Act. *See Rambus, Inc.*, 2006 WL 2330117 (F.T.C. Aug. 2, 2006), at *118 (finding that “Rambus engaged in exclusionary conduct” by “hiding the potential that Rambus would be able to impose royalty obligations of its own choosing, and by silently using JEDEC to assemble a patent portfolio to cover the SDRAM and DDR SDRAM standards”). The DC Circuit, however, reversed this holding. *See Rambus, Inc. v. F.T.C.*, 522 F.3d 456 (D.C. Cir. 2008). Even though Rambus’ conduct would have been anticompetitive under the Sherman Act if Rambus’ actions definitely caused JEDEC to adopt a different standard than it otherwise would have, *See id.* at 463–64, “there was insufficient evidence that JEDEC would have standardized other technologies had it known the full scope of Rambus’s [patent portfolio].” *Id.* at 464.

148. It has challenged these practices in the computer memory industry, *see supra* note 147 and accompanying text, the computer industry, *See Dell*, 121 F.T.C. 616 (1996), and in the oil and gas industry, *See Union Oil Co. of California*, Docket No. 9305 (F.T.C. June 10, 2005), available at <http://www.ftc.gov/os/adjpro/d9305/050802statement.pdf>.

149. *See* Carrier, *supra* note 142, at 93.

150. I explain that this sort of expansion may have occurred in *Princo* in Part IV *infra*.

excluding certain products.”¹⁵¹ Finally, firms can engage in exclusionary conduct during the standard-setting process by, for example, “exclud[ing] a number of . . . significant potential entrants from [a standard-setting] alliance”¹⁵² This and similar conduct “has the anti-competitive potential of excluding output from the market.”¹⁵³

Nevertheless, there is no doubt that companies that control prevailing standards can engage in a wide range of practices that could still achieve pro-competitive ends in the long run—even with the presence of some lock-in. In the *Princo* context, Philips could have, *on its own*, refused to deal with others, refused to interoperate with other standards, and refused to license its standard to any other manufacturer of CD-R/RW technology. But, this is because, in such contexts, “competitors [using other standards] can . . . gain[] ground against incumbents”¹⁵⁴—their unilateral refusal to deal would not suppress alternative standards in those cases. For example, competitors with their own networks in the operating system context—such as Apple and Linux—were eventually able to show in the wake of the *Microsoft* case that they could become competitive with their own slices of market share.¹⁵⁵

This is why an analogy to the *Microsoft* case is quite useful here. The *Microsoft* antitrust case was largely about network effects. The alleged harm was that Microsoft engaged in anticompetitive practices with the “goal . . . to maintain its operating systems monopoly.”¹⁵⁶ The theory of the case emphasized the “applications barrier to entry”¹⁵⁷ created by network effects that allegedly made it “difficult or impossible for rival operating systems to compete effectively

151. Carrier, *supra* note 142, at 335 (emphasis added).

152. Hans-Werner Gottinger, *Economies of Network Industries* 74 (2003); *see also* Carrier, *supra* note 142, at 336 (noting a concern “arising in SSOs in which membership is restricted to a subset of an industry, involves a concerted refusal to deal with competitors, or boycott.”); 2 Hovenkamp et al., *supra* note 30, § 35.3, at 35-21 (noting that, “if membership in a standard-setting organization is limited to a subset of the full industry, and if the standard it produces is both one from which nonmembers can be excluded and which possesses durable market power (perhaps due to network effects), refusal to allow open participation in the standard may have anticompetitive effects”); *cf. Nix. Wholesale Stationers v. Pac. Stationery & Printing Co.*, 472 U.S. 284 (1985) (applying a rule of reason analysis and market power inquiry when assessing the legitimacy of a group boycott under Section 1 of the Sherman Act).

153. Gottinger, *supra* note 152, at 74.

154. Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, 6 J. Competition L. & Econ. 153, 182 (2010).

155. *Id.* at 180 (“Today Linux and Apple are significant competing standards.”).

156. Franklin M. Fisher & Daniel L. Rubinfeld, *United States v. Microsoft: An Economic Analysis*, in *Did Microsoft Harm Consumers? Two Opposing Views* 1, 5 (David S. Evans et al. eds., 2000).

with Microsoft.”¹⁵⁸ Concerned that the Netscape browser would erode the applications barrier by making it easier for software companies to write software that could be compatible with computers running different operating systems,¹⁵⁹ Microsoft attempted (unsuccessfully) to “enter into a horizontal agreement with Netscape to eliminate Netscape as a competitor supplying browsers for Windows,”¹⁶⁰ engaged in similar conduct to suppress other “platform-level applications programming interfaces” with Intel and Apple,¹⁶¹ and introduced predatory pricing schemes with respect to the Internet Explorer browser by bundling it for free with Windows 95.¹⁶²

While Microsoft’s actions may have been distasteful,¹⁶³ it was still true that, at the end of the day, Microsoft introduced an inno-

157. The “applications barrier to entry” resulted from the network effects associated with consumers’ use of Microsoft’s operating system. Software companies had an incentive to write applications that were compatible with Windows due to the high costs of developing and porting applications between different operating systems, along with Microsoft’s high market share. *Id.* at 11. Because consumers did not want to purchase operating systems that could not run useful software, this situation created a “positive feedback effect” that allowed Windows to dominate the operating system market. *Id.*

158. *Id.* at 11.

159. Because the Netscape Internet browser was “capable of supporting applications” that ran *independently from the operating system*, Microsoft was concerned that the network effects associated with the “applications barrier to entry” would be eliminated in a world with Netscape. Consumers, then, would no longer need windows. *See id.* at 14. But foreclosing such competition *on its operating system* would not foreclose entry into the operating system market. Today, still, Google is piloting an operating system that runs entirely using web-based Applications. *See* Consumer Reports, *Google Announces Chrome Web Store, Laptop Pilot Testing Program*, Dec. 7, 2010, <http://news.consumerreports.org/electronics/2010/12/google-chrome-web-store-notebook.html> (“Google made a number of announcements featuring its Chrome operating system, including details about upcoming Chrome laptops . . .”).

160. Fisher & Rubinfeld, *supra* note 156, at 16. This aspect of Microsoft’s efforts, if successful, would have arguably been consistent with Philips’ suppression effort in *Princo*. The difference is that the express suppression effort by Philips was actually successful.

161. *Id.* at 16–18.

162. “The IE browser was not only given away free; companies were also paid money and given valuable concessions to accept, use, distribute, and promote IE.” *Id.* at 19. This was despite the massive investment costs associated with the R&D necessary to create the browser. *See id.* at 19.

163. *See* David S. Evans & Richard L. Schmalensee, *Be Nice to Your Rivals: How the Government Is Selling an Antitrust Case without Consumer Harm in United States v. Microsoft, in Did Microsoft Harm Consumers? Two Opposing Views* 45, 47 (David S. Evans et al. eds., 2000) (“Some of Microsoft’s contracts, offering marketing preferences to distributors of Internet Explorer in return for preferential access to their customers, may have appeared problematic, but the contracts did not harm competition.”).

vative new web browser “and left consumers with the choice of two first-rate browsers instead of one.”¹⁶⁴ And most importantly, Microsoft did not restrict the “competition that matters” in the operating system market—the ability of an “*innovative* entrant [to] compet[e] effectively.”¹⁶⁵ Microsoft’s actions may arguably have hindered competition in the web-browsing and operating system markets, but those actions did not categorically foreclose the possibility of competition in those markets. Specifically, there was no agreement with competing operating system providers that suppressed competition with those operating systems.

Philips’ actions, unlike Microsoft’s, did have such a categorical effect on competition in *Princo*: the pooling arrangement foreclosed the possibility that Sony’s Lagadec digital encoding method could compete with Philips’ analog method in the CD-R/RW marketplace. In *Microsoft*, on the other hand, Microsoft did not foreclose competition with Netscape—as of 1998 Netscape’s program, called ‘Navigator’, had been distributed on 22 percent of computers,¹⁶⁶ and there was no evidence that “consumers who wanted Navigator had difficulty obtaining it.”¹⁶⁷

While some argued that “Microsoft has engaged in conduct that has no compelling economic justification but for its effect of restricting competition,”¹⁶⁸ its conduct has never prevented Apple from competing using its MacOS, and, to this day, Google is attempting to compete in the operating system market using its ChromeOS—an operating system that is completely web-based.¹⁶⁹

Ultimately, then, Microsoft has not been able to secure lock-in that has superseded meaningful competitive efforts against its operating system. Meanwhile, because other market entrants have not been foreclosed from the market, we have learned that the operating system market—a market that some have assumed should be governed by a single standard—is actually a market in which consumers have preferred some—albeit minimal—variety. This is in contrast to *Princo*, where the court, by approving Philips’ suppres-

164. *Id.* at 45–46; *Cf.* Liebowitz & Margolis, *supra* note 107, at 110 (noting that although “[a]ctions to establish a standard may appear to be actions to defeat, kill, or destroy rivals,” these “seemingly predatory actions are exactly the mechanisms that prevent lock-in to inferior standards”).

165. Evans and Schmalensee, *supra* note 163, at 66. Network effects, in and of themselves, do not “retard the adoption of *innovative* products that provide new features consumers value.” *See id.*

166. *Id.* at 79.

167. *Id.* at 80. Netscape also had “enormous market capitalization” from investors, which enabled it to use many creative business tactics to compete. *Id.* at 110.

168. Fisher and Rubinfeld, *supra* note 156, at 41.

169. *See supra* note 159 and accompanying text.

sion agreement, preempted our understanding of the consumer preferences in the CD-R/RW market.

IV. LOOKING BEFORE LOCKING: THE IMPORTANCE OF DEMAND IN NETWORK INDUSTRIES

As Judge Posner has noted, some of “the networks that have emerged in the new economy do not seem particularly secure against competition.”¹⁷⁰ Although “subsequent technological innovation” may be discouraged when “network externalities are large,”¹⁷¹ there is no guarantee that the network externalities will be large enough in every industry to deter meaningful competition within the market for a particular technology.

Judge Posner’s statement is just one corollary to the network effects continuum discussed above. Depending on the degree of network effects in a market, consumers may prefer one standard. In others they may prefer two or three. And in still others they may prefer twenty. While it may be true that, in many cases, industry leaders seek to adopt standards in good-faith based on the nature of the relevant market,¹⁷² it may also be true that, in other instances, they may seek to take advantage of the “standardization revolution” to expand the scope of a patent monopoly beyond what consumers want. In this Part, I provide legal principles that should guide courts moving forward when they analyze patent misuse claims in the network industry context.

170. Richard A. Posner, *Antitrust in the New Economy* 4–5 (John M. Olin Law & Economics Working Paper No. 106 2d Series) (2000), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=249316.

171. *Id.* at 5. Posner notes that, when a network will be a “natural monopoly”—what I refer to as a natural network—the first entrant will be able to charge low prices as an inducement to enter the market and gain a monopoly share in the long-run. *See id.* at 4. But this may not be the case in a networked industry that is not a natural network, since the network effects do not predominate and consumers are willing to consider factors beyond the network as dispositive. This was, for example, the case in the Blu-Ray/HD DVD war, where consumers appeared to care more about storage capacity than about sheer network effects. *See, e.g.,* Blu-ray vs HD DVD, <http://www.mediacollege.com/video/format/compare/bluray-hddvd.html> (noting that Blu-ray won the standards war because it “had the trump card of 40% more capacity”); Jacson Maughan, *What is the Difference Between HD DVD and Blu Ray*, <http://www.life123.com/technology/home-electronics/bluray-dvd-players/what-is-the-difference-between-hd-dvd-and-blu-ray.shtml> (noting that Blu-ray edged out HD DVD in part because “more data can be stored in a smaller space on Blu-ray discs”).

172. *See, e.g.,* Lemley & McGowan, *supra* note 95, at 516–17 (noting that private standard-setting may be efficient because “multiple companies participating in a standard means that those companies can compete to offer products incorporating the standard after it is selected, thus expanding output and lowering prices”).

A. Assess the Demand-Side Nature of Markets

The first reform that should take place in the patent misuse network effects area concerns a more meaningful analysis of the demand-side nature of the relevant industries at issue. If *Princo* shows us one thing, it shows us that the Federal Circuit did not consider the extent to which the network effects in the CD-R/RW market would have supported multiple competitors in that market. Most of the court’s analysis seemed to take for granted that the market for CD-R/RWs was suited to a single data encoding standard. But, this is not necessarily true, and courts should be more mindful of the possibility of multiple coexisting standards in network industries.

1. Did the Philips-Sony Agreement Unlawfully “Expand the Scope” of Philips’ Patent Monopoly over CD-R/RWs?

As noted above, the relevant inquiry in patent misuse is whether a patent-holder has used a patent to “expand the scope of the patent monopoly.”¹⁷³ On this question, the *Princo* majority simply assumed that Philips had not leveraged the Orange Book patent, and the dissent argued for a broad view of patent misuse. Neither opinion considered the implications of a demand-side network effects analysis on their holding.

However, understanding the demand-side nature of the CD-R/RW market is crucial to determining whether Philips did indeed expand the scope of its patent. When Philips chose to enter into the suppression agreement with Sony, it could have been looking at the agreement from one of two different perspectives. On the one hand, it could have been looking at a market like that on the right hand panel in Figure 3—a natural network market where the network effects would inevitably force the market to converge towards a single standard. On the other hand, it could have been looking at a market more like the left panel—one where two standards, based on the network effects, could and would coexist and continue to compete for market share over a long period of time.

173. See *supra* Part I.B.

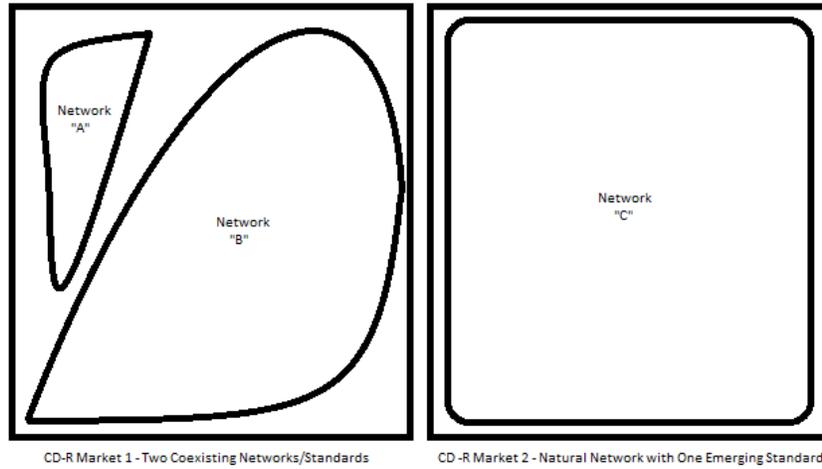


Figure 3. Contrast Between Two Hypothetical CD-R Markets

The implications of the two different demand-side markets are crucial to understand for patent misuse analysis. If the market for CD-R/RWs is more like a natural network, there is more of an economic rationale for courts to be deferential to the standard-setting efforts of Philips and Sony. Indeed, it may be less efficient for them to compete in such a market. And assuming that Philips' Orange Book Standard would have become the market leader for CD-R/RWs anyway, Philips has not done anything to enlarge its patent monopoly from what it would have been absent the agreement. It is quite possible that Sony knew that it was unlikely that it would have defeated Philips in a standards war, and so it agreed to license with Philips out of risk aversion.

If consumers' preferences within the CD-R/RW marketplace are more like the left-hand panel in Figure 3, on the other hand, it would be much more difficult to justify the suppression agreement. This is because, in the absence of the *Princo* suppression agreement, Philips would have only obtained a market share proportional to "Network B" (or possibly "A") in Figure 3. However, because the only possible competitor to Philips is suppressed by the agreement, Philips and Sony are able to artificially create a market that looks like "Network C." They are able to get the CD-R/RW market to "tip" towards a single standard. And although the alternative digital method may have been feasible to bring to market—and desirable for consumers—the fact that the digital method has a patent prevents anyone from competing using that alternative. In this instance, Philips is able to artificially expand the scope of its patent grant beyond the market share it would have been entitled to absent the suppression agreement.

This discussion illustrates the common distinction between “ancillary” and “naked” restraints on trade frequently mentioned in the antitrust laws: “[u]nder the doctrine, courts must determine whether [a restraint] is a naked restraint on trade, and thus invalid, or one that is ancillary to the legitimate and competitive purposes of the business . . . , and thus valid.”¹⁷⁴ In the *Princo* majority, Judge Bryson assumed that the suppression agreement was an “ancillary” restraint because it was a joint venture.¹⁷⁵ But there is a thin line between ancillary and naked restraints. Certainly, partnerships and merged entities have long been presumed to increase efficiency since Judge Taft’s *Addyston Pipe* decision.¹⁷⁶ But, as Robert Bork has noted:

[T]he polar models in this area of law are the naked cartel and the partnership, one creating resource misallocation and the other efficiency. Yet both involve the agreed elimination of competition, frequently through price fixing and market division. The law must learn better how to assign the agreements of businessmen to the appropriate model.¹⁷⁷

What this discussion illuminates is the need to bring this dialogue about ancillary and naked restraints into the network effects conversation. If the CD-R/RW market looks like the panel on the right in Figure 3, the purpose of the agreement—and the suppression—is to ensure rapid convergence of the market to a single standard when consumers would have preferred that anyway. By suppressing the technology, Philips and Sony were able to push the market in a direction of standardization more quickly when that may have been a desirable end for consumers. In the meantime, Philips has not done something that necessarily enlarged the scope of its patent grant. The agreement to suppress, in Bork’s words, “was subordinate to the main transaction, the [joint venture to create a standard], and contributed to its efficiency.”¹⁷⁸

If the market looks like the panel on the left, however, the agreement to suppress was arguably “part and parcel” of an effort to expand the patent grant beyond the scope it would have absent

174. *Texaco Inc. v. Dagher*, 547 U.S. 1, 7 (2006).

175. See *Princo Corp. v. Int’l Trade Comm’n*, 616 F.3d 1318, 1336 (Fed. Cir. 2010), *cert denied*, 131 S. Ct. 2480 (2011).

176. See *United States v. Addyston Pipe & Steel Co.*, 85 F. 271, 280 (6th Cir. 1898) (“Again, when two men became partners in a business, although their union might reduce competition, this effect was only an incident to the main purpose of a union of their capital, enterprise, and energy to carry on a successful business, and one useful to the community.”).

177. Robert H. Bork, *The Antitrust Paradox: A Policy at War With Itself* 264 (1978).

178. *Id.* at 266.

the agreement.¹⁷⁹ Philips would not have been able to control the *entire* market for CD-R/RW technology absent the agreement, and it therefore was only able to control the *entire* CD-R/RW market if it were able to convince Sony to suppress its patent.¹⁸⁰ And, if Philips did not have a patent on the Orange Book technology, it would not have been able to secure the suppression agreement from Sony—thus, Philips misused the leverage associated with its patent to achieve the anticompetitive end.¹⁸¹ In that scenario, the Philips agreement would have harmed consumers, and the seeming “cooperative” efforts of Philips and Sony would look more like the profit-splitting arrangement of a cartel.¹⁸² This, of course, depends on assessments of the facts.

These principles can be generalized to other situations. If, for example, Microsoft, Nintendo, and Sony colluded to agree on a single video game console “standard” to dominate the video game industry, many would express concern about that agreement. We, of course, would hesitate in that situation because we have an empirical awareness of consumers’ expressed demand within that network industry, where several video game consoles coexist. We could similarly analogize to the antitrust law governing mergers—would we expect the DOJ to approve a merger of Microsoft, Nintendo, and Sony to create one dominant video game console standard?

179. *Cf. Princo*, 616 F.3d at 1346 (Dyk, J., dissenting) (“The agreements to suppress the Lagadec technology . . . were part and parcel of the same course of conduct designed to protect the Raaymakers patents from competition from the alternative Lagadec technology.”).

180. *See* 2 Hovenkamp et al., *supra* note 30, § 30.3a, at 30-7 (“A more useful definition of a naked restraint is that it is an agreement whose profitability depends on the power to control the market. By contrast, a restraint is ancillary if its objectively intended purpose or likely effect is lower prices or increased output as measured by quantity or quality.”).

181. This is because, if the Philips Orange Book Standard patent were in the public domain, anyone, including Sony, could have attempted to make the technology. It was because Sony was *able* to create a patent pool for this technology that Philips was able to secure the agreement.

182. While cooperation among competitors “may reduce competition without providing offsetting efficiency gains,” the “probability that cooperation will yield efficiency gains is higher than in most sectors.” Evans & Schmalensee, *supra* note 136, at 37. But, while such activities are often procompetitive, “they do not rule out cartel behavior” and other anticompetitive activities. *Id.* at 38. “As always, facts are necessary to assess likely consequences.” *Id.*

2. Encouraging Entities to “Look Before they Lock” By
Incorporating Demand-Side Analysis Into the Patent
Misuse/Antitrust

Because a demand-side analysis of the relevant market yields vastly different interpretations of Philips’ actions in *Princo*, it is important that, when private entities enter into suppression agreements to adopt a *de facto* standard, they too assess the demand-side aspects of the market before they lock-in a new standard. There are several reasons why this should be done. And, luckily, firms will be encouraged to engage in these assessments once courts begin to consider the character of a network industry as part of their analyses of patent misuse claims.

Generating Empirical Data on the Network Industry. If companies assess the extent to which consumer preferences within a given market will encourage convergence to one or more standards, they would begin to understand the character of the markets in which they operate. These companies, in turn, would be able to make better licensing decisions both for themselves and for consumers. They would know whether or not consumers will *prefer* standardization in the particular industry at issue. Most importantly, companies would be able to furnish empirical data regarding the character of their industry that would advance the courts’ collective understandings of particular industries.¹⁸³ Indeed, it may be the case that the CD-R/RW market has a character such that consumers prefer only one standard.¹⁸⁴ CD-R/RW technology is fairly analogous to the HD DVD and Blu-Ray discs that were engaged in a standards war—and, in that market, consumers appear to have largely preferred a single standard.¹⁸⁵

Showing a Suppression Agreement’s Procompetitive Character. When companies are able to show, based on empirical evidence, that they operate in a market where consumers prefer a single standard, they will be better able to show that suppression agreements in high-technology industries are of a procompetitive character. When they

183. *Cf.* Spulber, *supra* note 98, at 261 (“As with other types of economic information, knowledge of technology is highly decentralized. Accordingly, firms are likely to have the best information to determine the best mix of alliances and rivalries. Network effects and technological standardization provide incentives for firms to cooperate. The benefits of technological diversity and product variety provide incentives for firms to compete. Determining the right mix of cooperation and competition requires substantial and detailed scientific and technical knowledge. Markets offer a variety of institutions that help determine the most efficient technology.”).

184. *See id.* (noting that there may be benefits to having a single standard, but that they must be weighed against the benefits of technological diversity and variety).

185. *See supra* notes 7–12 and accompanying text.

are able to make such a showing to a court, the courts should be more deferential to the agreement.

In the FTC's amicus brief in the *Princo* case, the FTC noted that the agreement between Philips and Sony is likely an agreement that is "inherently suspect" because it is a covenant not to compete between two patent-holders.¹⁸⁶ Nevertheless, the FTC emphasized that, even if the agreement appears "inherently suspect," a colorable showing that the agreement was reasonably necessary to further the development of new technologies *or other pro-competitive ends* would necessitate a more fulsome rule of reason analysis¹⁸⁷ By showing that standardization is indeed a desired end for consumers, firms could provide another justification to courts that would uphold their suppression agreements.

Eliminating Unnecessary Standardization. In the event that firms gather evidence that consumers would prefer two or more standards to coexist in an industry, courts should emphasize the character of the network industry in their patent misuse analyses. Such analysis would encourage firms *to avoid suppression* when they know that consumer demand would, in reality, establish equilibrium between two or more standards.

It is particularly important to eliminate unnecessary standardization when the *only* possible competitors in a particular industry hold patents. At the point all possible alternatives to the standard are suppressed, competition could only occur once the patents expired. While "unnecessary standardization should eventually be competed away by new entrants offering different sorts of products" in a competitive market, that standardization cannot be competed away where all of the potentially competing products are suppressed patents.¹⁸⁸ There, "standard-setting organizations may be able to impede such competition, in effect acting as a cartel with the power to exclude output."¹⁸⁹

B. Towards Per Se Legality for Standard-Setting: A Quid Pro Quo

1. Suppression Agreements as *Per Se* Legal If Suppressed Inventions Restored to Public Domain Status Within a Reasonable Timeframe

As courts analyze demand-side network effects and discover more about various network industries, firms would be required to

186. See FTC *Princo* Brief, *supra* note 61, at 25-26.

187. *Id.* at 26.

188. 2 Hovenkamp et al., *supra* note 30, § 35.1, at 35-34.

189. *Id.*

incur additional costs to protect themselves against patent misuse liability. Nevertheless, such analysis does not guarantee that the *best* technology would prevail in the marketplace. Firms, however, could exhibit behaviors that could obviate the need for detailed economic analysis by the courts. Here, I propose a rule of *per se* legality that could not only make us reasonably confident in a firm’s choice of an allegedly “superior” standard, but could also allow us to avoid complex judicial review of patent misuse in exchange for a *quid pro quo*.

In the *Princo* case, Philips appeared extremely confident—as did the majority—that Sony’s Lagadec patent would not have been competitive with the Orange Book Standard. And it is indeed possible that Sony was confident that its digital standard was inferior as well.

If (1) the market for CD-R/RWs is a natural network that will ultimately converge to a single standard and (2) the patent-pooling parties are confident that the superior technology is being standardized (as opposed to the suppressed technology), the parties should ultimately be willing to agree to restore the *suppressed* technology to public domain status.

With respect to the Philips-Sony agreement, for example, Philips could create the licensing agreement with Sony in exchange for suppression of the Lagadec patent and shared royalties. In exchange, however, Philips could agree to release the Lagadec patent into the public domain after a certain time period (one year, for example).¹⁹⁰ This still would have provided Philips-Sony with a head start to sell Orange Book compliant CDs (some suppression would be achieved), but it would also display confidence that pool licensees *could not possibly* compete with the Orange Book Standards using the digital Lagadec patent. Such a commitment would show to both consumers and the courts that the joint venture is placing a bet on the Orange Book Standard as *the standard*.

Moreover, a commitment to release the potentially competing technology into the public domain would confirm to consumers that the joint venture is confident that the industry exhibits the characteristics of a natural network. Because the firms believe that the market could only sustain a single standard, the firms would not need to worry about meaningful competition from a competing standard—even if that standard were only to gain a small niche of the market (as in the case of MacOS, for example).

190. Ideally this length of time would be set at zero, but there would be no incentive for an entity like Philips to pay Sony to suppress if the invention were to immediately enter the public domain. I acknowledge that it is possible for lock-in to occur within a year, so that this proposal by no means ensures a perfect system.

In exchange for commitments from firms to release suppressed inventions into the public domain after a set time period, firms should then be accorded *per se* legality for their suppression agreements (with respect to both patent misuse and antitrust claims).¹⁹¹ If firms were willing to take such a step, we could not only promote possible innovation sooner with respect to the initially suppressed technology (which would be available for public domain use sooner), but we could also be more confident that companies are making suppression agreements in good faith. In the meantime, such a rule would promote judicial economy and reduce the need for misuse litigation.

2. Quick-Look Analysis When Firms Forgo Option of *Per Se* Legality

If, however, firms choose fully to suppress a potentially competing technology (and not release it into the public domain), firms' conduct should not be subject to mere "rule of reason" analysis or be accorded *per se* legality. When firms are not confident that a suppressed technology will fail to be a competitive force, courts should look at a suppression agreement with skepticism. Thus, in those instances the quick-look analysis would seem appropriate.

When a restraint triggers "quick-look" analysis, the restraint is typically regarded as facially competitive but sufficiently novel that collective judicial experience is insufficient to warrant *per se* condemnation.¹⁹² Here, we have a technological practice in a "novel" and uncertain context. And, assuming the proposal in this Article is adopted, the firms would have an option that would allow them to escape liability completely. By forgoing that option, firms would indicate a lack of confidence in the superiority of their technology, implying that the restraint at issue is a naked one.

If quick-look analysis is employed, the court should begin with the question of whether the licensing condition or practice on balance enhances or suppresses innovation "by expanding the scope and temporal aspects of a patent."¹⁹³ "Once patent misuse has been

191. Cf. Patrick D. Curran, Comment, *Standard-Setting Organizations: Patents, Price Fixing, and Per Se Legality*, 70 U. Chi. L. Rev. 983, 984 (2003) (advocating *per se* legality for industry bargaining within standard-setting organizations, but not discussing patent suppression in the network industry context).

192. 2 Hovenkamp et al., *supra* note 30, § 30.3d, at 30-13; see also *Craftsmen Limousine, Inc. v. Ford Motor Co.*, 491 F.3d 380, 387 (8th Cir. 2007) (noting that, under "quick look" analysis, "the restraint appears pernicious enough on its face to fall within the category of restraints that are unlawful per se, but *judicial inexperience* with the particular type of restraint warrants a 'quick look' at the relevant market and the defendant's alleged justifications for imposing the restraint.") (emphasis added).

193. Leaffer, *supra* note 83, at 147.

proven, the burden should shift to the patent owner to demonstrate a business justification for having insisted on the restrictive licensing practice”¹⁹⁴ One of the business justifications that could be used, as explained above, is the fact that the industry is likely to converge to a single standard anyway based on a demand-side analysis; this showing should be made in addition to concrete evidence showing that the suppressed technology is unlikely to be viable. Placing the burden on the business to show its justification is not unprecedented. Indeed, the analysis is very similar to (1) the Title VII disparate impact analysis that the Supreme Court adopted in *Griggs*;¹⁹⁵ and (2) the standard that Judge Dyk adopted in the *Princo* dissent, where he applied a “quick look” rule of reason analysis in assessing the patent misuse claims.¹⁹⁶

C. Develop Long-Run Safe Harbors for Formal Standard-Setting Organizations in Certain Industries

The Orange Book Standard established in *Princo*, as noted above, did not emerge from a formal standard-setting organization. Rather, it emerged from a private agreement between two companies that sought to create a *de facto* standard by pooling their patents. As this Article has argued, we should challenge the assumption that such standard-setting organizations are necessary in those network industries where market demand may support multiple, coexisting standards.

Nevertheless, in those industries where market data consistently establishes that SSOs *are* necessary, we should recognize their importance and provide companies that use them with safe harbors. Some have already argued that, “[g]iven SSOs’ significant procompetitive justifications, courts and the antitrust agencies should consider their activity under the Rule of Reason.”¹⁹⁷ And Congress has already provided for Rule-of-Reason treatment (and a reduction in potential liability from treble to single damages) for standards-related activity undertaken by formal standards-setting organizations.¹⁹⁸

194. *Id.*

195. See *Griggs v. Duke Power Co.*, 401 U.S. 424, 431 (1971) (noting that the touchstone of Title VII analysis is an employer’s showing of “business necessity”).

196. *Princo v. Int’l Trade Comm’n*, 616 F.3d 1318, 1353 (Fed. Cir. 2010), *cert denied*, 131 S. Ct. 2480 (2011) (Dyk, J., dissenting) (noting that a “quick look” rule of reason standard applies to “inherently suspect” agreements). If companies are not willing to accept the quid pro quo suggested in this Article, I would submit that their agreement would indeed be “inherently suspect.”

197. Carrier, *supra* note 142, at 342.

198. Standards Development Organization Advancement Act of 2004, 15 U.S.C. §§ 4301–4305 (2004). However, this act only protects formal SSOs (as

In the long-run, and as we understand more about network industries, we can become increasingly confident that standard-setting organizations will become entrenched into naturally networked industries. Presuming that such organizations are open to all competitors in the industry,¹⁹⁹ require advanced disclosure of patents prior to standardization,²⁰⁰ and mandate reasonable and nondiscriminatory (RAND) licensing fees,²⁰¹ it would be useful to extend *per se* legality to formal SSO standards-setting activity that meets certain prescribed conditions as well.²⁰²

Providing such safe-harbors to formal standard-setting organizations in the long run will provide other benefits. For example, in *Princo* the distinction between “competitors” and “joint venturers” was a critical component to the analysis. Joint venturers are treated differently than competitors for antitrust purposes by the Supreme Court,²⁰³ and the *en banc* Federal Circuit decision appeared to hinge in part on possibility that Sony and Philips were joint venturers. If presumptions of legality were given to certain standard-setting organizations, firms would be more likely to join them—when firms are *formally* part of standard-setting organizations, there is less of a dispute over whether a particular effort truly was a joint venture.

CONCLUSION

As both *Microsoft* and *Princo* have shown, courts have been ill-equipped to grapple with issues relating to network industries. Antitrust can be used as a tool to assess patent misuse claims related to suppressed patents—and it should not be ignored. While

opposed to informal consortia).

199. If such organizations are closed to certain competitors in the industry, the *best* standard may not be considered by the SSO.

200. See, e.g., Merges & Khun, *supra* note 146, at 49. In their piece, Robert P. Merges and Jeffrey M. Kuhn argue for a “standards estoppel” doctrine that would “prevent companies from strategically asserting patents to gain inefficiently high rewards for their patents.” One of their recommendations is that “companies with patents that might cover an emerging standard would be required to make those patents known at an early stage by publicizing them, disclosing them in standards-setting, or asserting them promptly in litigation.” *Id.* at 50.

201. See Carrier, *supra* note 142, at 327.

202. Cf. Curran, *supra* note 191.

203. See, e.g., *Texaco, Inc. v. Dagher*, 547 U.S. 1, 6 (2006) (“As a single entity, a joint venture, like any other firm, must have the discretion to determine [its] prices”); see also *Arizona v. Maricopa Cnty. Med. Soc’y*, 457 U.S. 332, 356 (1982) (noting that, when “persons who would otherwise be competitors pool their capital and share the risks of loss as well as the opportunities for profit . . . such joint ventures [are] regarded as a single firm competing with other sellers in the market”).

it is difficult to prove actual harm in “innovation markets,” the law “merely requires proof of harm to competition on the general presumption that such harm, in turn, leads to harm to consumers.”²⁰⁴

The above indicates that acts of patent suppression associated with standardization efforts can harm consumers in network industries. And such acts can leverage an existing patent monopoly to artificially expand its scope. Unfortunately, however, courts have until now largely failed to consider these potential harms by failing to consider the demand-side preferences of consumers in network industries. As such, courts should make such assessments when they consider patent misuse claims in *Princo*-like contexts moving forward.

Meanwhile, industry leaders are capable of assessing when they are engaging in good-faith standardization efforts. When firms “look before they lock” and can show that their efforts to pool patents and suppress alternative technologies are grounded in a desire to enhance consumer welfare, they should be rewarded for their efforts and be subject to minimal scrutiny by the courts. If firms are unwilling to take these steps, however, courts should look at their actions with skepticism.

It is important to clarify the role of demand-side network effects in both patent misuse and antitrust doctrines. While commentators have recognized the importance of *Princo*, they have not emphasized the importance of demand-side network effects in patent misuse analysis.²⁰⁵ In a future case,²⁰⁶ the Federal Circuit should reaffirm the role that demand-side network effects—and antitrust—play in patent misuse analysis. That way, in future standards wars we can be confident that the courts will be closer to an ideal where they incentivize standard-setting behavior that is in the best interests of consumers.

204. Fisher & Rubinfeld, *supra* note 156, at 5.

205. See, e.g., Philip W. Goter, Note, *Princo, Patent Pools, and the Risk of Foreclosure: A Framework for Assessing Misuse*, 96 Iowa L. Rev. 699, 724–25 (2010) (arguing that courts should employ a four-part rule of reason analysis in assessing patent misuse claims involving suppression).

206. A petition for certiorari was filed in *Princo*, but the petition was denied. See Petition for Writ of Certiorari, *Princo Corp. v. Int’l Trade Comm’n* (No. 10-898) (Jan. 2011). Neither party addresses demand-side network effects in their brief. Indeed, the Government’s brief attempts to avoid the merits entirely. Brief for Int’l Trade Comm’n in Opposition to Petition for Writ of Certiorari at 22–31 *Princo Corp. v. Int’l Trade Comm’n*, (No. 10-898) (Apr. 2011) (asking the Court to deny the petition because Philips’s Orange Book patents will expire on May 23, 2012). It is likely that the Court denied cert on the simple ground that the patents were about to expire.