



EXPLOITING OTHERS' INVESTMENTS IN OPEN STANDARDS



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I. INTRODUCTION

Technological standards promote competition by encouraging two varieties of interoperability: technical interoperability, meaning enabling hardware and software from different vendors to communicate through shared protocols, and operational interoperability, meaning enabling users to switch easily among competing products or platforms. Understood in the technical sense, standards solve a coordination problem and increase the odds that a new technology will be successful through “greater realization of network effects, protecting buyers from being stranded, and enabling competition within an open standard.”² Standards encourage innovation by reducing barriers to entry.

De jure standards are formally specified through the activities of standard-setting organizations comprised of industry participants. By contrast, *de facto* standards arise from informal industry activity. *De facto* standards sometimes result from a “standards war” in which rivals compete to persuade the market to adopt a preferred technology. Standards wars will frequently be fought to an impasse, with multiple technologies remaining on the market. But in some cases, the market may tip so that a single technology comes to dominate. Classic examples of standards war “victories” include competitor VHS defeating Beta-Max to become the industry standard video cassette format and Blu-ray later defeating

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² Marc Rysman & Tim Simcoe, *Patents and the Performance of Voluntary Standard Setting Organizations*, 54 *MGMT. SCI.* 1920, 1932 (2008).



HD-DVD in high-definition video discs.

This brief article principally is concerned with *de facto* standards that arise from later entrants adopting products or technologies employed by an established player — referred to for clarity as “unilateral” *de facto* standards. Significant examples of a unilateral *de facto* standard include the IBM BIOS, later adopted by Compaq to spur the development of the PC-compatible industry, and the menu and command hierarchy employed in the Lotus 1-2-3 spreadsheet program (discussed in greater detail below). Unilateral *de facto* standards are susceptible to certain forms of abuse because they lack the formal safeguards of *de jure* standards or the market constraints that limit the winners of standards wars. In particular, the original developer of a technology that becomes a unilateral *de facto* standard can employ an “open early, closed late” strategy to induce industry reliance on the technology and then later exploit that reliance to create lock-in and exclude rivals.

II. “OPEN EARLY, CLOSED LATE” STRATEGIES

In general, standards are most effective at promoting competition when they are “open.” The term “open” can be applied either to access to the standard — meaning that the standard is publicly available to any firm that wishes to implement it, though not necessarily at no charge — or to the standard-setting process itself. Indeed, unilateral *de facto* standards can only arise where the established firm’s technology is openly available — or at least where it is understood to be so.

Open standards reduce entry barriers by “neutraliz[ing] installed-base disadvantages” faced by new entrants or allowing them to “assemble allies” to combat entrenched players.³ Openness can also help to drive market adoption by assuring customers or firms creating complementary products that they will not become locked into a single supplier of the standardized technology. In other words, agreement to compete on implementing a standard rather than setting a standard “results in greater compatibility among products, which in turn gives consumers a broader range of choices.”⁴

However, standards are by their nature potentially subject to hold-up problems. Firms can exploit the power to exclude access to some input necessary to implement or make use of a standard — the most common example being standard-essential patents — to obtain market power after a standard is set. This risk is particularly acute once a standard has become widely deployed and the industry has made standard-specific investments that would be costly to unwind. For this reason, *ex ante* control mechanisms have been developed to preserve openness. For instance, *de jure* standards developed by standard-setting organizations frequently bind members to license their relevant intellectual property on fair, reasonable and non-discriminatory (“FRAND”) terms.

³ CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY STRATEGY/TECHNOLOGY 200 (1999).

⁴ Press Release, Fed. Trade Comm’n, Dell Computer Settles FTC Charges (Nov. 2, 1995), available at: <https://www.ftc.gov/news-events/press-releases/1995/11/dell-computer-settles-ftc-charges>



The difficulties of preserving openness are greatly exacerbated in the case of unilateral *de facto* standards because there is no opportunity for *ex ante* control. Even for *de facto* standards resulting from a standards war, there is an opportunity for the evaluation of competing standards and market pressure that may induce commitments tending to preserve the standard as open. For instance, to win a standards war, the proponent of a proposed standard must convince other firms to adopt its technology over competing options. This persuasion tends to lead to wide licensing of any intellectual property necessarily to implement the proposed standard. Further, a standards war is public and understood to be a form of standards development, giving firms an opportunity to evaluate the risk that the winning technology will be subject to later hold up and to obtain assurances that it will not.

For this reason, unilateral *de facto* standards are particularly vulnerable to “open early, closed late” strategies in which a firm obtains or entrenches a dominant position by holding out a technology as open only to reverse its position later in order to exclude competition. As Professor Carl Shapiro observed in his testimony before the Antitrust Modernization Commission in 2005:

[I]n a network industry, a firm might obtain a dominant position based in part on certain “open” policies that induce reliance by complementary firms, and then later exploit that position by offering less favorable interconnection terms or by refusing to interconnect with them altogether. Indeed, it is very common in the computer industry for firms controlling “platforms” to welcome suppliers of complementary products, even those offering products that are directly competitive with products offered by the firm controlling the platform. Indeed, such “openness” can be crucial for a platform to become successful in the first place. But therein lies the danger: that a firm will employ an open policy in order to gain dominance and then impose less favorable interconnection terms once dominance has been achieved. . . . When the effects of opportunism are market-wide, antitrust concerns arise.⁵

A dominant firm can close access to a previously open standard in a variety of ways — for instance by increasingly restrictive interconnection terms as in Professor Shapiro’s example — but the assertion of intellectual property rights is a particularly common tool.

III. EVALUATION OF “OPEN EARLY, CLOSED LATE” STRATEGIES UNDER COMPETITION LAW

The leading case evaluating this kind of “open early, closed late” conduct as a potential competition law violation is *Eastman Kodak Co. v. Image Technical Services, Inc.*⁶ The United States Supreme Court found that Kodak’s change in policy to no longer supply replacement parts to independent copier service firms could violate Section 2 of the Sherman Act.⁷ Kodak benefitted from initially supplying parts because the assurance of competition among service

⁵ Testimony of Carl Shapiro, Antitrust Modernization Commission, *Exclusionary Conduct* 15-16 (Sept. 29, 2005) (internal citation omitted).

⁶ 504 U.S. 451, 482-85 (1992).

⁷ 504 U.S. 451, 482-85 (1992).



firms (and therefore lower service prices) induced customers to buy Kodak's copiers.⁸ Once Kodak's customers were locked in through long-term investments in copiers, Kodak was able to opportunistically change its policy and charge a supracompetitive combined price.⁹ Critically, as Judge Easterbrook later observed, Kodak's strategy allowed it to charge a combined price "above the price that Kodak could have charged had it followed a closed-service model from the outset."¹⁰ Kodak "took advantage of the fact that its customers lacked the information to anticipate this change" much less quantify the risk of a change in policy and factor that into the initial copier purchase decision.¹¹

The Federal Trade Commission's 2009 complaint against Intel included a challenge to a similar course of conduct. NVidia had for years relied on open access to buses, connections and interfaces to Intel CPUs – covered by Intel intellectual property rights – to produce complementary processing chips known as GPUs.¹² The FTC alleged that "[f]or many years, Intel allowed unhindered accessibility to these interfaces and encouraged others to become reliant on that accessibility," but once the industry became "dependent" on these interfaces, Intel selectively limited access, preventing NVidia and others from producing compatible GPUs in the future and forcing customers to purchase Intel GPUs.¹³ Just as in *Kodak*, Intel had "reversed its previous course" and closed access in order to preserve a monopoly position developed in part due to the industry's reliance on a previously open standard.¹⁴

"Open early, closed late" strategies based on copyright can be particularly problematic. Copyright terms are extremely long, and modifications to copyrighted works restart the clock for the entire work, unlike with patents where the original invention falls into the public domain at the expiration of the original patent term. In addition, copyrights are not subject to independent review of validity as patents are through the Patent Trial and Appeal Board. Finally, the holders of copyrights covering unilateral technology standards can easily exploit the operational benefits of the standard to turn customers' investments against them and create lock in.

For instance, in *Lotus Development Corp. v. Borland Int'l, Inc.*,¹⁵ the First Circuit considered the potential exclusionary effects of a copyright claim on user interface elements of the Lotus 1-2-3 spreadsheet program that Borland had reproduced in its own software. Borland, interestingly, had been on the other end of a similar "open early, closed late" strategy a few years earlier in connection with its acquisition of Ashton-Tate in the early 1990s. The Department of Justice found that "Ashton-Tate has enjoyed competitive advantages as a result of [the] adoption [of its dBASE software] as a 'standard' by corporate

⁸ See Susan A. Creighton & Jonathan M. Jacobson, *Twenty-Five Years of Access Denials*, ANTITRUST, Fall 2012, at 50, 52-53.

⁹ *Id.*

¹⁰ *Schor v. Abbott Laboratories*, 457 F.3d 608, 614 (7th Cir. 2006).

¹¹ *PSI Repair Servs., Inc. v. Honeywell, Inc.*, 104 F.3d 811, 820-21 (6th Cir. 1997).

¹² *In re Intel Corp.*, FTC File No. 061-0247, Administrative Complaint ¶ 80 (Dec. 16, 2009), available at: <https://www.ftc.gov/sites/default/files/documents/cases/091216intelcmpt.pdf>

¹³ *Id.* ¶ 81.

¹⁴ *Id.* ¶ 84.

¹⁵ 49 F.3d 807 (1st Cir. 1995).



customers.”¹⁶ Ashton-Tate later asserted a copyright claim against one of its competitors that had employed the dBASE standard, but the Department forbade Borland from pursuing the claim or asserting any similar claim post-acquisition.¹⁷

Judge Boudin’s concurrence is instructive on how “open early, closed late” strategies can allow the originator of a unilateral *de facto* standard to appropriate the benefit of its customers’ investments. Judge Boudin observed that “for a period Lotus 1-2-3 has had such sway in the market that it has represented the *de facto* standard for electronic spreadsheet commands.”¹⁸ As a result, elements of the Lotus 1-2-3 user interface — particularly the menu hierarchies and macro system — themselves became unilateral *de facto* standards that later entrants adopted to produce operational efficiencies for their customers:

Requests for the protection of computer menus present the concern with fencing off access to the commons in an acute form. A new menu may be a creative work, but over time its importance may come to reside more in the investment that has been made by *users* in learning the menu and in building their own mini-programs — macros — in reliance upon the menu. Better typewriter keyboard layouts may exist, but the familiar QWERTY keyboard dominates the market because that is what everyone has learned to use. The QWERTY keyboard is nothing other than a menu of letters.¹⁹

In other words, Lotus’s emergence as the dominant spreadsheet program was the result of its customers’ investment in learning to use Lotus1-2-3 — an effect bolstered at least in part by others’ adoption of similar interfaces. As Judge Boudin observed, allowing Lotus to exploit these investments, which Lotus did not make, could have pernicious consequences:

So long as Lotus is the superior spreadsheet — either in quality or in price — there may be nothing wrong with this advantage. But if a better spreadsheet comes along, it is hard to see why customers who have learned the Lotus menu and devised macros for it should remain captives of Lotus because of an investment in learning made by the users and not by Lotus.²⁰

These examples show clearly how a firm employing an “open early, closed late” strategy can initially benefit from standardization and then later capture those benefits for itself by exploiting reliance on the standard to exclude competition.

IV. CONCLUSION

Even technologies covered by intellectual property rights can come to be *de facto* standards in the market as a result of the acquiescence, or even the encouragement, of the rights holder. As seen in the cases discussed above, firms may benefit from an initially open

¹⁶ Competitive Impact Statement at 9, *United States v. Borland Int’l*, No. C-91-3666-MHP (N.D. Cal. Oct. 22, 1991) (internal citation omitted), available at: <https://www.justice.gov/atr/case-document/file/627986/download>.

¹⁷ *Id.* at 5; see also *id.* at 9-11.

¹⁸ *Lotus*, 49 F.3d at 821 (Boudin, J., concurring).

¹⁹ *Id.* at 819-20 (emphasis in original) (internal citation omitted).

²⁰ *Id.* at 821.



strategy to establish or reinforce a dominant position in the market. Those firms may then opportunistically reverse course and use their intellectual property to limit access once customers and competitors have come to rely on the standard, exploiting others' investment to exclude competition and maintain their dominance. The D.C. Circuit observed in *United States v. Microsoft* that a firm does not have an "absolute and unfettered right to use its intellectual property as it wishes."²¹ Antitrust scrutiny may be necessary to ensure that dominant firms do not implement "open early, closed late" strategies that use intellectual property "not only as a shield to protect [its] invention, but as a sword to eviscerate competition unfairly."²²

²¹ 253 F.3d 34, 63 (D.C. Cir. 2001).

²² *Atari Games Corp. v. Nintendo of Am., Inc.*, 897 F.2d 1572, 1576 (Fed. Cir. 1990).