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REGULATING INTEROPERABILITY: LESSONS FROM
AT&T, MICROSOFT, AND BEYOND

PHILIP J. WEISER*

In evaluating the history of judicially developed remedies to facilitate competition in network industries, the AT&T and Microsoft cases provide an instructive set of contrasts for commentators and enforcers. As a formal matter, the Department of Justice relied on different theories in the two cases, but as a practical matter, both cases sought to address the breakdown of trust in the relationship between a platform owner and applications providers that rely upon that platform. By platform owner, I mean a firm that controls a network, facility, or essential input that those providing a complementary good or service (i.e., the "application") must rely on. In a notable variation on this theme, some of Standard Oil's critics alleged similar concerns to those addressed in the Microsoft and AT&T cases, but approached the issue from the other direction, focusing on the abuse of market power by a provider of a "killer application."1 In the Standard Oil case, the platform was the railroads and the "killer application" was the petroleum shipped by Standard Oil (and coveted by the railroads as a steady stream of revenue and traffic). Consequently, one can bookend the history of monopolization remedies—at least from Standard Oil to Microsoft—as a story of the relationship between platforms and applications.

This article examines the inexorable tension between platforms and applications, evaluating strategies for antitrust law to resolve that tension and facilitate competition. In particular, antitrust courts face a considerable challenge in developing institutional strategies for superintending monopolization remedies in this context. As Judge Richard Posner put

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1 For a discussion of the Standard Oil case and how vertical relationships can facilitate the creation of monopoly power, see generally Elizabeth Granitz & Benjamin Klein, Monopolisation by "Raising Rivals' Costs": The Standard Oil Case, 39 J.L. & ECON. 1 (1996).
it, "The real problem [facing antitrust law] lies on the institutional side: the enforcement agencies and the courts do not have adequate technical resources, and do not move fast enough, to cope effectively with a very complex business sector that changes very rapidly."

This article highlights two strategies for addressing this challenge. First, it recommends that antitrust law not be viewed as the sole tool—or even necessarily the best one—for managing conflicts between platforms and applications. Second, it calls on antitrust law to exercise increased creativity and experimentation—and offers some guidelines for doing so—as courts and commentators devise institutional strategies to guide both antitrust oversight and antitrust remedies in a technologically dynamic environment.

This article proceeds in four parts. Part I explains the nature of the monopolization theories and remedies developed in the antitrust actions against AT&T and Microsoft. Part II evaluates, at a higher level of generality, the inexorable tension between platform owners and applications providers, discussing the challenge that this often-contentious relationship creates for antitrust law. Part III suggests how an appreciation for the role of standard-setting bodies in addressing interoperability issues can help address some of the seemingly insoluble challenges that confront antitrust enforcers in this context. Finally, Part IV offers a short conclusion.

I. AT&T, MICROSOFT, AND ANTITRUST OVERSIGHT

Antitrust law generally takes the position that rivals have no duty to deal with one another. Nonetheless, the exceptions to this doctrine raise particularly interesting, important, and challenging cases. For over the last twenty years, much of the debate over the nature of the antitrust duty to deal obligation focused on the Aspen Skiing case, which determined that a three-mountain ski resort violated the Sherman Act by dis-

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3 As Herbert Hovenkamp put it, antitrust law only constitutes one tool in the competition policy toolkit, which should be understood to encompass "the full range of public rules and sanctions designed to ensure that markets are as competitive as they can realistically be. . . . " Herbert Hovenkamp, *Innovation and the Domain of Competition Policy*, 60 ALA. L. Rev. 103, 104 (2008).

4 See United States v. Colgate & Co., 250 U.S. 300, 307 (1919) (offering this dictum); see also Dennis W. Carlton, *A General Analysis of Exclusionary Conduct and Refusal to Deal—Why Aspen and Kodak Are Misguided*, 68 ANTITRUST L.J. 659, 659 (2001) ("The antitrust doctrine of a duty to deal automatically creates a tension because the antitrust laws are premised on the simple notion that rivalry among firms benefits consumers, yet a doctrine of a duty to deal clearly limits that rivalry.").

continuing a cooperative relationship with a rival (i.e., the joint offering of a four-mountain pass) on the ground that this decision had the purpose and effect of excluding an otherwise equally efficient rival from the market. More recently, in light of Verizon v. Trinko’s dictum that “Aspen is at or near the outer boundary of § 2 liability,” some have suggested that this doctrine is either truly exceptional or is effectively overruled. For owners of dominant network facilities, this suggestion is a welcome one. If the past is prologue, however, even the Trinko dictum will not erase the role for antitrust oversight of cooperation (or lack thereof) between rivals in network industries. Indeed, antitrust courts have a long history of addressing such issues.

The justification for antitrust oversight of cooperative arrangements between rivals is that there are certain types of industries or sets of circumstances where, as Judge Posner put it, “cooperation is indispensable to effective competition.” In such markets, antitrust courts will sometimes be asked to evaluate whether the conduct of the dominant firm has the effect of “denying consumers the full benefits of technological progress that a dynamically competitive market would offer.” Such requests for antitrust oversight are almost certain to continue because, at least in network industries, cooperation is essential for rivals of dominant firms to have any chance of success in the marketplace. As a result, there is always the potential for courts to conclude that a firm’s refusal to cooperate with its rivals reflects a predatory strategy rather than legitimate business conduct. The antitrust cases against AT&T and Microsoft reflected an effort by antitrust enforcers to develop both a substantive vision for a duty to deal requirement as well as an institutional strategy for enforcing it. In Section A, I evaluate the legacy of the

10 Olympia Equip. Leasing Co. v. Western Union Tel. Co., 797 F.2d 370, 379 (7th Cir. 1986).
11 Carl Shapiro, Exclusivity in Network Industries, 7 GEO. MASON L. REV. 673, 674 (1999).
12 See CARL SHAPIRO & HAL VARIAN, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 246 (1999) (“For as long as there have been networks, there has been interconnection: passengers or cargo brought by one network to its extremities are carried farther along by an adjacent network.”).
AT&T case in this light; in Section B, I discuss the antitrust cases against Microsoft (both in the United States and in the European Union). By so doing, I set up Part II’s discussion of the inexorable tension between platform owners and applications providers.

A. United States v. AT&T

In United States v. AT&T, the Bell System faced an existential threat it could hardly fathom. For almost a century, Bell viewed the concept of independent applications that attached to its network as both a foreign and offensive concept. Indeed, Bell termed “customer premises equipment” (or CPE, as it was often called) provided by independent firms as “foreign attachments.” Reflecting its hostility to this notion, it fought tooth and nail against allowing the interconnection of such equipment to its network, proffering an array of justifications why such technology should be resisted (because it could create the risk of electrocuting central office personnel, for example) and inventing anticompetitive tactics that artificially raised the costs of rivals who sought to market CPE to its customers.13

Competition policy took a circuitous course to adopting a pro-entry regime for CPE. Initially, the Federal Communications Commission (FCC) sympathized with AT&T’s arguments, ruling that the so-called Hush-A-Phone device could not attach to consumer’s telephones.14 After the D.C. Circuit rejected this conclusion, the FCC ultimately concluded that AT&T’s arguments were specious and adopted a system of non-discriminatory interconnection enforced through its Part 68 rules. (These rules specify an open interface for connection to the public switched telephone network.)15 Thus, by the time that the AT&T antitrust case concluded, an effective remedial regime was already in place. With the benefit of hindsight, the FCC’s Part 68 regime (which was reinforced by the AT&T antitrust consent decree) is viewed as an enormous success,

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13 See, e.g., Litton Sys. Inc. v. AT&T, 700 F.2d 785 (2d Cir. 1983).
14 Famously, the Hush-A-Phone was a cup-like device used to muffle phone conversations and ensure a greater level of privacy—i.e., prevent those nearby from overhearing conversations. AT&T took the position, upheld by the FCC and reversed by the D.C. Circuit, that this device was a “foreign attachment” barred by its tariff. See Hush-A-Phone Corp., Decision, 20 F.C.C. 391 (1955), rev’d, 238 F.2d 266 (1956).
bringing competition to existing markets (i.e., cheaper, higher quality, and more choice in telephones) and, more importantly, facilitating the development of new markets and products, such as the modem industry and, ultimately, the Internet.

The development of competition in the equipment manufacturing market depended on the specification of a clear interface that was not subject to manipulation and was subject to a zero-price access regime. By contrast, the AT&T consent decree—rather than prior regulatory decisions—facilitated the emergence of competition in the long-distance market. In particular, the decree enabled independent long-distance firms like MCI and Sprint to compete with AT&T on equal footing, both through the assurance of equal access requirements (embodied in the consent decree, but enforced by the FCC) and a structural remedy that separated AT&T’s long-distance arm from its local network (which provided the necessary input to long-distance service). The theory of the equal access requirements was that the independent long-distance firms should be afforded equal access to the local network (vis-à-vis AT&T)—both in terms of price and quality (e.g., not having to dial extra digits).

The AT&T consent decree’s ability to spur competition in long distance is widely viewed in a favorable light and as a credit to the importance of antitrust law as a competition policy strategy. For years, regulators had failed to address adequately the lack of equal access to the local Bell Companies’ local networks and long-distance firms made only a small dent in AT&T’s dominant market share. Reflecting that fact, Judge Greene credited the testimony of two former FCC officials that “the Commission is not and never has been capable of effective enforcement of the laws governing AT&T’s behavior.” As noted above, this point is debatable as to competition in customer premises equip-

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16 For an excellent discussion of the economics (and common sense) behind this conclusion, see Gerald R. Faulhaber, Policy-Induced Competition: The Telecommunications Experiment, 15 Info. Econ. & Pol’y 73 (2003).


18 See AT&T, 552 F. Supp. at 225–26 (“Notwithstanding the provisions of Appendix B(C)(3), whenever, as permitted by the decree, a separated BOC fails to offer exchange access to an interexchange carrier that is equal in type and quality to that provided for the interexchange traffic of AT&T, the tariffs filed for such less-than-equal access shall reflect the lesser cost, if any, of such access as compared to the exchange access provided AT&T.”).

19 Id. at 168.
ment, but it is difficult to dispute as to the long-distance sector.\textsuperscript{20} Moreover, in the wake of the AT&T consent decree, the change in the nature of competition in long distance was palpable, with MCI and Sprint, as well as subsequent entrants, making huge strides in the marketplace.\textsuperscript{21} The advent of competition in the long-distance market also interacted with the introduction of competition in the equipment sector in significant ways because MCI and Sprint became major purchasers of advanced communications technology. In particular, the decisions of those firms—emboldened by the AT&T consent decree—enabled Dow Corning, which had invented fiber optic cable and failed to sell it to AT&T, to develop its innovation and transform communications technology as a result.\textsuperscript{22}

The AT&T consent decree's belt and suspenders strategy for promoting competition in long distance has come under recent scholarly criticism. To both Judge Greene and William Baxter (the head of the Antitrust Division who entered into the decree), the rationale for a break-up of the Bell System was impeccable: the Bell Companies, which were subject to rate regulation, faced a powerful incentive to leverage their monopoly position into adjacent markets and needed to be quar-

\textsuperscript{20} Robert W. Crandall, \textit{The Failure of Structural Remedies in Sherman Act Monopolization Cases}, 80 OR. L. REV. 109, 183–84 (2001) (explaining that AT&T "often denied the nascent competitors interconnection with its network facilities or at least delayed such interconnection through aggressive exploitation of the available regulatory processes" and that the antitrust case against AT&T emphasized that "AT&T's ownership of local operating companies had provided it with the incentive and the ability to exclude competitors in long-distance services and telecommunications equipment manufacture by denying competitors interconnection with the local Bell operating companies").

\textsuperscript{21} Id. at 191.

\textsuperscript{22} See Gino Cattani, \textit{Technological Pre-Adaptation, Speciation, and Emergence of New Technologies: How Corning Invented and Developed Fiber Optics}, 15 INDUS. & CORP. CHANGE 285, 309 (2006) (explaining the incentives that led AT&T to ignore the development of this technology); Howard A. Shelanski, \textit{Competition and Deployment of New Technology in U.S. Telecommunications}, 2000 U. CHI. LEGAL F. 85, 107–08 (2000). AT&T's decision not to deploy fiber optic technology was related to its dominance of these markets. It has been related that

AT&T, which owned most of the telephone lines in America at the time [of the invention of fiber optic technology], said it would be 30 years before its telephone system would be ready for optical fiber. And when it was, AT&T planned to make its own fiber. . . . [After AT&T entered into a consent decree,] MCI took the risk [of ordering fiber optic technology] and placed a 100,000 kilometer order for a new generation of fiber.

With the benefit of hindsight, some scholars have advanced two lines of criticism about the decree. First, they question whether the risks of vertical integration merited the administrative and consumer costs that emerged from a quarantine solution. Second, they claim that the antitrust court overlooked the possibility of using a standalone conduct remedy—i.e., the equal access rules—that would have led to a substantially similar outcome without the administrative costs and inefficiencies attendant to the structural remedy. Without a true counterfactual, it is difficult (and perhaps impossible) to settle the debate over either claim, but Robert Crandall argues that the experience in other countries suggests strongly that the imposition of equal access rules alone is sufficient to generate a competitive long-distance market.

Crandall’s critique that structural relief was unduly invasive and that a more surgical behavioral remedy (i.e., the equal access requirement) would have been equally effective standing alone warrants serious consideration. Such a claim may be true in certain cases and, at a minimum, raises important questions about what institutional strategies are optimal under different conditions.

As for Crandall’s claim about the experience of other countries using standalone equal access requirements, however, three factors potentially distinguish those examples from the U.S. experience. First, there is no way to know whether the standalone equal access rules could have been implemented effectively in the United States without an attendant structural remedy because, as for the case of other countries, they were able to learn from the earlier development of equal access arrangements in the United States (which were more effective on account of the structural relief). In particular, because the Bell Companies were unable to benefit financially from discriminatory access arrangements (on account of their lack of participation in the adjacent markets), they had no incentive to frustrate the implementation of an equal access rule regime. By contrast, the FCC’s pre-\textit{U.S. v. AT&T} efforts to impose equal access arrangements in the context of the integrated Bell System stalled and were ineffectual. Second, it is notable that other countries did not face the monopsony purchasing problem created by the Bell System, which undermined the development of competition in equipment manufacturing. Consider, for example, that the U.S. decree also imposed a re-

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24 Crandall, \textit{supra} note 20, at 189.
quirement that prohibited the Bell Companies "from discriminating between AT&T and other companies in their procurement activities, the establishment of technical standards, the dissemination of technical information, their use of Operating Company facilities and charges for such use, and their network planning." Just as the equal access conditions were implemented more effectively on account of the removal of the incentive to discriminate, these conditions were more effective on account of the divestiture of the Bell Companies from AT&T's equipment manufacturing arm. Finally, in many other countries, the government owned (at least in part) the telephone company, thereby enabling it to exert a form of pressure on the incumbent provider that the U.S. government could not use.

The case that a non-discriminatory interconnection requirement can operate effectively absent structural relief is illustrated by the fact that such requirements appear to function in a reasonably effective manner in other contexts without the presence of attendant structural remedy. The FCC superintends interconnection between wireless providers and the wireline telephone network, for example, even where the incumbent Bell Companies arguably possessed the opportunity and incentive to undermine the service quality of the cellular providers who were not affiliated with them. In that context, both the FCC and Judge Greene concluded that a quarantine solution was not necessary because regulation could use a benchmark—the type of arrangement offered to the wireline-affiliated cellular provider—against which to evaluate the access provided to other providers. Similarly, in enacting the Telecommunications Act of 1996, Congress concluded that the Bell Companies could be allowed into the long-distance market without fear that they would undermine competition in that market, provided that the local market was opened to competition and the relevant benchmarks were first established. Notably, both the FCC, in the case of wireless interconnection, and Congress, with respect to the Telecommunications Act, initially insisted that the benchmark arrangement be tied to a structurally separate affiliate, but in both cases, the requirement was relaxed once the equal access arrangements were shown to operate effectively.

Whether or not an equal access remedy could have succeeded as a standalone remedy in the AT&T consent decree, it is clear that Judge

25 AT&T, 552 F. Supp. at 142.
26 Id. at 196 n.269; see also An Inquiry into the Use of the Bands 825–845 MHz and 870–890 MHz for Cellular Communications Systems, Report & Order, 86 F.C.C.2d 469 (1981).
Greene recognized the importance of such relief in facilitating long distance competition. It is also clear that Judge Greene appreciated the institutional considerations that antitrust courts must attend to in overseeing complex remedial schemes. In particular, Judge Greene recognized that some degree of flexibility and experimentation was appropriate, remarking that "since the Bell System network is both vast and complex, a variety of approaches will in all probability be necessary to achieve equal access" and eschewing the "[i]mposition by the Court of a single procedure applicable to all areas and all interconnection requirements . . ."28 To that end, Judge Greene also relied greatly on the FCC to superintend the relevant equal access arrangement, with the court maintaining jurisdiction in the event that a party concluded that the FCC had failed to act effectively. By so doing, Judge Greene both acknowledged the possibility that the FCC would continue to be unable to regulate effectively (although the imposition of structural relief made that task far easier)29 and followed the Supreme Court's Otter Tail precedent of devising an antitrust remedy that could be overseen by a regulatory agency.30

B. MICROSOFT'S ANTITRUST CHALLENGES

Alongside the AT&T case, the antitrust action against Microsoft is the other high profile effort by the Justice Department to mandate interoperability between a platform owner and applications developers.31 In that case, the Justice Department challenged a number of Microsoft's actions as part of an effort to maintain its monopoly in the market for desktop computing operating systems.32 In particular, the Department claimed that Microsoft sought to exclude Netscape's Navigator browser as well as Sun's Java technology so as to thwart the possibility that those technologies would serve as "middleware" that would commoditize

28 AT&T, 552 F. Supp. at 197.

29 As Judge Greene concluded in the AT&T case: "The evidence adduced during the AT&T trial indicates that the Bell System has been neither effectively regulated nor fully subjected to true competition. The FCC officials themselves acknowledge that their regulation has been woefully inadequate to cope with a company of AT&T's scope, wealth, and power." Id. at 170.


31 For a more in-depth discussion of that case than the one provided below, see Harry First & Andrew I. Gavil, Re-Framing Windows: The Durable Meaning of the Microsoft Antitrust Litigation, 2006 UTAH L. Rev. 641 (2006).

Microsoft's operating system and displace Microsoft's monopoly power. In what proved to be the authoritative determination of the case, the D.C. Circuit Court of Appeals unanimously ruled for the government on its core claim that Microsoft violated Section 2 of the Sherman Act, remanding the case for further proceedings on the appropriate remedy. In the wake of that remand, the Justice Department and Microsoft settled on a set of conduct remedies, which were upheld on appeal.

In short, Microsoft suggests that a platform monopolist must exercise special care in terms of the type of cooperation—or lack thereof—it offers to competitors. To be sure, such a requirement only applies when the platform at issue is sufficiently entrenched as to be protected from competition from rivals. In Microsoft, both the district court and the court of appeals concluded that, among other things, the strong “network externalities” inherent in operating systems meant that any rival operating system would find it extraordinarily difficult to displace Microsoft's dominance and encourage application developers to create software programs to run on a platform other than Windows. Consequently, both courts concluded that Microsoft possessed monopoly power in the market for operating systems (whether defined as all desktop computers or only Intel-compatible ones).

In holding a platform monopolist liable under the antitrust laws, the Microsoft court focused on a number of Microsoft's practices that could not be justified by any legitimate business reasons. First, the court held

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34 See United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001), aff’d in part and rev’d in part, and remanding United States v. Microsoft Corp., 97 F. Supp. 2d 59 (D.D.C. 2000)). That decision also ruled against the Department on a number of related claims, such as the government’s contention that Microsoft violated Section 2 of the Sherman Act by attempting to monopolize the browser market and reversed and remanded on Section 1 of the Sherman Act’s prohibition on tying as well as the district court’s decision to break up Microsoft into two companies. See 253 F.3d at 46.


36 In the Microsoft case, the court explained how, in network markets, the lack of application developers for a platform can constitute an “applications barrier to entry.” See D.C. Circuit 2001, 253 F.3d at 55–56.

37 As Franklin Fisher, the government’s expert in Microsoft explained, it is important to be cautious about judging conduct to be exclusionary, and the absence of any plausible legitimate explanation is an effective means of identifying such conduct. With respect to the Microsoft case, Fisher suggested that:

The most revealing of the actions (if not the most important), however, was that involving Internet Content Providers. Microsoft permitted Disney to be featured by Netscape, but it required that Netscape not be paid for so doing. . . . Like the
that the license restrictions imposed by Microsoft excluded Navigator from the market without any efficiency justification.\textsuperscript{38} Second, the court held that Microsoft's design decision to place browsing code in the same files as operating system code and excluding such code from the Add/Remove Programs utility constituted an exclusionary practice.\textsuperscript{39} Finally, the court concluded that Microsoft engaged in exclusionary conduct by pressuring developers to use Microsoft's own non-compatible version of a Java Virtual Machine (JVM), deceiving them about its (lack of) compatibility with Sun's JVM, and pressuring Intel not to support Sun's JVM.\textsuperscript{40} In so doing, the court underscored that a rival has no duty to make a competing platform compatible—particularly here where Microsoft's product worked more effectively on Windows than Sun's JVM—\textsuperscript{41}—but that the use of anticompetitive tactics to gain an advantage violated the antitrust laws. Nonetheless, where a firm engages in a practice designed to disadvantage a rival—and cannot justify that practice on efficiency grounds—it runs afoul of Section 2 of the Sherman Act.

In reaching its conclusion that Microsoft violated the antitrust laws, the D.C. Circuit did not seek to define the scope of Section 2 of the Sherman Act in a manner other than that offered in \textit{Aspen Skiing}.\textsuperscript{42} Nor

\begin{itemize}
  \item other acts, its only purpose was the hampering of competition in browsers and the preservation of the barrier to entry that protected Microsoft's power in operating systems. These were not acts that were profit-maximizing except for that effect.
  \item \textit{Franklin M. Fisher, Economic Analysis and "Bright Line" Tests, 4 J. COMPETITION L. & ECON. 129, 151 (2008).}
  \item \textit{See D.D.C. Findings 1999, 84 F. Supp. 3d at 111 ("[Microsoft's actions] forced OEMs [original equipment manufacturers like Dell] either to ignore consumer preferences for Navigator or to give them a Hobson's choice of both browser products at the cost of increased confusion, degraded system performance, and restricted memory. By ensuring the Internet Explorer would launch in certain circumstances in Windows 98 even if Navigator were set as the default, and even if the consumer had removed all conspicuous means of invoking the Internet Explorer, Microsoft created confusion and frustration for consumers, and increased technical support costs for business customers.")}; \textit{D.C. Circuit 2001, 253 F.3d at 60 (upholding the consumer confusion finding resulting from the pre-installation of Internet Explorer and Microsoft's restrictions on removing it); id. at 61 (restrictions on changing the boot sequence are anticompetitive, as it prevents OEMs from promoting rivals' browsers).}
  \item \textit{D.C. Circuit 2001, 253 F.3d at 74–77.}
  \item \textit{Id. at 74.}
  \item \textit{Herbert Hovenkamp, Post-Chicago Antitrust: A Review and Critique, 2001 COLUM. BUS. L. REV. 257, 302 ("The claim most subject to judicial interpretation in the \textit{Microsoft} case is the substantive monopolization claim itself, where the courts have always had difficulty fashioning an appropriate standard."). At bottom, it may well be the case that imposing a
did it clarify Aspen Skiing's somewhat open-ended formulation and declined to set forth a means of "distinguishing between exclusionary acts, which reduce social welfare, and competitive acts, which increase it." It did, however, reject Microsoft's claim that the Department's failure to identify consumer harm—as distinct from predatory conduct—should doom a Section 2 case. In that regard, it endorsed the argument of Professor Franklin Fisher (the government's primary economic expert) that "[i]njuries to competition are presumed to injure consumers" and the government should not have to wait for a predatory campaign to succeed before taking action. Finally, Microsoft both noted and rejected Microsoft's Schumpeterian argument that a new platform will invariably displace the dominant platform and thus minimize any worries about temporal exercises of market power.

In many respects, the hardest question in Microsoft was the selection of the appropriate remedial strategy. The district court originally decided, in a judgment overturned by the D.C. Circuit, that the company should be broken into two, with an applications company separated from an


43 D.C. Circuit 2001, 253 F.3d at 58.

44 Franklin M. Fisher, Antitrust and Innovative Industries, 32 UWLA L. Rev. 83, 83 (2001). In particular, there are three possible positions as to what Section 2 requires: (1) proof of harm to consumers; (2) proof that a monopolist has excluded competitors from the market on a basis other than efficiency; or (3) proof of exclusionary conduct towards competition. See D.C. Circuit 2001, 253 F.3d at 58–59. Microsoft rejected the first by holding that, since the case presented proof of the second, it was sufficient to hold the company liable under section 2. See id. at 89. Others argue, however, that proof of an anticompetitive purpose—i.e., the third position—suffices to give rise to antitrust liability, highlighting that antitrust oversight must be able to address anticompetitive conduct in its incipiency. See Jonathan B. Baker, Promoting Innovation Competition Through the Aspen/Kodak Rule, 7 GEO. MASON L. Rev. 495, 503, 506 (1999) (asserting that "liability may be established" in a Section 2 case "without considering evidence on the effect of the monopolist's conduct on competition."); David A. Balto & Ernest A. Nagata, Proof of Competitive Effects in Monopolization Cases: A Response to Professor Muris, 68 ANTITRUST L.J. 309, 314 (2000) (standard should be that challenged conduct makes a "significant contribution" to maintaining or creating monopoly power). For an alternative view, see Nicholas Economides, United States v. Microsoft: A Failure of Antitrust in the New Economy, 32 UWLA L. Rev. 3, 29 (2001) (terming Fisher's approach as "rush[ing] to judgment before a certainty of an anti-competitive act."); Timothy J. Muris, The FTC and the Law of Monopolization, 67 ANTITRUST L.J. 693, 696–97 (2000) (emphasizing the need to assess the actual anticompetitive effect).

45 An alternative Schumpeterian-based argument is that the government's action in Microsoft sought to facilitate the gales of creative destruction by preventing a dominant firm from using its market power to prevent the rise of new upstarts using a disruptive technology. See Timothy F. Bresnahan, A Remedy that Falls Short of Restoring Competition, ANTITRUST, Fall 2001, at 67, 69.
operating systems company. This approach, which drew inspiration from the Bell breakup, reflected an odd combination of a limited degree of analysis and considerable ambition. Indeed, the district court imposed this remedy without holding any hearing to evaluate the relevant costs and benefits. Consequently, the D.C. Court of Appeals concluded that the court overstepped its bounds, calling for a more careful inquiry into the proper remedial strategy.

The D.C. Circuit's oversight of the remedial issue in Microsoft heeded both the relevant doctrinal standards and the practical considerations that should guide the development and institution of an effective remedial strategy. On the doctrinal front, the Supreme Court has counseled courts that antitrust remedies should end the unlawful conduct, prevent its recurrence, and restore the possibility of competition in the market. Given the breadth of this mandate, courts have considerable latitude in crafting an appropriate remedy and are not limited to imposing "a simple proscription against the precise conduct [the violator] previously pursued . . . ." On a practical level, as Judge Posner related, courts are greatly limited by the twin set of concerns that a remedial strategy should be "sufficiently clear to be judicially administrable" and should not "impose an undue administrative burden on the district court, which would have to administer the decree." After all, as the Supreme Court remarked in the Trinko case (quoting Phillip Areeda), courts should not "assume the day-to-day controls characteristic of a regulatory agency."

On remand, Judge Colleen Kollar-Kotelly took these concerns to heart and emphasized the difficulty of devising a remedy and institutional strategy in light of the dynamic nature of the industry. With this concern in mind, she concluded that the set of conduct remedies agreed to by the government and Microsoft were reasonable and she

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49 Id. at 698.
rejected the calls for more aggressive remedial strategies. She instead accepted the Justice Department’s theory that the appropriate stance was to address Microsoft’s future conduct towards “middleware” platforms. She also accepted the federal government’s conclusion that any effort to address the commingling of code would be counterproductive—despite the D.C. Circuit’s earlier conclusion that such conduct constituted an antitrust violation by Microsoft.

In principle, the Microsoft consent decree sought to prevent Microsoft from engaging in predatory strategies to protect its platform-based dominance. In particular, the decree protected emerging applications developers through a series of requirements imposed on Microsoft, including one that mandated the reasonable and non-discriminatory licensing of protocol information (including relevant intellectual property rights) so that software developers could design applications for non-Microsoft platforms that could run on Microsoft’s operating system as well. It also imposed requirements to make application programming interfaces (APIs) available on a non-discriminatory basis. The court declined, however, two remedies suggested by the non-settling States—a Java “must carry” provision and a requirement that the Internet Explorer product be released under an open source license. Finally, the court deemed adequate the definition of interoperability for purposes of the disclosure requirements and judged as sufficient to enforce the decree the establishment of a “three-member ‘Technical Committee’ of ‘experts in software design and programming’ . . . .” Ultimately, the district court extended the decree for two years because of an “extreme and unforeseen delay” in the decree’s implementation caused by Microsoft’s failure to produce “complete, accurate, and useable” documentation on its protocols.

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53 Id. at 194, aff’d sub nom. Massachusetts v. Microsoft, 373 F.3d 1199, 1223 (D.C. Cir. 2004).  
54 D.D.C. States Remedy 2002, 224 F. Supp. 2d at 157 (concluding that addressing the commingling of code issue would be very difficult, even if not a “technologically impossible” task). See also D.C. Circuit 2004, 373 F.3d at 1209 (“The district court’s decision to fashion a remedy directed at the effect of Microsoft’s commingling, rather than to prohibit commingling, was within its discretion.”).  
55 D.D.C. States Remedy 2002, 224 F. Supp. 2d at 268 (MSFT Consent Decree § III.D), required Microsoft to disclose on a non-discriminatory basis the APIs “used by Microsoft Middleware to interoperate with a Windows Operating System Product.” The decree also called for non-discriminatory disclosure of certain communication protocols. See id. at 269 (§ III.E).  
56 D.C. Circuit 2004, 373 F.3d at 1227–32.  
57 Id. at 1243.  
On the heels of the U.S. antitrust consent decree, the European Union imposed its own set of requirements on Microsoft, going beyond those mandated by the U.S. consent decree. In presenting its case, the European Commission focused on the issues related to competition in the market for servers and "media players," calling for, among other things, Microsoft to unbundle its media player from its operating system. Moreover, the European Commission imposed a fine of 497 million euros—$613 million at that time—that was the largest fine ever imposed by the Commission. To enforce its remedy, the Commission called for a monitoring trustee to supervise Microsoft's compliance with its order. The Justice Department assailed this action, calling it at odds with "sound antitrust policy" and potentially destructive to innovation and consumer welfare. The European Commission was not dissuaded by such criticism and proceeded to raise the total fine to $2 billion on the ground that Microsoft had failed to implement the relevant requirements. On appeal, moreover, the European Court of First Instance upheld the Commission's ruling, emphasizing in its decision the importance of interoperability to promoting competition in the market for servers.

It is still too soon to render a definitive judgment on the Microsoft consent decree, but there is some agreement on a few preliminary observations. As an initial matter, it seems unlikely that the decree, taken on its own, will enable competitors to displace Microsoft's platform dominance. At the same time, however, it is also quite possible that the

including the United States—disputes that more than five years after the entry of the Final Judgments, Section III.E still has yet to be fully implemented.); id. at 163 ("practically speaking, Microsoft has never complied with Section III.E").


60 Commission Decision'2004, supra note 59, at 277-78.

61 Id. at 289-91.


63 To that end, the Court of First Instance quoted the Commission's finding that "'[w]hen confronted with a choice between putting up with interoperability problems that render their business processes cumbersome, inefficient and costly, and embracing a homogeneous Windows solution for their work group network, customers will tend to opt for the latter proposition' and that 'once they have standardised on Windows, they are unlikely to report interoperability problems between their client PCs and the work group servers.'" CFI Decision 2007, supra note 59, ¶ 662.

64 Some have complained that the ultimate remedial decision, which opted for a set of behavioral restrictions over structural relief, is to blame on this score. See Bresnahan, supra note 45, at 67. Even as to a set of behavioral constraints, some have highlighted how those
The decree has given rise to a number of salutary dynamics in terms of providing applications developers with a greater level of transparency and assurances about the operating environment than they otherwise would have enjoyed. In this respect, the decree may have curtailed "Microsoft's ability to use its dominance to impose contractual restraints on various firms operating in related markets" and thereby promoted a more robust development environment. Although this goal was not necessarily what motivated the DOJ's decision to bring the Section 2 claims, it may be a concern that motivated some of the earlier complaints about Microsoft's conduct. After evaluating this concern at a higher level of generality in Part II, Part III returns to the specific questions surrounding the impact of the Microsoft decree.

II. OF PLATFORMS, APPLICATIONS, AND CREDIBLE COMMITMENTS

The dilemmas that Microsoft and AT&T confronted as to how to treat applications providers underscore a challenge that, under almost any set of circumstances, will not be easily solved. The basic question is: when can application developers trust that platform owners will treat them in a fair, reliable, and forthright fashion? If the answer is "never" or "not under certain circumstances," there will be increasing pressure on government regulators, antitrust courts, and other institutions to facilitate cooperation between these two sets of actors.

A. THE INEXORABLE TENSION BETWEEN PLATFORMS AND APPLICATIONS

The emerging Internet ecosystem provides an array of examples where platforms and applications must interoperate, raising a series of challenging issues for policymakers. These issues cut across an array of domains—all of which can be viewed within a competition policy framework—including antitrust law, intellectual property law, and standard setting. Consider, for example, the disputes between Nokia and Qualcomm (over whether Qualcomm has deceived customers and competitors as to the licensing fees it charges for access to patents that are part of official standards) and the debate whether to mandate access to the iPod digital music player or the iTunes digital music service by rival ultimately imposed fell short of what might have been a more effective remedy. See Comments of Computer and Communications Industry Association on the Revised Proposed Final Judgment at 71–72, United States v. Microsoft Corp., No. 98-1232 (D.D.C. 2002), available at http://www.usdoj.gov/atr/cases/ms_tuncom/major/mtc-00050610b.pdf (comparing the final negotiated decree to the draft remedies proposed under Judge Posner's mediation).

digital music services or digital music players. In both cases, a platform firm possesses either intellectual property or a distribution network (or both) that can determine the success of an application. Most platform owners, however, also depend on attracting applications that will make the platform more valuable and desirable to consumers. Reflecting the significance of these issues, the often-contentious platform owner-applications developer relationship has generated a cottage industry in business and policy circles, giving rise to concepts like “co-opetition” and “network economics.”

The reason that these relationships attract such attention in both business and policy circles is that a platform owner often makes substantial front-end investments that lead to high fixed costs, low marginal costs, and high entry barriers. In many cases, therefore, the successful platform owner possesses a degree of market power and applications developers depend on the platform owner to facilitate interoperability. As a practical matter, moreover, the applications developer will invest heavily in platform-dependent resources, potentially leaving it at the mercy of the platform provider’s continued cooperation and in fear that the platform provider “will raise the price of access [to the network/platform] to a level that extracts almost all the value from the total enterprise and leaves the dependent [applications developer] with only crumbs.” The platform provider, by contrast, lives in fear that, once having invested the necessary resources to establish its product, it will fail to establish a critical mass of users, will be overtaken by a superior technology, or will be subject to regulatory oversight that will limit its back-end cost recovery.

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Relationships between platform providers and application developers can be less interdependent and subject to easier exit in a world of open standards where interoperability across platforms provide both sellers and customers considerable flexibility. In theory, such an ecosystem promotes innovation because the owners of technology platforms “work together more easily, with less hassle, and ensure[ ] that they have more choice[s] when they are making a decision about what to buy or to use.” In practice, however, this conception neither describes most cases nor is ideal in all cases insofar as some level of “stickiness” in and loyalty to a proprietary platform is sometimes necessary to promote investment and enable ongoing platform innovation. Indeed, it is the open and nonproprietary nature of the TCP/IP suite of protocols—which enable the Internet to operate and function in the manner depicted above—that has made it difficult to upgrade this technology. In some cases, the constraints associated with open standards are well worth the cost, but the difficult tradeoffs involved make categorical judgments imprudent and have prevented the emergence of a “coherent legal approach to interoperability.”

Given the widespread existence of and likely continued dominance of proprietary platforms, whether such platforms will face built-in incentives to behave in a fair-minded fashion is a question that merits further study. Consider, for example, that many platform sponsors can manage effectively the tension between creating “economic incentives that encourage other firms to develop complementary applications for the platform, and at the same time protect[ing] its own ability to profit from its innovations.” Even where a platform monopolist possesses the opportunity to engage in strategic behavior that destroys competition in the applications market—say, threatening firms with foreclosure if they fail to sell out on the cheap—such tactics may well be anticipated and addressed through contractual protections. Indeed, the failure to appreciate that firms routinely take steps to protect themselves against the possibility of ex post strategic behavior is a weakness in the logic of the

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73 As Gawer and Henderson note, “if the entrant monopolist’s incentive to engage in ex post price ‘squeezes’ is sufficiently strong, complementors may have no ex ante incentive to engage in innovation at all.” Gawer & Henderson, *supra* note 68, at 5.
Supreme Court’s *Kodak* decision, which adopted a relatively categorical approach to addressing “ex post opportunism.” Complicating matters is the fact that the type of behavior that can be classed as “opportunistic” or “strategic” varies and can, in theory, be prevented through contractual safeguards. Such safeguards, however, are difficult to craft in many cases, as they must protect investments made “under conditions of great uncertainty, and it is difficult to write the contracts that would be required.”

**B. THE CREDIBLE COMMITMENT PROBLEM AND THE COMPETITION POLICY STAKES**

The challenge for platform owners is to assure applications developers that they will continue to treat such entities in a benign fashion, even when the platform owner attains substantial market power and has the ability to undermine the position of the applications developer. Although platform owners face powerful incentives to assure applications developers that they will be treated fairly, there are notable cases where the incentives of the platform owner cut in a different direction. Many applications developers, therefore, may not want to merely rely on the continued goodwill of the platform owners on which they depend. Indeed, the notable success of open source development can be understood, in part, as a reflection of its favorable development environment (i.e., where continued interoperability is relatively assured and the possibility of development fees being imposed is close to nil). In other contexts, companies have sought to develop a trusted reputation for fair dealing (which would be lost if they engaged in opportunistic behavior) or to provide some means of assuring developers that they will not engage in harmful conduct—such as the metaphorical version of “trading hostages,” whereby each firm holds something of value to the other so

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75 DeLong, supra note 68. As DeLong explained on this point, “A significant problem with the mantra of ‘do it by contract’ is that it requires contract writers with an unlimited legal budget and a level of foresight that would be the envy of a psychic.” *Id.; see also* Paul L. Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J.L. ECON. & ORG. 95, 102 (2002) (“Transacting parties enter into relationships to mitigate [ex post opportunistic behavior,] but cannot do so perfectly.”).


77 One risk in that context, however, is that patent holders will sue users or developers of open source products. See Paul H. Arne, *Patent Risks in Open Source Licensing*, IN *PRACT. L. INST., ADVANCED LICENSING AGREEMENTS 2008: SOFTWARE LICENSING AND OPEN SOURCE ISSUES* 453 (2008).
that neither engages in opportunistic behavior at the other's expense.\textsuperscript{78} Even where companies develop such strategies, there is still some margin for error, miscalculation, and mistrust—a lesson that Intel, despite its efforts to promote trust in its business practices,\textsuperscript{79} has learned (and re-learned) when it faced repeated antitrust investigations.\textsuperscript{80}

Because of the high stakes involved with platform owner-application developer relationships, the government will often be asked to oversee the terms of such dealing between them. First, the affected parties themselves may view government oversight—through regulation or antitrust—as a means of "leveling the playing field" or gaining through regulation or litigation what they could not gain in negotiation. Second, even if not viewed as a "rent-seeking" exercise, firms and individuals may wish to avoid the institutional instability and the lack of transparency which may attend private arrangements established by platform providers. The development of common carrier rules by common law courts and the later use of those rules as guides for administrative regulation, for example, reflected the unease that those reliant on physical infrastructure provided by private carriers (like the railroads) were left exposed to an undue risk of opportunistic behavior. With respect to the critical software, hardware, and transport platforms that support the Internet, some predict that "some form of government intervention, to set the rules, is inevitable" and may "be welcomed by the players, just as government intervention was welcomed in the end by the railroads."\textsuperscript{81} Whether and how such rules are developed, however, remains to be seen, and policymakers should be mindful of the institutional challenges in developing any oversight regime for such a dynamic industry.\textsuperscript{82}


\textsuperscript{79} For a discussion of Intel’s effort to support interoperability, see Annabelle Gawer & Michael A. Cusumano, Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation 57–62 (2002).


\textsuperscript{82} Id. ("Society needs basic rules to operate by, and modern technology creates potential scenarios that old rules did not cover. But we need to remember that it is not easy to regulate markets, especially ones in cyberspace, and especially when policy makers labor under the burden of many false myths."); DeLong, supra note 68 (noting the unfortunate trend that "policy tends to lurch back and forth, favoring now one group and then the other, to the long-term detriment of both, and of the public").
The third and most compelling rationale for government oversight of platform provider-applications developer relationships rests on the conviction that independent innovation of applications that ride on a platform yields considerable social benefits and should be protected from opportunistic behavior. If platform owners are able to appropriate the entire value of all inventions that rely on their platform, they are likely to deter considerable amounts of innovation and wealth creation. It is clear, moreover, that the platform providers themselves will not be able to foresee or invent all of the technological breakthroughs that rely on their platforms. This concern only becomes relevant, however, if there are scenarios in which the interests of the platform providers diverge from those of application developers seeking to innovate (and thus society's interest in promoting innovation and consumer welfare). Such scenarios are quite plausible because the development of new applications can undermine the position of the incumbent platform provider (for example, by facilitating competition in the platform market itself or undermining the ability of the platform provider to engage in price discrimination). By seeking to prevent such a scenario, platform owners

83 The examples of unforeseeable inventions are legion, starting with the fact that “The railroads enabled the great catalog mail order businesses that transformed rural America, but they did not invent them.” DeLong, supra note 68. With respect to the Internet, the Center for Democracy & Technology elaborated on this point:

The history of the Internet has been marked by numerous examples of new technologies—such as instant messaging or web-based video—that emerge from humble beginnings but then become extremely popular. The “next big thing” might never have a chance to develop and become popular if the approval and cooperation of several top broadband access providers were to become a prerequisite to widespread use. The pace of innovation that has been the hallmark of the Internet could slow substantially.


84 As Shane Greenstein explained in this regard, “[p]articularly worrisome are situations where carriers take actions that are privately beneficial—either to protect existing markets or related commercial investments and relationships—and have the consequence of reducing the incentives of other firms to conduct economics experiments that could create value.” Shane Greenstein, Economic Experiments and Neutrality in Internet Access 40 (Nat’l Bureau of Econ. Research Working Paper No. 13158, 2007), available at http://www.nber.org/papers/w13158.

85 See Farrell & Weiser, supra note 23, at 107-09; F.M. Scherer, Schumpeter and Plausible Capitalism, 30 J. ECON. LITERATURE 1416, 1418 (1992) (arguing that innovation “undermine[s] the market positions of firms committed to old ways of doing business.”); Willow A. Sheremata, Barriers to Innovation: A Monopoly, Network Externalities, and the Speed of Innovation, 42 ANTITRUST BULL. 937, 944 (1997) (“When owners of a current technology raise artificial barriers to entry of new technology, opportunities for innovation decline to the detriment of consumers.”).
might act in ways that reduce socially valuable experimentation and innovation.86

Cautioning against the case for government oversight of the relations between platforms and applications is the difficulty of overseeing the terms of dealing in a technologically dynamic context. The AT&T consent decree is an instructive precedent that highlights the institutional challenges that face antitrust courts. That case involved a relatively stable industry in which it was not necessary to constantly revisit the terms of dealing and where the presence of a regulatory agency offered an alternative means of engaging in the necessary oversight of the platform. In the Microsoft case, by contrast, neither of those two factors was present. Consequently, as antitrust courts and enforcers look to those two cases for guidance in terms of overseeing the relationship between platforms and applications, they should draw the right lessons and, more importantly, ask the right questions. Part III proceeds to highlight those consideration and questions, calling for a more nuanced evaluation of what institutional strategies competition policy can call upon to oversee the terms of dealing between platform owners and application developers.

III. LESSONS FOR MONOPOLIZATION REMEDIES GEARED TOWARD INTEROPERABILITY ISSUES

The information economy and endemic challenges related to cooperation between competitors in network industries is likely to strain the capabilities of antitrust courts. Disputes related to interoperability, particularly in the absence of any regulatory authority charged with overseeing the Internet and the information industries more generally (with the exception of telecommunications networks), will increasingly reach antitrust courts and enforcement agencies. After all, applications developers often fear the possibility of exclusionary conduct by a platform monopoly and are likely to complain of the sort of strategic behavior challenged in the AT&T and Microsoft cases. As the failed attempt to impose an AT&T-like divestiture requirement on Microsoft underscores, however, “[o]pportunities for effective, yet relatively simple,

structural relief may be rare. . . .”87 Consequently, it is incumbent on enforcers and courts to utilize increased creativity as to what institutional strategies can enable behavioral remedies to succeed.

Courts and enforcement agencies will often look for solutions to enable platforms and applications to interoperate effectively. In so doing, they may well invoke the theory noted by Senator Hatch as to the Microsoft case: “Vigilant and effective antitrust enforcement today is preferable to the heavy hand of government regulation of the Internet tomorrow.”88 This motivation begs the difficult institutional question of “but how?” This Part addresses that very issue. Section A discusses a few key lessons from antitrust doctrine; Section B evaluates how standard setting bodies can help to develop and enforce commitments to interoperability.

A. LESSONS FROM ANTITRUST DOCTRINE AND HISTORY

Institutional considerations have long guided antitrust jurisprudence. In the 1960s, former antitrust chief Donald Turner explained that the antitrust laws should not attempt to regulate parallel pricing by oligopolists because there is no manageable remedy to address such conduct.89 For similar reasons, courts generally eschew calls for them to regulate the rates of a business or limit the rents charged on a license of a patented good.90 A notable exception, of course, is the $AT&T$ case,
where the oversight of the equal access rules fell within the purview of a regulatory agency.

As explained above, the relevant antitrust standards on the choice of remedy provide little guidance to courts evaluating complex institutional considerations. The Supreme Court, for example, has offered broad and generally unhelpful guidance along the lines of the directive that the appropriate remedies should "unfetter a market from anticompetitive conduct" and "terminate the illegal monopoly, deny to the defendant the fruits of its statutory violation, and ensure that there remain no practices likely to result in monopolization in the future." Fortunately, there is some valuable guidance, albeit often underappreciated, that can be gleaned from substantive monopolization law.

Despite all of the scholarly criticism of the Aspen Skiing case, the case's substantive standards, although not explicitly focused on remedial concerns, provide three important limiting principles that provide valuable institutional perspectives on how courts can identify and address antitrust violations. First, the substantive monopolization requirements greatly narrow the range of scenarios that warrant judicial attention. In particular, courts must determine that a platform owner enjoys durable monopoly power before considering whether any exclusionary conduct raises a duty to deal claim. Even if such a showing is made, a party seeking to establish a mandated duty to deal must demonstrate that any proffered plausible business justification for the challenged practice is pretextual. Before mandating access arrangements under a duty to deal framework, antitrust law considers whether so doing would be infeasible or harmful in any manner. In so doing, antitrust law evaluates

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93 See Oliver E. Williamson, Delimiting Antitrust, 76 Geo L.J. 271, 275 (1987) ("the structural preconditions—mainly high concentration coupled with severe hurdles to entry—necessary for support of exclusionary or other anticompetitive effects now are meticulously respected" before Section 2 claims can go forward).
94 In Aspen Skiing itself, the reasons offered for the defendant's conduct, particularly its refusal to accept coupons provided by Aspen Highlands that enabled skiers to use its mountains, were rejected by the Supreme Court. See Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 610–11 (1985).
95 Importantly, preventing the loss of customers, assuring consistent profits, or promoting a company's vision of the public interest do not constitute efficiency defenses cognizable by antitrust courts. See Otter Tail Power Co. v. United States, 410 U.S. 366, 380–82 (1973). In a questionable ruling, however, two circuit courts judged AT&T's assessment of the public interest—as opposed to any regulatory action—as sufficient to immunize the company from an interconnection requirement. See S. Pac. Commc'ns Co. v. AT&T, 740 F.2d 980, 1000 (D.C. Cir. 1980); Mid-Texas Commc'ns Sys., Inc. v. AT&T, 615 F.2d 1372, 1390 (5th Cir. 1980).
whether imposing an access requirement would be unsafe, unreliable, or would degrade the quality of the relevant good or service.

The second critical consideration set forth in Aspen Skiing, at least as conceived of by the Trinko decision, is that a viable duty to deal claim must rest on a prior course of dealing or some benchmark that can provide a tractable guide as to what constitutes a reasonable type of behavior. In particular, Trinko suggested that the facts involved in that case—an allegation of discriminatory interconnection arrangements between the dominant local telephone provider and its would-be rivals—were fundamentally different from those in Aspen Skiing. The Trinko Court emphasized that the allegations in Aspen Skiing were far more tractable because they involved a case of outright denial—as opposed to discriminatory access—of a "product that [the defendant] already sold at retail—to oversimplify slightly, lift tickets representing a bundle of services to skiers." Even if the type of access requested in Trinko was less exceptional than suggested by the Court (and even if the Court unfairly characterized the question presented in Otter Tail), Trinko correctly highlights the importance of a reliable benchmark in determining whether a refusal to deal can judged as a predatory strategy and rectified effectively through antitrust oversight. Notably, the Aspen Skiing Court rejected the defendant's argument that the case required the Court to enter the thicket of evaluating the appropriate division of revenue between competitors engaged in a cooperative venture by invoking the earlier (and discontinued) approach of using random-sample surveys to allocate usage between a multi-mountain ticket. Alternatively, the Aspen Skiing Court could have rejected the defendant's argument on the

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96 The Court also expressed a relative confidence—overconfidence, in my view—that a regulatory agency's jurisdiction undermines the case for antitrust oversight. See Philip J. Weiser, The Relationship of Antitrust and Regulation in a Deregulatoy Era, 50 ANTITRUST BULL. 549, 561 (2005).

97 Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 410 (2004). See also Aspen Skiing, 472 U.S. at 610 (refusal to accept coupons, which would have provided "immediate benefits," could not be justified as a legitimate business practice).

98 Trinko distinguished the facts of Otter Tail by suggesting that "the defendant was already in the business of providing a service to certain customers (power transmission over its network), and refused to provide the same service to certain other customers." Trinko, 540 U.S. at 410. This reasoning, however, overlooks that Otter Tail itself focused more on the fact that "[t]here were no engineering factors that prevented Otter Tail from selling power at wholesale to those towns that wanted municipal plants or wheeling the [requested] power." Otter Tail, 410 U.S. at 378. As noted above, the relevant oversight remedy in Otter Tail—a mandate that the defendant wheel power to the plaintiff at wholesale rates—resembled that of the AT&T case because it could be overseen by a regulatory agency (the Federal Power Commission) and not the antitrust court.

ground that a proper injunction merely would have required the defendant to accept the coupons offered by the plaintiff to pay face value for the use of its facility.

Third, where courts must intervene by crafting a conduct remedy, *Aspen Skiing* underscores the basic antitrust lesson that courts should search for appropriate standards that can be judicially enforced. One strategy, as noted by *Aspen Skiing*, is that the presence of market benchmarks can provide a workable remedial scheme and ensure that the court will not be forced to interpret and micromanage regulatory mandates. As discussed in connection with *Microsoft*, the transparency and non-discrimination requirements in that context provide applications developers (including potential competitors) with valuable assurances that they are not going to be subject to opportunistic behavior. Although some have criticized such remedial requirements as ineffec-tual, such criticisms often fail to acknowledge fully the difficulty of judicial supervision of remedies for which courts are not institutionally well situated to enforce.

The challenge for antitrust law and competition policy more generally is whether relatively modest conduct remedies will be sufficient to forestall either full-blown regulation or structural relief. In the case of *AT&T*, the ability of such remedies to work effectively was called into question to such a degree that the court viewed a radical restructuring of the company as a sound strategy—ironically, just when the notice and transparent interconnection requirements were put into place by the

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100 *See, e.g.*, Image Technical Servs., Inc. v. Eastman Kodak Co., 125 F.3d 1195 1224–28 (9th Cir. 1997) (imposing duty to license parts to competitors on same terms as sold to other customers); Carlton, *supra* note 4, at 675 n.30 (suggesting that, where a benchmark exists for a discriminatory access arrangement between a vendor and different customers that is designed to and has the effect of undermining competition in a related market, antitrust scrutiny should attach).

101 Carl Shapiro’s judgment, for example, is that:

Looking back after six years, the Final Judgment has achieved precisely what it was designed to do: prevent Microsoft from continuing to engage in the conduct that had been found to be illegal. The Final Judgment has done nothing significant to affirmatively restore competition. Thus, in my view, the remedy in the most prominent antitrust case of our era has failed.

Carl Shapiro, *Microsoft: A Remedial Failure*, 75 *Antitrust* L.J. 739, 761 (2009). Notably, in bemoaning the court’s refusal to mandate that Internet Explorer be made available on an open source basis and that Microsoft be required to auction off the right to port Microsoft Office, Shapiro declined to evaluate how the court could oversee such requirements effectively. *Id.* at 757–58. This very concern is presumably what Dennis Carlton, who, like Shapiro, was an expert economist in the antitrust litigation against Microsoft, had in mind when he reported that "[r]emedies for anticompetitive exclusionary conduct can be hard to fashion, as the Microsoft case illustrates.” Dennis W. Carlton, *Does Antitrust Need to Be Modernized?* (Econ. Analysis Group, Discussion Paper No. 07-3, 2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=956890.
FCC. In *Microsoft*, by contrast, the case for more radical regulatory oversight or structural relief was far from clear. Rather, the court decided, in the words of Professor Spencer Weber Waller, that “disclosure is divestiture when it comes to our high-tech, information-based, intellectual property-driven economy.”

Whether or not the *Microsoft* consent decree aided the rise of Google in any respect (whether by the terms of the decree or its deterrent effect), the decree may well have influenced Microsoft's behavior for the better. Consider, for example, that developers have long expressed concerns about so-called “secret APIs” and favoritism for some applications developers over others. As a result of the decree, Microsoft can now more credibly dispel such concerns, highlighting that if it hid secret APIs from some outside developers, it would be in contempt of court. The fact that the consent decree bolsters the credibility of Microsoft's commitment to support interoperability thus may well explain why Microsoft itself was willing to embrace this requirement. Moreover, from an enforceability perspective, the fact that the requirement is to make APIs available on a non-discriminatory basis, it is less onerous to enforce than one devised out of whole cloth. By contrast, the more ambitious protocol licensing requirement is open to criticism on the

102 Spencer Weber Waller, *The Past, Present, and Future of Monopolization Remedies*, supra this issue, 76 *Antitrust* L.J. 11, 26, (2009) (emphasis omitted). It also merits noting that, contrary to Shapiro's suggestion, see supra note 101, the remedies addressing the identical anticompetitive tactics used in the first browser war may well not be irrelevant. See, e.g., Ed Felten, *The Microsoft Case: The Government's Theory, in Hindsight, Freedom to Tinker*, May 27, 2008, http://www.freedom-to-tinker.com/?p=1294 (“Life doesn't always offer do-overs, but we may get a do-over on the browser war, and this time it looks like Microsoft will take the high road.”).

103 Ed Felten, for example, has suggested that the case should be considered a success “not so much because of the settlement, which most people saw as weak, but because the case taught Microsoft that ignoring antitrust concerns can be dangerous...” and because “its business and legal behavior is more moderate.” Ed Felten, *The Microsoft Case, Ten Years Later, Freedom to Tinker*, May 20, 2008, http://www.freedom-to-tinker.com/?p=1292.


105 See Transcript of Teleconference with Bill Neukom, Executive VP for Law and Corporate Affairs, Microsoft, on Microsoft’s Proposed Final Judgment, at 3 (5/10/00) available at http://www.usdoj.gov/atr/cases/f219300/2193560.pdf (referring to Microsoft proposal calling for API disclosure as “codify[ing]” company’s practice); Microsoft Corporation’s Proposed Final Judgment at 3, United States v. Microsoft Corp., No. 98-1232 (D.D.C. May 10, 2000), available at 2000 WL 572716 (requiring Microsoft to provide “timely and complete access to such Technical Information as is provided through any software development program that Microsoft makes available as to the software development community at large”).

ground that it is both more costly than a non-discriminatory API requirement and less likely to succeed. Nonetheless, some commentators have suggested—particularly as to the requirements imposed by the European Union—that such requirements have affected Microsoft's conduct and may well have facilitated the ability of open source products to compete with Microsoft.

In a sign that the decree may be facilitating a changing perspective on the part of Microsoft, the company has advanced, in two recent initiatives, its own commitment to transparency and openness. The first such effort, deemed the “Windows Principles,” was announced in 2006. The second such effort, the adoption of a set of Interoperability Principles in 2008, suggests an even stronger commitment to and embrace of interoperability. In addition to these initiatives, Microsoft has invested in a support staff to comply with the decree’s requirements, increasing the number of staff persons from 10 in 2003 to 630 by January 2008.

In Europe, antitrust enforcers were initially unimpressed with such steps, with European Competition Commissioner Neelie Kroes suggesting that “talk is cheap” and other high level officials reporting that they were skeptical as to the sincerity and likely effectiveness of Microsoft’s commitment to interoperability. More recently, however, the European Union has concluded that Microsoft has made substantial
progress in supporting interoperability and has determined that the presence of an oversight monitor was no longer necessary.\footnote{3}

B. Standard-Setting Bodies and Alternative Models of Institutional Oversight

To the extent that any oversight regime will be effective in facilitating interoperability, antitrust courts and competition policy more generally need to investigate the challenges associated with institution building and norm creation. Like Madison's concern with mere "parchment barriers,"\footnote{4} the best remedial strategies call for some degree of self-enforcement and built-in checking mechanisms to operate effectively. Of late, this concern has pointed antitrust enforcers towards a greater degree of concern with and oversight of standard-setting bodies. Given that the emerging knowledge-based economy places such a huge premium on inter- and intra-industry cooperation and interoperability, this concern is warranted because such institutions have the potential to play a valuable competition policy role—both in preventing the need for antitrust-mandated interoperability and, potentially, in facilitating it. To that end, antitrust law will need to develop a strategy for empowering and overseeing the operation of such institutions.

The first challenge for antitrust enforcers is to develop a productive relationship with standard-setting forums. This requires antitrust authorities around the world to understand the governance of such bodies. Three notable governance issues that antitrust authorities must come to grips with are the development of safeguards to prevent cartel-like behavior (be it price setting or the exclusion of rivals), the creation of processes for open and fair decision making, and the determination of what restrictions are placed on the inclusion of patented technology in official standards. Antitrust enforcers will generally do well to allow some level of experimentation across different standard-setting bodies and not insist on "one size fits all" solutions to these issues.\footnote{5} In a sign that the U.S. Supreme Court may appreciate this point, \textit{California Dental Association v. FTC} suggests a great level of respect for and deference to such entities,\footnote{6} and can be best read as announcing the principle that

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\begin{itemize}
\item \footnote{4} \textit{The Federalist} No. 48, at 305 (James Madison) (Clinton Rossiter ed., 1961).
\item \footnote{6} See \textit{California Dental Ass'n v. FTC}, 526 U.S. 756, 765–66 (1999). In my view, the court probably overdid the necessary level of deference in that case, as exemplified by its
\end{itemize}
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credible standard-setting bodies are to be regarded—at least in the absence of contrary evidence—as acting in the public interest, not in the self-interest of any or all of its members.\(^{117}\)

A second challenge for antitrust enforcers is to determine when the conduct of standard-setting participants crosses the line and violates the antitrust laws. The highest profile antitrust case of this type involved Rambus. In that case, Rambus attracted the attention of the Federal Trade Commission (FTC) for deceiving the Joint Electron Device Engineering Council (JEDEC), an industry standard-setting body, about its patent position. In particular, the FTC alleged that Rambus violated the antitrust laws by "deliberately engaging in a pattern of anticompetitive acts and practices that served to deceive [JEDEC], resulting in adverse effects on competition and consumers."\(^{118}\) After the FTC concluded that Rambus violated the antitrust laws by engaging in deceptive conduct during the setting of an official standard (and being able to charge higher royalties as a result), it concluded that the appropriate remedy was to restrict the royalty payments to Rambus to the level that would have been allowed under the standard-setting body's reasonable and own judgment that Justice Breyer's reasoning—had it been offered by the Ninth Circuit—might well have warranted a different result. See id. at 779 ("Had the Court of Appeals engaged in a painstaking discussion in a league with Justice [Breyer's] (compare his 14 pages with the Ninth Circuit's 8), and had it confronted the comparability of these restrictions to bars on clearly verifiable advertising, its reasoning might have sufficed to justify its conclusion."); see also Thomas A. Piraino, Jr., A Proposed Antitrust Approach to Collaborations Among Competitors, 86 Iowa L. Rev. 1137, 1161-62 (2001) (criticizing decision and quoting appraisals of decision as an "enigma" and "cr[ying] out for more clarification").

\(^{117}\) See California Dental, 526 U.S. at 771, 773 n.10 ("The public service aspect, and other features of the professions, may require that a particular practice, which could properly be viewed as a violation of the Sherman Act in another context, be treated differently.") (quoting Goldfarb v. Virginia State Bar, 421 U.S. 773, 788-89 n.17 (1975)). To be sure, this reading departs some from the Court's perspective in National Society of Professional Engineers v. United States, 435 U.S. 679 (1978), but it echoes the approach of the Third Circuit in United States v. Brown University, 5 F.3d 658, 677-78 (3d Cir. 1993), where it called for relaxed scrutiny of organizations acting for public interest reasons. See also Clamp-All Corp. v. Cast Iron Soil Pipe Inst., 851 F.2d 478, 487 (1st Cir. 1988) (legitimate standard setting to be given deference). For suggestions that the Court's decision can be so understood, see Wayne D. Collins, California Dental Association and the Future of Rule of Reason Analysis, Antitrust, Fall 1999, at 58 (suggesting this to be a key difference between the majority and the dissent). See also David Balto, Some Observations on California Dental Association v. FTC, Antitrust, Fall 1999, at 64 ("the decision is limited to the specific context of self-regulation of advertising by an association of professionals."). Under this reading, a key threshold showing necessary to challenge a standard-setting body's decision is a demonstration how its decision reflected a private party's (or parties') effort to exclude competition. See Allied Tube & Conduit Corp. v. Indian Head, Inc., 486 U.S. 492 (1988) (undertaking such an inquiry); see also Clamp-All, 851 F.2d at 487 (rejecting antitrust claim on the grounds of no antitrust injury where competitor failed to present evidence of anticompetitive intent).

non-discriminatory license requirement. On appeal, the D.C. Circuit ruled that this conduct did not fall within the scope of section 2 of the Sherman Act, highlighting that it did not have the effect of excluding rivals from the marketplace, but merely enabling it to charge a higher price. In so doing, the D.C. Circuit split with the Third Circuit, which ruled at the motion to dismiss stage that Qualcomm’s alleged breach of its promise to adhere to a reasonable and non-discriminatory requirement constituted a violation of the antitrust laws. This circuit split, along with the unique facts of Rambus (including a disclosure requirement that was flawed at best), underscore that litigation over “patent hold-up” behavior is likely to continue and that standard-setting bodies should evaluate carefully their own strategies for avoiding such conduct in the first place.

With respect to Microsoft, European regulators have viewed with interest and suspicion Microsoft’s conduct in key standard-setting efforts, suggesting a new form of an antitrust violation in the context of standard setting. In the winter of 2008, the European Union announced that it had opened an antitrust investigation focused on how the company participates in and influences the decision making of entities, such as the European Committee for Standardization or the International Organization for Standardization. In the face of this pressure, the company’s commitment to interoperability, or both, Microsoft announced that it would support an open source standard known as OpenDocument (ODF) and not merely its own proprietary product OOXML. It remains to be seen, however, whether this decision will end this investigation or whether the European Union will push for

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121 See id. at 466 (acknowledging conflict with Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297 (3d Cir. 2007)).


124 Id.
some form of an enforceable commitment to an ongoing level of support for the ODF standard. In any event, the EU's push in this area moves in a potentially dangerous direction in the sense that the type of conduct being addressed—vote trading and influence peddling—is far from unheard of in standard-setting efforts. Regulators should be wary about adopting rules that limit such behavior because such rules may well give rise to unintended consequences and might undermine the effectiveness of such bodies—in which some form of give-and-take agreements may be necessary for them to develop successful standards.

The final issue is whether standard-setting bodies can be used as a means to implement interoperability requirements set forth in an antitrust consent decree. To that end, some suggested that the Microsoft consent decree should have embodied a commitment on the part of Microsoft to support open industry standards on an equal basis to its own proprietary technologies. The objecting states requested that the court impose a remedy along these lines, promoting a requirement that would have required "Microsoft to (1) continue supporting any industry standard it has publicly claimed to support 'until it publicly disclaims such support or the standard itself expires or is rescinded by the standard-setting body,' and (2) 'continue to support an industry standard any time it makes a proprietary alteration to the standard.'" In upholding the district court's rejection of that proposal, the D.C. Circuit concluded that such a remedy was too divorced from the substantive violations to be appropriate.

In Microsoft, the district court and the D.C. Circuit were reluctant to empower a standard-setting body to develop and enforce interoperability requirements that would govern Microsoft's behavior. In addition to its concerns that the requirements were not related to the liability issues in the Microsoft case, the D.C. Circuit explained that such a remedy was questionable on the grounds that standard-setting bodies are imperfect institutions, often making subjective decisions and moving at a slow pace that does not keep up with the rapid pace of technological change. This is a fair criticism, but courts will find it difficult to identify any institution—including a technical committee along the lines of that embraced in Microsoft—that is without such drawbacks.

126 Massachusetts v. Microsoft Corp., 373 F.3d 1199, 1214 (D.C. Cir. 2004).
127 Id.
128 Id. at 1215.
The benefit of a standard-setting forum as an adjunct to an antitrust court is that it might be used in a manner that spares antitrust courts from weighing into matters beyond their core competence and that spurs the relevant standard-setting body to function more effectively. It is indeed the case that standard-setting bodies often fail to reach resolution on issues in a timely manner, particularly where the interoperability issues will facilitate the success or failure of particular companies. Nonetheless, by holding out the possibility that it would have to weigh in on such issues, an antitrust court might encourage such processes to move more effectively, thereby giving rise to two salutary results—a better functioning standard-setting process and a more effective means for an antitrust court to address interoperability issues.

IV. CONCLUSION

Antitrust authorities are just beginning to grapple with the challenges of addressing relations between platform owners and applications developers who rely upon the platform. The AT&T case is both very encouraging and, to a considerable degree, anomalous in providing guidance to antitrust courts and enforcers. In that case, after all, the court could work in tandem with a sector-specific regulator. In the Microsoft case, by contrast, courts and enforcers were forced to develop remedial strategies in the absence of such a regulator. In relying on a technical committee and looking for reasonably self-enforcing requirements, courts and enforcers followed a sound course, but also exhibited a limited amount of imagination and, quite possibly, a limited degree of effectiveness as well. In short, the remedies used in the Microsoft case—with the possible exception of the Technical Committee—did little to address the concern that "the basic institutional and remedial forms for implementing antitrust law through the courts remain largely unchanged." The antitrust remedial challenges of the future are likely to require more creativity, including the use of standard-setting bodies, than courts and enforcers have used to date. In the case of network neutrality issues, for example, former FTC Chairman Deborah Platt Majoras asserted categorically that antitrust law is "well-equipped to deal with the competitive issues raised" in that context. Taking issue with this suggestion,
then-FTC Commissioner Leibowitz highlighted that "while antitrust may be a good way of thinking about [the network neutrality concerns], it is not necessarily well-suited to protecting" consumers against them. In that regard, Leibowitz highlighted the concern that antitrust courts often move too slowly and lack the remedial apparatus to manage the oversight of interconnection-related issues. What competition policy strategy will emerge to address such issues remains to be seen.

For too long, antitrust scholars—both lawyers and economists—have focused on substantive antitrust questions at the expense of the institutional and administrative ones that inform the selection of antitrust remedies. Given the lack of regulatory bodies or common carrier-like rules to govern the information infrastructure that increasingly is at the heart of modern economic activity, antitrust law may well be tested in its ability to provide some level of oversight of platform owner-application developer relationships. Consequently, antitrust courts and commentators will increasingly be called upon to evaluate whether and how antitrust law can play an effective role in resolving "concrete problems arising [from] collaborative relationships" through the "design of the institutions and remedies" for a new era of antitrust.

While the AT&T antitrust litigation and its effective use of a parallel regulatory agency offers a model of the legacy response to platform owner-applications developer relationships, the Microsoft antitrust litigation provides a window on the challenges inherent in a new era of antitrust oversight. It is still too soon to tell whether antitrust law is up to the task of developing the institutional strategies—be it the use of technical committees or reliance on standard-setting bodies—for addressing interoperability concerns that are likely to increasingly arise in the infor-

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134 For my suggestion as to an effective strategy for addressing network neutrality concerns, see Philip J. Weiser, The Next Frontier for Network Neutrality, 60 ADMIN. L. REV. 273 (2008).
135 As Oliver Williamson once put it as to economists:
Puzzles and tradeoffs frequently preoccupy economists to the neglect of administrability. They study issues that are interesting for their own sake, even if the "complexities" are poorly understood and well beyond the current capacity of the legal system. Economists, however can and have dealt with issues of administrability where these needs are plainly salient.
See Williamson, supra note 93, at 279. It is worth noting that the lack of focus on remedies extends to the merger context as well. See Philip J. Weiser, Reexamining the Legacy of Dual Regulation: Reforming Dual Merger Review by the DOJ and the FCC, 61 FED. COMM. L.J. 167, 168 (2008).
136 Svetiev, supra note 65, at 594.
mation-based economy. Such concerns, like the ones that arose concerning exclusionary practices by railroads (notably, in conjunction with *Standard Oil*), will require some form of oversight and an outlet for addressing competitive concerns.

Historically, network industries and interoperability issues have led to economic regulation, but over the last thirty years, the United States has largely sought to rely on antitrust and market-based institutions like standard-setting committees for addressing such issues. Whether this effort will hold will depend, at least in part, on whether antitrust law can be effective in this context, thus holding off the calls for regulation. To promote effective competition policy in the information economy, there is thus a twin set of challenges for policy makers and commentators. First, they must come to grips with how standard-setting bodies operate and how to best bolster their effectiveness through appropriate government support and antitrust law oversight. Second, they must evaluate the comparative institutional competence of alternative bodies which might play a role in remedial strategies and determine which strategies are preferable. In short, these efforts will determine whether antitrust law can play an important role in avoiding the type of regulation that has generally governed network industries of critical importance to the economy.

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157 For an initial development of this point, see Weiser, *supra* note 115, at 3–4.
158 For an explanation of how new institutional economics (NIE) can play an important role in this regard, see Timothy J. Muris, *Improving the Economic Foundations of Competition Policy*, 12 GEO. MASON L. REV. 1, 23 (2003) (discussing NIE insights related to antitrust divestiture remedies); see also Joskow, *supra* note 75, at 112–15 (same).