

NBER WORKING PAPER SERIES

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DID CONSUMERS WIN?

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Working Paper 11727
<http://www.nber.org/papers/w11727>

NATIONAL BUREAU OF ECONOMIC RESEARCH
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October 2005

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NBER Working Paper No. 11727

October 2005

JEL No. K21, L1, L4, L6

ABSTRACT

U.S. v. Microsoft and the related state suit filed in 1998 appear finally to have concluded. In a unanimous en banc decision issued in late June 2004, the D.C. Circuit Court of Appeals rejected challenges to the remedies approved by the District Court in November 2002. The wave of follow-on private antitrust suits filed against Microsoft also appears to be subsiding. In this paper we review the remedies imposed in the United States, in terms of both their relationship to the violations found and their impact on consumer welfare. We conclude that the remedies addressed the violations ultimately found by the Court of Appeals (which were a subset of those found by the original district court and an even smaller subset of the violations alleged, both in court and in public discourse) and went beyond them in important ways. Thus, for those who believe that the courts were right in finding that some of Microsoft's actions harmed competition, the constraints placed on its behavior and the active, ongoing oversight by the Court and the plaintiffs provide useful protection against a recurrence of such harm. For those who believe that Microsoft should not have been found liable because of insufficient evidence of harm to consumers, the remedies may be unnecessary, but they avoided the serious potential damage to consumer welfare that was likely to accompany the main alternative proposals. The remedies actually imposed appear to have struck a reasonable balance between protecting consumers against the types of actions found illegal and harming consumers by unnecessarily restricting Microsoft's ability to compete.

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I. Introduction

The D.C. Circuit Court of Appeals issued a unanimous *en banc* decision in June 2004 upholding the remedy ordered in *U.S. v. Microsoft*.¹ A District Court has been actively overseeing compliance with that order since May 2003.² Several of the major derivative private actions have either been dismissed or settled.³ It thus appears that this long conflict is nearing an end.⁴ It is concluding in a way that prevents hard-core warriors on either side from claiming victory, though some who opposed Microsoft have claimed, in effect, that victory was stolen from them in the remedy phase of the struggle.⁵

What about consumers, however, whose interests both sides claimed to be serving? As the rhetorical dust kicked up by the *Microsoft* battles settles, we believe it is becoming clearer that the end result—the violations ultimately found by the appeals court and the remedy imposed under its guidance by the district court—is broadly consistent with basic, pro-consumer antitrust principles. To the extent it departs from those principles, it reflects some

¹ *Massachusetts v. Microsoft Corp.*, 373 F. 3d 1199 (D.C. Cir., 2004).

² Microsoft began complying with the terms of the settlement before it was entered by the courts. That process started in December 2001. J Colleen Kollar-Kotelly did not issue a decision on the settlement until November 2002. In May 2003, J. Kollar-Kotelly ordered that Microsoft begin filing compliance status reports with the court. The first such report was due in July 2003. (Stipulation and Revised Proposed Final Judgment, *U.S. v. Microsoft*, Civil Action No. 98–1232 (CKK), November 6, 2001, *available at* <http://www.usdoj.gov/atr/cases/f9400/9495.pdf>; Memorandum Opinion, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233); J. Colleen Kollar-Kotelly, Order, *State of New York v. Microsoft Corp.*, Civil Action No. 98–1233 (CKK), May 14, 2003. Since that Order, the parties have filed Status Reports with the court at three-month intervals starting in July 2003.

³ Suits by Sun and AOL (which bought Netscape in 1999) have both been settled. Several other suits were brought by other competitors of Microsoft, including Be, Inc., which offered the Be operating system in the mid 1990s (case settled), and two suits by companies involved in digital media, Burst and RealNetworks (both cases still pending as of February 2005). In addition, dozens of class-action suits were filed alleging overcharges on Windows and, in some cases, Microsoft Word and Excel. Most of those suits have been dismissed or settled, but a handful remain pending as of February 2005.

⁴ As we discuss further below, however, Microsoft still faces a major antitrust challenge in Europe. *See* the European Commission's decision: Case COMP/C-3/37.792 *Microsoft*, Mar. 24, 2004. The Court of First Instance (CFI) denied Microsoft's request to stay the remedy until the case was reviewed on the merits. (Order of the President of the Court of First Instance, Case T-201/04 R, December 22, 2004.) The CFI is not likely to reach a decision on whether to uphold or void the Commission's decision until 2006.

serious bumps along the procedural road and, in part as a consequence, embodies an element of punishment for Microsoft's perceived aggressiveness and arrogance.⁶ As we discuss in this essay, the courts did find that Microsoft engaged in anticompetitive actions, but, in the absence of any evidence that those actions actually reduced competition, the remedy imposed is well designed to prevent similar violations without imposing potentially expensive structural changes or substantially restricting Microsoft's ability to compete on the merits.

Accordingly, we argue below, if one accepts the courts' ultimate findings of fact one must conclude that the *Microsoft* remedy is likely to contribute future benefits for consumers.⁷ Even if one goes beyond those findings and harbors a deep and broad distrust of Microsoft, as some observers plainly do,⁸ it is hard to escape the conclusion that the constraints placed on Microsoft's behavior and its active oversight by the parties and the District Court will benefit consumers by reducing the likelihood of future anticompetitive behavior—even if one believes that more severe constraints should have been imposed.

At the other end of the spectrum, even if one believes, as we do, that Microsoft's conduct did not justify a finding that it had violated the Sherman Act, because there was no credible evidence of likely consumer harm flowing from the challenged actions,⁹ it is hard to find much fault with a remedy that does not impose costly structural change or significantly reduce Microsoft's ability to compete on the merits—in particular, its ability to design,

⁵ Timothy F. Bresnahan, *A Remedy that Falls Short of Restoring Competition*, 16 ANTITRUST 67 (2001).

⁶ Eleanor M. Fox, *What Is Harm to Competition? Exclusionary Practices and Anticompetitive Effect*, 70 ANTITRUST L.J. 371 (2002).

⁷ Whether a rigorous cost-benefit analysis, taking into account litigation and compliance costs, would conclude that this litigation enhanced discounted expected social welfare is a harder question. We do not attempt to answer it here.

⁸ See, e.g., *Reforming Microsoft*, N.Y. TIMES, Sept. 7, 2001.

⁹ Howard H. Chang et al., *Has the Consumer Harm Standard Lost its Teeth?* AEI-Brookings Joint Center Working Paper; MIT Sloan Working Paper No. 4263-02, 2002, available at <http://ssrn.com/abstract=332021>.

develop, and market products that respond to the demands of end users and software developers.

Moreover, regardless of one's views of the particular facts of this case, there can be little doubt that this near-death experience has caused Microsoft, which unquestionably has significant short-run market power in personal computer operating systems, to be more careful to avoid even the appearance of anticompetitive behavior.¹⁰ As long as this increased care does not result in competitive timidity or reduced innovation, it may make all parties better off.¹¹

Those observers who have complained about the remedy in this case are typically not considering, as we are here, a but-for world in which this case was never brought. Moreover, their primary concern seems to have been with competition in particular markets, rather than with fidelity to general antitrust principles. That is, they have sought to use antitrust as a tool to reshape particular market structures rather than to deter anticompetitive behavior across the economy.¹² Observing that competition in operating systems for personal computers was not as vigorous as they would like and that some of the actions Microsoft took in the course of maintaining its leading market position were judged to have been anticompetitive, they asked the courts to impose drastic structural and injunctive relief designed to induce more competition, largely by hobbling Microsoft and making some of its intellectual property available to its rivals.¹³

While it is hard to argue with the proposition that more vigorous competition in the software business would raise welfare, all else equal, increasing competition by weakening a

¹⁰ For a discussion of the fragility of market power in network industries, see Richard Schmalensee, *Antitrust Issues in Schumpeterian Industries*, 90 AM. ECON. REV. 192 (2000).

¹¹ This is not to assert that on balance this litigation was welfare-enhancing; see note 7 *supra*.

¹² Robert E. Litan & Carl Shapiro, *Antitrust Policy during the Clinton Administration*, UC Berkeley, Center for Competition Policy Working Paper No. CPC01-22, 2001, available at <http://ssrn.com/abstract=502782>.

competitor does not leave all else equal and is not likely to make consumers better off—in general or, as we argue below, in this case. In *Microsoft*, in the absence of evidence that the violations in question had actually reduced competition, the courts properly declined to take not particularly egregious antitrust violations as a license to punish the firm in ways that would make it a less effective competitor.

Those who are frustrated with the result in *Microsoft* are thus not frustrated because the courts stepped away from traditional antitrust standards, which are based on concern for consumer welfare. Rather, they are frustrated because the courts refused, despite enormous pressure, to leap forward into uncharted territory. Microsoft escaped execution, but it hardly escaped unscathed. Accepting the original trial court’s findings of fact, this outcome—and the appellate decisions on which it rests—is consistent with sound antitrust doctrine.

Not only did the *Microsoft* litigation follow a somewhat winding path, which we summarize below, but the conduct ultimately found illegal was not at the core of the case originally brought or the trial actually held. Section I of this paper summarizes the evolution of the liability side of the case from the original complaint in May 1998 to the D.C. Circuit’s decision on liability in June 2001. Similarly, as Section II summarizes, the discussion of remedy changed considerably along the way from the original complaint to the D.C. Circuit’s final decision on remedy in June 2004.

At the core of this case as originally brought was the allegation that Microsoft’s provision of Internet browsing functionality—labeled Internet Explorer or IE—as a component of the Windows operating system rather than as a stand-alone application constituted a tie that was *per se* illegal under Section 1 of the Sherman Act. This tying claim was never proven

¹³ These proposals, as well as the remedy actually ordered, are summarized below.

although many commentators appear not to have noticed.¹⁴ Microsoft ultimately was found liable for an apparently related violation: making it difficult for computer manufacturers who used Windows (OEMs in the language of the case) to remove ready means of access to IE, including its icon on the Windows desktop and its place on the Start menu. Accordingly, as Section III describes, much of the discussion of remedies focused on whether and how Microsoft should be ordered to modify the design of Windows. We argue that the design change actually ordered would in fact have been appropriate even if an illegal tie had been found. In fact, the design change ordered is what the government sought as its remedy for the claimed illegal tying.¹⁵ More drastic design changes proposed in this case—and adopted by the European Commission in its case against Microsoft now under appeal¹⁶—would have imposed significant costs on consumers without any incremental competitive benefit.

Section IV discusses the other remedy provisions and the enforcement of the entire relief order. Section V summarizes our evaluation of the *Microsoft* outcome and draws a number of related conclusions.

¹⁴ There has been much confusion about this point in the non-specialist media. For instance, *Déjà vu all over again*, *ECONOMIST*, Jan. 29, 2004, asserted that “Although Microsoft was found guilty of illegally ‘tying’ its web-browser to Windows, and was initially ordered to be broken in two, the far more lenient settlement that was eventually agreed made no attempt to prevent similar tying in future.” As we discuss below, the final remedy is more easily understood if one is told (as readers of the *ECONOMIST* were not) that the trial court’s finding of illegal tying was vacated and remanded by the court of appeals and never retried, and the trial court’s divestiture order was vacated, in part, because the trial court did not hold a hearing to address remedies-specific factual disputes.

¹⁵ The DOJ’s initial complaint to the District Court asked that Microsoft be enjoined from “distributing a single version of its operating system which includes Microsoft’s browser software, *unless... each OEM is permitted at its option to delete the software that provides the Internet Explorer icon and the other means by which users may readily use IE to browse the web.*” (emphasis added) Department of Justice Complaint, U.S. v. Microsoft Corp., Civil Action No. 98–1232, May 18, 1998, § VIII, Part 2.e.

¹⁶ Commission Decision, Case COMP/C-3/37.792 Microsoft, Mar. 24, 2004.

II. Violations Alleged and Found

A. Basic Facts¹⁷

The central product in *Microsoft* was Microsoft's Windows operating system for personal computers.¹⁸ An operating system permits applications software, like word processors, to control the underlying hardware through what are called APIs (Applications Program Interfaces). APIs are interfaces that are documented so that applications can use them to request specific services from the operating system.¹⁹ When a user instructs a word processing program to print a document, for instance, the word processing program uses APIs to in effect pass this instruction (including detailed formatting information) along to the operating system, which in turn sends the printer detailed instructions specific to that printer. Operating systems for personal computers also provide services that can be invoked directly by end-users, such as the ability to name, copy, move, or delete files. In modern operating systems, APIs exposed by one part of the system may be used by other parts. Thus, for instance, when a user directly instructs Windows to rename a file, the same APIs are invoked as when the user tells an application such as WordPerfect to rename a file.

Interest among the public in use of the Worldwide Web increased sharply in 1993 after a team at the University of Illinois developed the first graphical Web browser, called Mosaic, which it licensed to several commercial software vendors. Netscape Communications, formed

¹⁷ We only cover the more prominent accusations.

¹⁸ An operating system is a piece of software that provides memory management services and interfaces for communication between applications and a computer's hardware. Microsoft Windows, which originally shipped as an add-on to Microsoft's earlier operating system, MS-DOS, has an integrated graphical user interface, so that users execute commands and perform functions primarily using a mouse. Since its inception, Windows has greatly increased in functionality; over the years Microsoft has, for instance, added support for networking protocols, included myriad drivers for peripheral hardware such as printers and speakers, and integrated new features, such as the Internet Explorer Web browser.

in 1994, hired away most of the Mosaic developers from the University of Illinois.²⁰ Its Navigator browser was an instant hit as soon as it was released in late 1994. By some estimates, it accounted for 80 percent of browser usage in 1995 and early 1996,²¹ and versions of Navigator ran on several operating systems in addition to Windows. As Netscape noted in a prospectus in the summer of 1995, however, it faced competition from several sources, including operating system vendors, many of which were developing their own Web browsers and planning to include them with their operating systems.²² IBM's OS/2 Warp operating system (then the primary competitor to Microsoft's Windows) was among the first, with its Web Explorer browser in the fall of 1994.²³ Microsoft followed in August 1995 with Internet Explorer included in its new Windows 95 operating system. Apple was also developing its own Web browsing software for the Macintosh.²⁴

At around the same time, Sun began promoting its Java software platform. It promised to permit programmers to write applications that would run on any computer with a "Java Runtime Environment" or JRE,²⁵ regardless of the computer's operating system or microprocessor. Java is often described as "middleware" because it works between applications software and the operating system; applications use some of the APIs provided by the middleware in addition to or in place of APIs provided by the operating system. Starting in

¹⁹ We use "API" to mean only documented, "public" interfaces that are intended for use by application software developers. Some authors use "API" to reference any interface, including those that are private or internal and are not documented for use by third-party developers.

²⁰ MICHAEL A. CUSUMANO & DAVID B. YOFFIE, *COMPETING ON INTERNET TIME: LESSONS FROM NETSCAPE AND ITS BATTLE WITH MICROSOFT* 7, 44, 99, 329 (1998).

²¹ *Id.*, at 11 (1998).

²² Netscape Prospectus, Aug. 8, 2005, *available at* <http://wp.netscape.com/comprod/investor/prospectus.html> (last visited Feb. 15, 2005).

²³ Randall Kennedy, *OS/2 Warp Goes Light Years Ahead of 2.1*, INFOWORLD, Nov. 14, 1994.

²⁴ Tom Quinlan, *Apple to Tack Internet on to Tardy Copland*, INFOWORLD, Feb. 26, 1996.

1996, Netscape distributed a JRE with Navigator.²⁶ Microsoft also added a JRE to Windows in 1996.²⁷

Microsoft had worked hard to persuade applications software vendors (independent software vendors, or ISVs in the language of the case) to write their programs to run on Windows. Its success in this effort contributed substantially to the value of its operating system products: consumers found them attractive in large part because they could run a large number of useful applications. Java posed a potential threat to Microsoft because it held out the possibility that if JREs became ubiquitous and their capabilities and performance improved sufficiently, standard PC-style applications could be written to run on any operating system for which a compatible JRE existed. Thus, an entrant in operating systems would not have to attract developers to write applications for its new operating system before it had customers; it would only have to create a JRE. Moreover, because the operating system would not have to support applications directly, it could be much simpler than Windows (or Apple's Mac OS) and less costly to OEMs.

Netscape seemed to pose a similar potential threat. During the period relevant to the case, it was not a middleware product: it neither exposed many APIs to other applications nor supported a robust programming language. But Navigator was widely used on Windows and other operating systems (notably Apple's Macintosh), and if it had both remained ubiquitous *and* come to expose a sufficiently rich set of APIs, applications program writers might have

²⁵ A JRE consisted of a Java Virtual Machine (JVM), which interpreted Java applications to run on a particular operating system/processor platform, and a set of "class libraries" that provided the Java equivalent of APIs.

²⁶ Netscape Press Release, *Netscape Builds Momentum with Shipment of Netscape Navigator 2.0*, Feb. 5, 1996, at <https://wp.netscape.com/newsref/pr/newsrelease82.html> (last visited June 14, 2002).

²⁷ *MS, Sun Battle for Java*, CNET News.com, Dec. 26, 1996, available at http://news.com.com/MS%2C+Sun+battle+for+Java/2100-1001_3-257680.html?tag=st.rn (last visited Jan. 28, 2005).

written programs to run on Navigator rather than on Windows. Moreover, Navigator provided wide distribution of Netscape's JREs.²⁸ In various interviews, Netscape's Chief Technical Officer boasted that Navigator and Java would relegate the role of Windows to a set of "slightly buggy device drivers."²⁹

Microsoft saw the opportunity presented by the Internet and the challenges posed by Netscape and Java, and it responded in several ways.³⁰ First and most important, it included a browser that it had licensed and modified and an application exposing no significant APIs in Windows 95 when it was released. A year later, in August 1996, Microsoft introduced IE 3, a fully redesigned version that broke the browsing functions down into a series of software "components." IE 4, released in October 1997, provided additional "componentization" and, like IE 3, offered new features and improved performance to browser users. By the time the suit was filed, Internet Explorer generally received better reviews in the trade press than Netscape's Navigator did.³¹

Breaking IE into components provided little direct benefit to users, but it exposed much of the functionality in IE as APIs that other parts of the operating system and applications could

²⁸ At trial, Netscape's JREs were portrayed by plaintiffs as faithful implementations of Sun's specifications. However, as noted *infra* note 33, Netscape's JREs ran fewer "pure" Java applications than did Microsoft's JRE in tests by PC Magazine. Moreover, like Microsoft, Netscape offered its own method for calling "native" code and did not adopt Sun's specification until more than a year after it was released. Even then, Netscape adopted Sun's specification only for its JRE that ran on Windows, not for those that ran on other platforms.

²⁹ CUSUMANO & YOFFIE, *supra* note 20, at 40.

³⁰ Netscape's success posed a significant challenge even if Navigator did not become middleware. Netscape's original business plan envisioned its browser primarily as a way of promoting sales of its Web servers. The idea was that by having the most popular browser, Netscape could set de facto Internet standards for new functionality, which its Web servers could provide, keeping Microsoft and other software vendors permanently in catch-up mode. Alessandra Bianchi, *Should Netscape Control the Web*, INC., Dec. 1996, <http://pf.inc.com/magazine/19961215/2028.html> (last visited Feb. 11, 2005); Christopher Jones, *When It Comes to Standards, Everyone's a Suit*, WIRED NEWS, Aug. 20, 1997, <http://www.wired.com/news/print/0,1294,6155,00.html> (last visited Feb. 11, 2005); CUSUMANO & YOFFIE, *supra* note 20, at 96, 99, 120.

³¹ David S. Evans & Richard L. Schmalensee, *The Economics of the Microsoft Antitrust Case in the United States: A Post-Trial Primer*, in TRIAL AND ERROR 65, 73 (2nd ed., 2002).

use to add new features. An example is the “HTML rendering engine,” the software that interprets files in HTML format for display on monitors or in printed documents. This software is used to display Web pages when the user is browsing the Web; it is used to display information in the Windows Help system; and it can be used by any application to display an HTML file, whether it is on the Web or the user’s hard disk.

Second, Microsoft actively promoted Internet Explorer. It included IE in Windows, including updated versions (IE 2, 3, and 4), which were incorporated into “service releases” of Windows 95 that were distributed to OEMs. IE 4 was an integral part of Windows 98. Thus, Microsoft licensed this product in its entirety and did not allow OEMs to disassemble or modify its software by removing IE or hiding IE from users. Microsoft also prevented OEMs from displaying other browsers and folders in a manner different and more prominent than IE was displayed. (Some computer makers did distribute Netscape Navigator as well as IE.)

Microsoft also provided IE and related software for free to Internet access providers (IAPs), offered some of them a bounty for each customer signed up that used IE, and provided some IAPs (most importantly, AOL) with free distribution of Windows in exchange for the IAPs’ agreement to not promote competing browsers to subscribers and to limit shipments of non-Microsoft browsers to subscribers who requested them.³² Microsoft similarly offered free software that let IAPs and corporations manage and customize IE. It also provided inducements to some Web site developers (Internet content providers or ICPs in the language of the case) to distribute and promote IE rather than competing browsers.

Finally, Microsoft added some Windows-specific extensions to its implementation of Java that, if used by a developer, meant that the written Java application could not run on JREs

that fully complied with Sun’s specifications. Nonetheless, tests in 1997 and 1998 showed that Microsoft’s JRE was able to run a larger proportion of “pure” Java applications (designed to meet Sun’s specifications and thus using no Windows-specific extensions) than were those from Sun and Netscape.³³

B. Complaints and Trial

The U.S. Department of Justice, twenty state co-plaintiffs, and the District of Columbia (collectively, “the government”) filed an antitrust lawsuit in May 1998. The complaints alleged that the inclusion of IE with Windows was an illegal tie.³⁴ They also charged that Microsoft’s contracting practices had effectively cut off Netscape’s distribution,³⁵ that Microsoft attempted to monopolize “the market for Internet browsers,” and that it had illegally maintained a monopoly in “the market for PC operating systems” through these and other anticompetitive practices.³⁶

The District Court put the case on a “fast track”: the trial began in mid-October 1998 and concluded in mid-June 1999, following 76 trial days. Each side was limited to 12 trial

³² AOL did not use IE *per se*. Instead, with Microsoft’s help, it used IE components and their APIs to provide Web browsing from within the software it provided to subscribers to find and use content on AOL’s proprietary network.

³³ See Larry Seltzer, *Java Environments*, PC MAG., May 27, 1997; Larry Seltzer, *Java Environments*, PC MAG., Apr. 7, 1998.

³⁴ Tying is a violation under Section 1 and is often analyzed under a fairly strict standard enunciated by the Supreme Court in *Jefferson Parish Hospital v. Hyde*, 466 U.S. 2 (1984). Tying can also be a violation under Section 2 under standard that is harder for plaintiffs to prevail on. 10 PHILLIP E. AREEDA ET AL., ANTITRUST LAW ¶ 1752 (1996).

³⁵ Shortly before the complaint was filed, Microsoft unilaterally removed the restrictions the Department found objectionable from many—but not all—of the relevant contracts.

³⁶ The States brought a separate claim of monopoly under Section 2 of the Sherman Act, alleging that Microsoft “used its monopoly power in the market for operating system software to foreclose competition in the separate market for Internet browsers and create a monopoly in the market for Internet browsers” (Plaintiff States’ First Amended Complaint, *U.S. v. Microsoft and New York, et al. v. Microsoft*, Civil Action Nos. 98–1232 and 98–1233 (TPJ), July 17, 1998, ¶¶ 91–92). The district court dismissed this claim on summary judgment “[b]ecause the theory of “monopoly leveraging” is inconsistent with both the Sherman Act’s plain text and with Supreme Court pronouncements on the general limitations of its reach” (Memorandum and Order, *U.S. v. Microsoft and New York, et al. v. Microsoft*, Civil Action Nos. 98–1232 and 98–1233 (TPJ), Sept. 14, 1998, p. 3).

witnesses who provided written testimony and were then cross-examined on that testimony at trial and three rebuttal witnesses who presented oral testimony. The court issued findings of fact on November 5, 1999 and conclusions of law on April 3, 2000. A hearing on remedies, in which the trial court allowed the parties to make statements but present no testimony, took place on May 24, 2000. A final decision was issued on June 7, 2000.

The testimony at trial covered six broad topics: (1) market definition and market power; (2) tying of IE and Windows; (3) contracts that limited the distribution of Netscape; (4) predatory conduct against Netscape; (5) Microsoft discounts and other efforts to dissuade OEMs from installing Netscape and other middleware products; and (6) various Microsoft actions regarding IBM, Intel, Netscape, Sun, RealNetworks, and Apple that were alleged to be part of a pattern of using monopoly power in the operating system to illegally maintain power there. Considerable economic testimony was presented on all of these topics. Table 1 summarizes the main antitrust charges initially levied against Microsoft, as well as their disposition by the District Court and, as we will discuss in the next section, the Court of Appeals.³⁷

The trial court agreed with the government on most of the charges against Microsoft, rejecting only the Section 1 claim of exclusive dealing. It found that Microsoft had a monopoly in personal computer operating systems, had illegally tied a browser to this operating system, had engaged in tying and exclusionary contracts for the purpose of excluding Netscape from

³⁷ The states in their complaint made additional antitrust claims under the Sherman Act regarding Microsoft's Office suite of business applications: 1) Office as well as Windows was indispensable to OEMs, contributing to Microsoft's leverage negotiating with OEMs about IE; 2) Microsoft's licensing terms for Office were anticompetitive, leading to higher barriers to entry in a putative market for PC office productivity suites and monopoly power in said market for Microsoft; and 3) Microsoft planned to illegally bundle its consumer email application, Outlook Express, with Windows 98 to eliminate potential threats to Office. Plaintiff States' Complaint, *New York, et al. v. Microsoft*, Civil Action No. 98-1233 (TPJ), May 18, 1998, §§ VII, XI-XII. The states further brought claims under their individual state laws. Plaintiff States' Complaint, *New York, et al. v. Microsoft*, Civil Action No. 98-1233 (TPJ), May 18, 1998, §§ VII, X-XXXIX.

the browser market, and had engaged in a variety of other actions to maintain its operating system monopoly and in an attempt to monopolize the browser market. Although these broad conclusions are clear from the court’s findings, it is harder than one might imagine to determine from the court’s findings (of fact and of law) whether particular actions engaged in by Microsoft were found to be illegal or were merely frowned upon by the court. For example, the trial court seemed to condemn Microsoft for engaging in predatory conduct (including giving IE away for free) in its Findings of Fact, but there is no specific Conclusion of Law that states that this was a violation.³⁸

After finding liability, the trial court asked the parties to submit their recommendations on remedies. The government sought structural relief—proposing to break Microsoft into two companies—as well as behavioral restraints, including restrictions on the integration of features into the operating system. The court decided not to take additional testimony on this topic and, after a one-day hearing, granted the government’s proposal over Microsoft’s objections.

C. The First Appeal

Shortly after the conclusion of the trial, interviews with the trial judge appeared in the press based on conversations that had taken place before he issued his Findings of Fact and Conclusions of Law. The Court of Appeals, in a unanimous *en banc* decision, found that the trial judge’s violations of several ethical precepts in these secret conversations were “deliberate, repeated, egregious, and flagrant.”³⁹ And it noted that some of his comments “would lead a reasonable, informed observer to question the District Judge’s impartiality.”⁴⁰

³⁸ As we will see below, the Justice Department did not raise the predation issue on appeal, and the appeals court dismissed this as a possible antitrust violation, while noting that it was not clear that it was being claimed as an antitrust violation by the government. *U.S. v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001), at 41–42, 88–89.

³⁹ *U.S. v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001), at 107.

⁴⁰ *Id.*, at 115.

The Court of Appeals concluded, however, that the appropriate remedy for the District Judge’s misconduct was to vacate the order breaking up Microsoft (which, as we discuss in Section II, it vacated for other reasons as well) and to disqualify him from participating in the case thereafter. In particular, it held that his findings of fact “both warrant deference under the clear error standard and, though exceedingly sparing in citations to the record, permit meaningful appellate review.”⁴¹

As it turned out, the District Court’s detailed findings of fact failed to save two of the trial court’s three findings of liability. The D.C. Circuit reversed the finding that Microsoft had attempted to monopolize the browser market because the trial court had not found that browsers comprised a relevant market. It also found that the plaintiffs had not presented adequate evidence on market definition or barriers to entry—either at trial or in oral argument on appeal—and it precluded the government from addressing this problem on remand. The appeals court also vacated the finding of *per se* illegal tying, in part because it concluded that “the nature of the platform software market affirmatively suggests that *per se* rules might stunt valuable innovation.”⁴² It remanded the issue, giving plaintiffs the option to retry a tying claim under the rule of reason, and it also provided guidance on the specific standards it would apply if upon remand the district court found under the rule of reason that Microsoft had illegally tied its browser to Windows, its software platform.⁴³ The government decided against pursuing the

⁴¹ *Id.*, at 118. The clear error standard requires a finding of fact to be sustained unless it can be shown that it is clearly erroneous in light of the record. This is little help when the record is thin: if only one witness testified on an issue, and that testimony was not clearly demolished on cross-examination, it stands as definitive even if inconsistent with incontrovertible facts not in the record.

⁴² *Id.*, at 92.

⁴³ In particular, the Court of Appeals’ standards were: “First, to be condemned as exclusionary, a monopolist’s act must have an ‘anticompetitive effect.’ That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more competitors will not suffice...Second, the plaintiff, on whom the burden of proof of course rests, must demonstrate that the monopolist’s conduct indeed has the requisite anticompetitive effect...Third, if a plaintiff successfully establishes a *prima facie* case under § 2 by

tying case on remand. Although some have argued that the change in administrations made the U.S. Department of Justice less aggressive, we think the higher standards for establishing a tying violations set by the appeals court together with that court’s prohibition against the government’s re-arguing that there is a browser market (a potentially important element of a tying claim) would have made such an attempt futile. In any event, it is not clear that the remedy would have been any different if the tying claim had been retried and Microsoft found liable.

The trial court’s detailed findings of fact *were* critical to the Court of Appeals’ review of the District Court’s finding of illegal monopoly maintenance. The findings relevant to the actions listed in the second and third sections of Table 2 were based on a thin trial record.⁴⁴

In considering these findings by the lower court, the appeals court described the test for causation that it thought was appropriate for considering liability questions. It first noted with approval that “*with respect to actions seeking injunctive relief*, [Areeda and Hovenkamp] recognize the need for courts to infer ‘causation’ from the fact that a defendant has engaged in anticompetitive conduct that ‘reasonably appear[s] capable of making a significant contribution

demonstrating anticompetitive effect, then the monopolist may proffer a ‘procompetitive justification’ for its conduct. If the monopolist asserts a procompetitive justification—a nonpretextual claim that its conduct is indeed a form of competition on the merits because it involves, for example, greater efficiency or enhanced consumer appeal—then the burden shifts back to the plaintiff to rebut that claim...Fourth, if the monopolist’s procompetitive justification stands un rebutted, then the plaintiff must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit.” *U.S. v. Microsoft Corp.*, 253 F.3d 34, 58-59, 95-97 (D.C. Cir. 2001). The court noted that although its discussion on the rule of reason arose in the context of the Section 2 monopolization claims, the analysis was analogous to that for Section 1 claims.

⁴⁴ For two of the twelve acts found illegal by the Court of Appeals, there was no direct testimony; the findings were based on documents introduced during cross-examination during the rebuttal phase (These findings concerned the “First-Wave” program, which the court found was used to reduce the likelihood that ISVs would distribute Navigator and non-Microsoft JREs. *Id.*, at 48–49, 54–55.) For another of the acts—the finding that Microsoft had deceived Java developers into using Windows-specific features in its Java developer kit—there was no testimony (at trial or in deposition) from any independent developer. The only testimony was from a Sun witness who testified that he had heard from some developers that they were confused, but could not recall any names (Trial Transcript, December 10, 1998, a.m. session (Gosling Direct), *U.S. v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001), at. 58–64.) There is a deeper but nonetheless sparse trial record for the other nine acts.

to ... maintaining monopoly power”(emphasis added).⁴⁵ It then asserted that “[w]e may infer causation when exclusionary conduct is aimed at producers of nascent competitive technologies as well as when it is aimed at producers of established substitutes.”⁴⁶ It described this as a “rather edentulous [i.e., toothless] test for causation[.]”⁴⁷

Under this standard, the Court of Appeals reversed the trial court on the allegations summarized in the second part of Table 2. But it found that because each of the actions listed in the third part of Table 2 seemed capable in principle of maintaining Microsoft’s monopoly power and lacked an adequate efficiency justification, each constituted a violation of the Sherman Act.

The Court of Appeals held in this case that actions by a monopoly were illegal if they were facially suspect, aimed at nascent competitors, and lacked a persuasive efficiency rationale, even in the absence of proof of any actual effect on competition or harm to consumers. The main explicit argument it gave for this “toothless” standard was the difficulty of proving what would have happened absent the illegal acts. Suppose monopoly A burns the factory of B, an emerging but struggling competitor, and B’s business fails. Even if it cannot be shown that the fire caused or even hastened the failure, most people would want to find A guilty of more than arson. The charge on the table in *Microsoft* was monopoly maintenance, and, in retrospect, once the appeals court had decided it would accept all of the trial court’s findings of fact, with their adverse description of conduct that struck most observers as at least

⁴⁵ *Microsoft*, 253 F.3d 34 at 79 (citing 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 651c, 78 (1996)).

⁴⁶ *Microsoft*, 253 F.3d 34 at 79.

⁴⁷ *Id.*, at 79.

exceptionally aggressive competition,⁴⁸ it would have been difficult for it to find that Microsoft had done absolutely nothing wrong. At the same time, for some of the acts ultimately found illegal by the Court of Appeals, Microsoft had not presented testimony explaining why its actions had pro-consumer benefits.⁴⁹

We and others have argued that more evidence of harm to consumers should be required to establish liability.⁵⁰ But the direct impact of any antitrust case on consumers depends on what relief, if any, is ordered,⁵¹ and in that context the D.C. Circuit pointedly noted that “Microsoft’s concerns over causation have more purchase in connection with the appropriate remedy issue.”⁵² As we show in the next section, its elaboration of that point played a central role in determining the remedy ultimately adopted.

III. Remedies Proposed and Ordered

A. Complaints and Trial

In its original complaint, the Department of Justice asked the court to order Microsoft not to tie “Microsoft’s Internet browser software or other software product” to Windows, to

⁴⁸ NEWSWEEK wrote that Judge Jackson’s Findings of Fact was a “compelling litany of misdeeds” documenting “at length how Microsoft is a monopolistic violator that not only bullies its competitors but also rips off the public by stifling innovation and overcharging for its software” *Bill Takes It On The Chin*, NEWSWEEK, Nov. 15, 1999. Time Magazine described Jackson’s Findings of Fact as the “judge’s greatest hits collection of Microsoft skullduggery,” detailing “the ways in which Microsoft used its monopoly power to bludgeon the competition” Adam Cohen, et al., *Bill Gates’ Monopoly/The Findings Of Fact*, TIME, Nov. 15, 1999.

⁴⁹ In many cases that is not surprising since there were many allegations made during the trial and it was not apparent that many of the ones ultimately found illegal by the appeals court were ones that the government was pursuing seriously. In addition, limiting each side to only 15 witnesses (12 during the main case and three in rebuttal) also made it impractical to call witnesses to testify on all of the factual issues raised. To a great degree, many factual issues were not addressed in testimony, or were addressed only through hearsay (which the trial judge freely allowed because there was no jury and he could decide for himself how much weight to give to the evidence).

⁵⁰ Chang et al., *supra* note 9 ; Timothy J. Muris, *The FTC and the Law of Monopolization*, 67 ANTITRUST L.J. 693 (2000).

⁵¹ The ultimate impact of any case depends both on the direct impact and on the indirect precedential effects. We argue below that the likely precedential effects of both the D.C. Circuit Court’s Microsoft decisions, taken together, will be to reinforce traditional, pro-consumer antitrust principles.

⁵² *Microsoft*, 253 F.3d 34 at 80.

forbid Microsoft from requiring or inducing anyone—whether OEM, IAP, or ICP—not to distribute “any non-Microsoft Internet browser software or other software product,” and not to take action or threaten to take action for non-distribution of Microsoft products or distribution of non-Microsoft products. (The key term “software product” was not defined.) The court was also asked to order Microsoft to eliminate restrictive terms from its OEM contracts corresponding to the OEM allegations in Table 2. In addition, the states’ complaint asked that Microsoft be ordered to license its intellectual property in “interfaces” that were necessary to permit alternative browsers to work effectively with Windows and that it be required broadly to provide necessary information and technical support to ISVs.

The Department of Justice asked that for a period of three years, Microsoft be allowed to distribute a single version of Windows with IE only if it also included Navigator and permitted each OEM “to delete the software that provides the Internet Explorer icon and the other means by which users may readily use IE to browse the web, the software that provides the icon and the other means by which users may readily use the Netscape Internet browser, or both.” In addition, the Department of Justice asked that Microsoft be permanently barred from distributing IE with Windows unless it made available to OEMs, “a practical and commercially reasonable option of deleting ... or not installing ... the software that provides the Internet Explorer icon and the other means by which users may readily use IE to browse the web” and gave a price break to OEMs that deleted or did not install IE.

It is important to recognize that, even after Web browsing became more tightly integrated into Windows starting with the release of IE 3 in 1996, removing user access to IE, as the Department of Justice’s complaint requested, does not require removal of the modules of code that support APIs related to Internet browsing. Thus, application programs (and other

parts of Windows) can call on Windows to perform functions, such as display of files in HTML format, that are also used in Web browsing. If some OEMs removed the files supporting these APIs, however, developers of applications software would have to recognize that programs relying on those APIs would not work on some computers running Windows. If these computers were numerous, application developers would need either to avoid using the functions involved or to bundle the necessary Windows code with their applications software to perform those functions so that consumers did not face inconsistent application performance.

In November 1999, the trial judge issued findings of fact that made it clear that he would conclude that Microsoft had violated the Sherman Act. He encouraged Microsoft and the government to agree on a consent decree, and he appointed a mediator, Judge Richard Posner. On April 3, after mediation had failed, the District Court issued its Conclusions of Law, which are summarized in Table 1 and Table 2.

On April 28, 2000, plaintiffs submitted their proposed relief. In addition to interim restrictions on Microsoft's conduct that were similar to those that had been proposed in the complaint, they proposed that Microsoft be split into two independent companies, with one producing operating systems ("OpsCo") and one producing applications and everything else ("AppsCo"), including IE. While there had been much press speculation about breaking up Microsoft,⁵³ this proposal was nonetheless surprising because it would neither directly increase competition in operating systems nor reduce the incentives of OpsCo, which would inherit Windows and its market power, to continue to add new features and functions to its products.⁵⁴

⁵³ *Microsoft may face breakup*, CNN MONEY, Apr. 24, 2000, at <http://money.cnn.com/2000/04/24/companies/microsoft/> (last visited Jan. 11, 2005); Joe Wilcox, *Rumors of Microsoft breakup proposal not surprising*, NEWS.COM, Jan. 13, 2000, available at <http://news.com.com/2100-1001-235617.html?legacy=cnet> (last visited Jan. 11, 2005).

⁵⁴ Indeed, several noted economists filed an amicus brief with the trial court arguing that this relief was insufficient for exactly this reason and that the only way to increase competition in operating systems was to create multiple

The government filed affidavits with its proposal that advanced the argument, which had not been made at trial, that competition would be enhanced because AppsCo would transform Microsoft Office, a very popular product containing a word processor, a spreadsheet, and other applications, into middleware that would compete with Windows for the loyalty of applications developers. No evidence related to such a transformation had been introduced at trial, nor had the concept been discussed in the Findings of Fact or Conclusions of Law.⁵⁵

On May 10, Microsoft responded that the proposed remedy was too severe and that it would be impossible to resolve remedy-specific factual disputes without substantial discovery and a full hearing. At a one-day hearing on May 24, the judge indicated that he was prepared to enter a relief order without any further process. Microsoft then offered to produce testimony from various experts showing, among other things,⁵⁶ that the proposed divestiture would not induce entry into operating systems; that it would be expensive and difficult, that it would disrupt product development, and that it would result in substantial price increases for both Windows and Office.⁵⁷ The District Court nonetheless held no further proceedings and issued a relief order on June 7 that was essentially identical to the government's proposal.

operating system companies, each able to distribute and improve upon the latest version of Windows: see Robert E. Litan,., Roger D. Noll, William D. Nordhaus, and Frederic Scherer, Remedies Brief of Amici Curiae at 8, *U.S. v. Microsoft* 253 F.3d 34 (Civil Action No. 98–1233 (TPJ)).

⁵⁵ The states' initial May 1998 complaint had included a claim concerning Microsoft's alleged monopolization of business productivity applications (Office) by denying competitors access to undocumented Windows interfaces that Office applications used. The states dropped that claim, however, in their first amended complaint. The only way in which Office appeared during the trial concerned Microsoft's threat to stop offering Office for the Macintosh if Apple did not promote the Macintosh version of IE more prominently on new Macintosh computers.

⁵⁶ Microsoft's offer of proof listed testimony from sixteen experts. For the full list see, Defendant Microsoft Corporation's Offer of Proof in Opposition to Entry of the Government's Proposed Final Judgment, *U.S. v. Microsoft*, Civil Action No. 98–1233 (TPJ), May 24, 2000.

⁵⁷ *Microsoft*, 253 F.3d 34, at 98–99. The argument for a price increase is classic, see AUGUSTIN COURNOT, RECHERCHES SUR LES PRINCIPES MATHÉMATIQUES DE LA THÉORIE DES RICHESSES (1838). Because Windows and Office are complements, a firm producing both will take into account reductions in the sales of Windows when considering increasing the price of Office, and vice versa. Given the same initial prices, two single-product firms, which necessarily ignore these cross effects, will find raising prices more attractive than will a

B. The First Appeal

As noted above, the D.C. Circuit's decision of June 2001 vacated the District Court's relief order in part because of judicial misconduct on the part of the District Judge and remanded the case to a new judge for the purpose of fashioning appropriate relief. It also vacated the order because the District Court failed to hold an evidentiary hearing on remedies-specific factual disputes and because it failed to offer an adequate explanation for the relief it ordered.⁵⁸ Had that been all the court of appeals had to say on the subject of relief, the new judge conceivably might simply have received additional written testimony, held a brief evidentiary hearing, and entered the same order as the trial court—this time with a summary of the government's explanation of the order's virtues attached.

However, the D.C. Circuit gave a third reason for vacating the District Court's remedies decree that made such a course impossible: “[w]e have *drastically* altered the scope of Microsoft's liability, and it is for the District Court in the first instance to determine the propriety of a specific remedy for the *limited* ground of liability which we have upheld” (emphasis added).⁵⁹ The discussion in Section I, summarized in Tables 1 and Table 2, makes clear just how drastically the D.C. Circuit had reduced the scope of Microsoft's liability: of the three violations found by the trial court, one had been reversed, one had been vacated, and, while the monopoly maintenance violation was upheld, the list of condemned actions had been shortened substantially.

single firm producing both. *See also* Defendant Microsoft Corporation's Offer of Proof in Opposition to Entry of the Government's Proposed Final Judgment, May 24, 2000, U.S. v. Microsoft Corp., (No. 98-1233). In a declaration filed by the government, a former chief economist of the Antitrust Division acknowledged this effect but contended that it would be small; *see* Declaration of Carl Shapiro, Apr. 28, 2000, at 10 U.S. v. Microsoft Corp, 253 F.3d 34, (No. 98-1233).

⁵⁸ *Microsoft*, 253 F.3d 34 at 46, 117, 119.

In providing guidance to the District Court on remand, the appeals court noted that unitary companies, not formed by mergers and acquisitions, are rarely split in antitrust proceedings because of the cost and difficulty involved, and it noted that Microsoft claimed to be a unitary corporation. It then turned to the critical issue of causation, asserting that “the District Court also should consider whether plaintiffs have established a sufficient causal connection between Microsoft’s anticompetitive conduct and its dominant position in the OS market.”⁶⁰ As we noted above, the court had defended its “edentulous” standard for liability with a citation from *Areeda and Hovenkamp* that applied “to actions seeking injunctive relief.”⁶¹ It reinforced this linkage in its discussion of remedy by citing *Areeda and Hovenkamp* with approval to the effect that “structural relief ... ‘require[s] a clearer indication of *a significant causal connection* between the conduct and creation or maintenance of market power” (emphasis added by the court) and that “[a]bsent such causation, the antitrust defendant’s unlawful behavior should be remedied by ‘an injunction against continuation of that conduct.’”⁶²

The court then referred to the weak standard for causation that it had adopted for liability: “we have found a causal connection between Microsoft’s exclusionary conduct and its continuing position in the operating systems market only through inference.”⁶³ The D.C. Circuit noted that the District Court, although it had found much more of Microsoft’s conduct illegal, had expressly found that, “There is insufficient evidence to find that, absent Microsoft’s

⁵⁹ *Id.*, In the summary, the court made the same point with slightly different language: “[T]he District Court’s Final Judgment rests on a number of liability determinations that do not survive appellate review; therefore the remedial order as currently fashioned cannot stand.” *Microsoft*, 253 F.3d 34, at 46.

⁶⁰ *Id.*, at 106.

⁶¹ *See supra* note 45.

⁶² *Microsoft*, 253 F.3d 34 at 106, (citing 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 653b, at 91–92 and ¶ 650a, at 67 (1996)).

actions, Navigator and Java already would have ignited genuine competition in the market for Intel-compatible PC operating systems.”⁶⁴ The appeals court concluded that, “While we do not undertake to dictate to the District Court the precise form that relief should take on remand, we note again that it should be tailored to fit the wrong creating the occasion for the remedy.”⁶⁵

This guidance left open the possibility that on remand the government would provide evidence of “a significant causal connection” that would convince the new district judge that more than injunctive relief was in order. Absent such evidence, however, structural relief was clearly ruled out, and one could doubt whether the appeals court would sustain relief much beyond “an injunction against continuation” of the conduct it had found illegal. In this first appellate decision, the D.C. Circuit thus enunciated both a weak standard for liability and a strong standard for relief: liability did not require much evidence of causation, particularly when nascent competition was involved, but serious proof of causation was required to go beyond straightforward injunctive relief. The rationale seems clear: if there is no evidence that the illegal conduct actually did harm consumers by reducing competition, there is no justification for relief intended to increase competition beyond what market forces would produce, since relief of this sort almost inevitably involves costs of various sorts.⁶⁶

C. Settlement and Hearings

Shortly after September 11, 2001, making reference to the events of that day, the new District Judge ordered the remaining parties to enter into settlement negotiations.⁶⁷ The U.S. Department of Justice and nine of the state plaintiffs (the “settling plaintiffs”) reached

⁶³ *Microsoft*, 253 F.3d 34 at 106–107.

⁶⁴ *Id.*, at 107(citing Findings of Fact ¶ 411).

⁶⁵ *Id.*, at 107.

⁶⁶ Chang et al., *supra* note 9.

⁶⁷ One state withdrew before the first District Court decision, and another settled during the summer of 2001.

resolution in the form of a proposed settlement in early November, but nine states and the District of Columbia (the “litigating states”) proposed a different, more severe remedy. Beginning in March 2002, the district court held a 32-day evidentiary hearing on the issue of remedies proposed by the litigating states. In addition, as part of its review under the Tunney Act the court held separate, shorter hearings of whether the proposed settlement was in the public interest. In November 2002, the District Court approved the settlement and entered a relief order that differed only slightly from the proposed consent decree. Table 3 summarizes the substantive provisions of that order and relates them to the actions listed in Table 2.

We defer a detailed discussion of those substantive provisions and their enforcement to Sections IV and V, below. We note here, however, that the consent decree order goes far beyond the relief sought by plaintiffs in their 1998 complaints: a wider range of actions is prohibited or required (including some that were neither complained of nor related to actions found illegal), a greater variety of software products is affected (including any new middleware technologies that might emerge, as well as more of Microsoft’s existing offerings), and, as a consequence, the required changes to Windows are more extensive. The only provision in the complaint’s relief not present in the final relief order is the requirement that for a three-year period Microsoft either bundle Netscape Navigator along with Windows or offer a version of Windows without IE. Since Navigator no longer had a large share of browser usage by late 2002, and the District Court found that Navigator’s distribution had not been foreclosed by Microsoft’s actions,⁶⁸ this omission is not particularly surprising.

Thus, if Microsoft had simply surrendered when it received the government’s complaint in 1998, it almost certainly would have received a less onerous order. One might argue that it

⁶⁸ See Table 1 for disposition of the charges.

also would have been spared considerable cost as well as a great deal of hostile media coverage and a wave of derivative litigation.⁶⁹ But, of course, surrendering would have entailed admitting to having broken the law, and Microsoft did not believe it had done so. That nine states felt the final relief order was too weak, even though it was much stronger than the order plaintiffs initially sought, testifies both to the difficulty of managing a large coalition of litigants and to the tendency of bitter, protracted litigation to drive parties to extreme positions. Our own view, to add to the Monday morning quarterbacking, is that Microsoft inevitably would have been subject to significant protracted litigation even if it had settled the IE issue in 1998. Many in government and elsewhere felt that it was necessary for antitrust to rein in Microsoft's perceived market power and arrogance, and some other grounds for suit almost certainly would have been found.

The remedy proposed by the litigating states differed in a number of important respects from that proposed by the Justice Department and Microsoft and finally adopted. It had a much broader definition of middleware. It required disclosure of considerable additional Microsoft intellectual property—including making the source code of Internet Explorer available on an open source basis and licensing three companies to use the source code of Microsoft Office to port it to operating systems other than Windows and Macintosh. And it required that Microsoft offer “unbound” versions of Windows that would allow licensees to remove any combination

⁶⁹ For a list of class action suits and other litigation that followed the trial court's liability finding, see Microsoft Press Release, *Antitrust Settlement Fact Sheet*, Oct. 28, 2003, at <http://www.microsoft.com/presspass/legal/10-28SettlementFS.asp> (last visited Jan. 10, 2005). Microsoft estimates that it has already spent roughly \$3 billion and has reserved an additional \$950 million to settle class action suits and private antitrust suits related to the findings in the DOJ case. See “Transcript of News Conference Regarding Microsoft Legal Settlements with the Computer & Communications Industry Association (CCIA) and Novell,” Nov. 8, 2004, at <http://www.microsoft.com/presspass/exec/bradsmith/11-08-04CCIATranscript.asp> (last visited Feb. 11, 2004)). In the press, Microsoft has often been equated with evil. See, e.g. Rob O'Regan, *In its current state, Microsoft has no appeal*, PC WEEK, Feb. 28, 2000; Mary Jo Foley, *Microsoft is still 'The Evil Empire,'* ZDNET NEWS, Mar. 9, 2000; Stewart Alsop, *Alas, poor Microsoft*, FORTUNE, July 7, 2003; Robert L. Mitchell, *Just Pin It on Microsoft*, COMPUTERWORLD, Feb. 3, 2003.

of “middleware” that they wished. The litigating states defined “middleware” as any software that provides one or more interfaces and that “could, if ported to or made Interoperable with multiple Operating Systems, enable software products written for that Middleware to be run on multiple Operating System Products.”⁷⁰ The states’ computer science expert witness equated “middleware” with all code in operating system products that is not part of the “kernel,” a very tiny part of most operating systems (about 1.5 percent of Windows XP and as little as 0.2 percent of one major Linux distribution in 2002⁷¹).

Thus, instead of requiring that Microsoft enable the blocking of end user access to specific pieces of Microsoft middleware (e.g., in the language of the Department of Justice complaint, enabling OEMs to delete or not install “the software that provides the Internet Explorer icon and the other means by which users may readily use IE to browse the web”), the litigating states would have required Microsoft to make available versions of Windows in which the corresponding computer code for various combinations of middleware had been removed. One of the goals of the states’ proposal was to remove code that supported APIs, so that ISVs would no longer be able to count on every copy of Windows of a particular vintage supporting the same set of APIs.⁷² We return to these issues in Section III.

In discussing the general standards and guidance from the D.C. Circuit that it followed in shaping the final relief order, the District Judge noted that “the Court’s determination of the

⁷⁰ Plaintiff Litigating States’ First Amended Proposed Final Judgment March 4, 2002, § 22.w, *New York v. Microsoft Corp.*, (No. 98–1233).

⁷¹ Direct Testimony of Stuart M. Madnick, Apr. 26, 2002, ¶ 142, n. 126 and 127 *New York v. Microsoft Corp.* 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233).

⁷² Memorandum Opinion at 300–301, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233) (citing Direct Testimony of James L. Barksdale ¶ 60). The European Commission’s order concerning Windows Media Player similarly would require removal of code, with the concurrent disabling of APIs seen as a positive feature. Commission Decision of 24.03.2004 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-3/37.792 Microsoft), ¶ 1019, *available at* <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>.

appropriate remedy in this case reflects, among other considerations, the strength of the evidence linking Defendant's anticompetitive behavior to its present position in the market."⁷³ Two economists testified on the issue of causality.⁷⁴ The judge found the litigating states' economist's "'assessment' to have been based entirely upon his examination of the district and appellate courts' opinions in this case," and that he "did not make any attempt to separate the effect of the illegal conduct from the effect of the conduct found *not* to be illegal."⁷⁵ The judge therefore gave little weight to Carl Shapiro's testimony.

Microsoft's economic expert, Professor Kevin Murphy, testified, based on analyses and evidence that were not part of the trial record, that the conduct that had been found illegal had had essentially no effect on Microsoft's market position. Recall that the trial court found that neither Netscape nor Java had ever actually developed a product that posed a threat to Windows: "no middleware product [including Navigator and Java] exposes enough APIs to allow independent software vendors ('ISVs') profitably to write full-featured personal productivity applications that rely solely on those APIs."⁷⁶

Professor Murphy noted that even by the time of the remedies hearing in 2002, Navigator had exposed only a handful of APIs that, in aggregate, did not provide significant middleware functionality, and Java had not become a significant platform for desktop applications. He argued that these outcomes reflected the technical limitations of Web browsers and Java as application platforms and business decisions by Netscape, not anticompetitive

⁷³ Memorandum Opinion at 30–31, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233).

⁷⁴ Direct Testimony of Kevin M. Murphy, *Id.*; Direct Testimony of Carl Shapiro, Apr. 5, 2002, *Id.*,

⁷⁵ *Microsoft Corp.*, 231 F. Supp. 2d at 114–115.

⁷⁶ Findings of Fact ¶ 28, *U.S. v. Microsoft Corp.*, 84 F. Supp. 2d 9 (D.D.C. 1999) (No. 98–1232) and *New York v. Microsoft Corp.* 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233).

actions by Microsoft.⁷⁷ When Netscape was an independent company, it never intended to turn Navigator into a middleware platform of the sort envisioned by the government's theory.⁷⁸

After AOL agreed to acquire Netscape in late 1998, funds for developing Navigator into middleware could hardly have been an issue, and AOL's huge membership provided an obvious basis for developing a middleware platform. Yet the development of Navigator slowed dramatically after this time, and AOL continued to use IE components rather than Navigator in its client software. Java continues to be widely used as a development platform, but mainly for small "Web applets" and for applications that run on servers and on cell phones and other small devices, where the nature of the applications makes Java's technical limitations less troubling than with PC applications. Serious attempts by several major ISVs in the late 1990s to write PC applications in Java failed, and Microsoft's large share of the desktop operating system business has made the cross-platform ability of Java not very valuable.

The court concluded, however, that Professor Murphy's testimony could not be given much weight because his "conclusion that the anticompetitive conduct identified in this case had no effect upon Microsoft's monopoly can be seen to undercut, if not directly contradict, the inference of causation necessary to the appellate court's imposition of liability."⁷⁹

⁷⁷ Direct Testimony of Kevin M. Murphy, Apr. 12, 2002 at ¶¶ 107, 113, 128, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98-1233).

⁷⁸ Trial Transcript at 73, *U.S. v. Microsoft Corp.*, 84 F. Supp. 2d 9 (D.D.C. 1999) (No. 98-1232); *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98-1233)(Barksdale Cross on Oct. 20, 1998).

⁷⁹ Memorandum Opinion at 118, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98-1233). We would argue that this testimony shows that the court of appeals was too pessimistic about the possibility of applying a test for causation with some evidentiary teeth in this case. Had it asked a District Court to consider the issue of consumer harm seriously on remand before finding liability, expert economists would have been able to present new, relevant data and analysis to supplement what was a very thin record on the acts found to be violations by the court of appeals. It might not have been possible to settle the issue definitively, but, as in other complex matters, Professor Murphy's testimony demonstrates by example that there would have been substantive evidence that a trial judge could weigh.

The combined effect of rejecting Shapiro’s testimony for the litigating states and Murphy’s testimony for Microsoft, however, was to lead the new trial judge to rely on the record from the original trial that the appeals court had relied upon in its liability findings. But, as noted above, the appeals court had gone out of its way to emphasize that it was using a “toothless” standard for liability—something it would not have had to do if the government could have met a stronger standard—and that a higher standard was needed for the sort of structural relief sought by the litigating states. Not surprisingly, then, the new trial judge found, “Neither the evidentiary record from the liability phase, nor the record in this portion of the proceeding, establishes that the present success of IE is attributable entirely, or even in predominant part, to Microsoft’s illegal conduct.”⁸⁰ And the court of appeals had instructed the new district court that in the absence of “a sufficient causal connection between Microsoft’s anticompetitive conduct and its dominant position in the OS market ... the antitrust defendant’s unlawful behavior should be remedied by ‘an injunction against the continuation of that conduct.’”⁸¹

Under these conditions, one could argue that the District Court was obliged only to enjoin repetition of the conduct described in the third part of Table 2.⁸² The Court rejected this approach and, along with a 324-page opinion discussing factual and legal issues in depth, issued the order sketched in Table 3, which it said “exceeds a mere proscription of the precise

⁸⁰ *Id.*, at n81.

⁸¹ *Microsoft*, 253 F.3d 34, at 106 (citing 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 653b, ¶ 650a, at 67 (1996)).

⁸² Memorandum Opinion at 110–113, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233). Some observers who argue that the Court’s relief order was inadequate go to the other extreme and overstate the courts’ findings on causation. *See, e.g.*, Bresnahan, *supra* note 5, at 67 (discussing the negotiated settlement that differed only slightly from the final remedies order): “The government plaintiffs successfully proved to the district court and a unanimous appeals court sitting *en banc* that Microsoft illegally prevented the widespread distribution of new technologies that would have substantially lowered the entry barriers into its Windows monopoly.” This, of course, goes far beyond what even the trial court found.

conduct found to be anticompetitive and is forward-looking...” as well as being “crafted to foster competition in the monopolized market in a manner consistent with the theory of liability in this case.”⁸³ But of course at this point Microsoft had already entered into a consent decree with the U.S. Department of Justice and other states that was much stronger than mere injunctive proscription.

In contrast, the trial judge described the litigating states as having “shown little respect for the parameters of liability that were so precisely delineated by the appellate court” and described many of their remedial proposals as “unjustifiably in conflict with the imposition as well as the rejection of liability in this case.”⁸⁴ In addition, “the Court observes that a number of the remedial provisions proposed by [the litigating states] would require drastic alterations to Microsoft’s products, as well as to aspects of its business model which do not involve illegal conduct.”⁸⁵ Further, “[c]ertain of Microsoft’s competitors appear to be those who most desire these provisions and, concomitantly, are the likely beneficiaries, while other competitors in the relevant market would not necessarily benefit.”⁸⁶

D. The Second Appeal

At the end of the day only a single non-settling state, our own Commonwealth of Massachusetts, decided the expected benefits of an appeal from this decision outweighed the expected costs, and it asked the D.C. Circuit to set aside the District Court’s remedial decree. Massachusetts was joined in a related appeal by two trade associations, which raised

⁸³Memorandum Opinion at 194, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233).

⁸⁴*Id.*, at 193. Similarly, the apparent regret expressed by *The Economist* in its discussion of remedy in this case seems to reflect a confusion about whether a break-up remedy could be appropriate given the appeals court’s liability findings (*supra*, note 14).

⁸⁵Memorandum Opinion at 193, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233).

overlapping substantive issues as well as procedural issues that do not concern us here. In June 2004, in another unanimous *en banc* decision, the court of appeals strongly affirmed the district court's decree in its entirety.⁸⁷

The D.C. Circuit found none of the new trial court's challenged findings of fact failed the appropriate "clearly erroneous" test, nor did its relief decree fall afoul of the "abuse of discretion" standard. As we discuss in more detail in Section III, the appeals court was particularly strong and clear on the issue of code removal versus removal of end-user access. It supported the District Court's decision not to adopt any provision, and in particular not to adopt a broad provision proposed by the litigating states, aimed at Action C.11 in Table 2—deception of Java developers.⁸⁸ And it reaffirmed the importance of its earlier decision reducing the scope of Microsoft's liability: "The parties' relative positions were considerably changed by our decision in [the first appeal]."⁸⁹ Following the court's decision, Massachusetts announced that it would not pursue an appeal to the Supreme Court.⁹⁰

IV. Tying, Commingling, and Product Design

This section is concerned with relief proposals that would alter the design of Windows. As noted above, the core of the case as originally brought was the allegation that there was a tie between Windows and Internet Explorer that was alleged to be *per se* illegal under the Supreme

⁸⁶ *Id.*, at 193.

⁸⁷ *Massachusetts v. Microsoft Corp.*, 373 F. 3d 1199 (D.C. Cir., 2004).

⁸⁸ The court of appeals noted that the District Court found that "[t]he Java deception 'concern[ed] a single, very specific incident of anticompetitive conduct by Microsoft,' which conduct Microsoft had ceased in accordance with a consent decree into which it had entered in another case in another court." *Id.*, at 20–21.

⁸⁹ *Id.*, at 83.

⁹⁰ Transcript of News Conference Regarding Microsoft Legal Settlements with the Computer & Communications Industry Association (CCIA) and Novell, Nov. 8, 2004, at <http://www.microsoft.com/presspass/exec/bradsmith/11-08-04CCIATranscript.asp> (last visited Feb. 11, 2005). Neither of the two private trade associations whose appeal had been rejected by the Court of Appeals filed notice of appeal to the Supreme Court.

Court’s *Jefferson Parish* test. The trial court agreed with the government, but, while this conclusion of law was set aside by the D.C. Circuit on the first appeal, the illegality of actions C.1-C.3 in Table 2 was upheld. In effect, the appeals court held that for technical reasons a further rule of reason analysis was necessary to decide whether Microsoft could tie by refusing to license Windows to OEMs without IE, while relatively little evidence was required to condemn Microsoft actions that seemed to prevent OEMs from, in effect, discarding IE rather than including it as part of the Windows-based systems they distributed to consumers.⁹¹ The rule of reason argument as to why this actually harmed Netscape and thus constituted a Section 2 violation was that consumers would be confused by having icons on their desktops for multiple pieces of software that performed the same basic functions. If such confusion actually harms competition, the natural remedy would seem to be to prohibit Microsoft from creating it—in this case by making it possible for OEMs to discard IE. But, as we discuss below, it has not been simple for the courts to decide exactly what that requires.

A. Windows Architecture and the Commingling Confusion

Versions 1 and 2 of Internet Explorer were conventional applications, making the meaning of “removal” straightforward.⁹² That is, the corresponding binary code was relatively isolated and could be deleted easily; it exposed few if any APIs; and its removal from Windows

⁹¹ In outlining the steps that plaintiffs would need to take in pursuing a tying claim under rule of reason, the D.C. circuit wrote that “the fact that we have already considered some of the behavior plaintiffs allege to constitute tying violations in the monopoly maintenance section does not resolve the § 1 inquiry. The two practices that plaintiffs have most ardently claimed as tying violations are, indeed, a basis for liability under plaintiffs’ § 2 monopoly maintenance claim. These are Microsoft’s refusal to allow OEMs to uninstall IE or remove it from the Windows desktop and its removal of the IE entry from the Add/Remove Programs utility in Windows 98. In order for the District Court to conclude these practices also constitute § 1 tying violations, plaintiffs must demonstrate that their benefits—if any—are outweighed by the harms in the tied product market.” *Microsoft*, 253 F.3d 34, at 95–96(internal cites removed).

Findings of Fact ¶ 175 , *U.S. v. Microsoft Corp.*, 215 F. Supp. 2d (D.D.C., 2002) (No. 98–1232); *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002) (No. 98–1233) .

would not cause other application programs or other Windows processes to crash. There was thus no meaningful “commingling” issue.

If the architecture of Version 3 and later versions of IE had been the same as Versions 1 and 2, to permit OEMs to discard IE Microsoft would have involved only the provision of a suitable add-remove utility (Action C.2 in Table 2) and removal of the contractual prohibitions of icon, folder, or “Start” menu entry removal (Action C.3). But starting with version 3, IE was designed to be an integral part of the Windows platform, not just an application. Much of the code that was used in Internet browsing was also used to perform other operating system functions in support of both Windows itself and applications. Deleting that code, through some sort of Add/Remove utility or in any other way, would disable those operating system functions.

Consider, for instance, the HTML rendering engine mentioned above.⁹³ In the first two versions of IE, this code could only be invoked when an end user, browsing the Internet, used Internet Explorer to display a Web page. Starting with IE 3, however, the code for HTML rendering was a separate component that exposed APIs that Microsoft documented for use by applications programs to display HTML files on screen, whether or not those files had been obtained from the Internet.⁹⁴ The end user could employ it to display an HTML file stored on the hard disk, for instance. Moreover, starting with IE 4, Microsoft used HTML to display

⁹³ In its remedy decision, the district court includes a discussion of the HTML rendering engine in Windows to illustrate the difficulty of defining middleware separate from an operating system and of removing middleware without degrading an operating system’s functions. (In the case of Windows, the HTML engine, which Plaintiffs argued OEMs must have the right to remove, is required for Windows Help and Windows Explorer to work properly, so Microsoft could not effect the removal without subjecting itself to claims of providing a degraded operating system product.) Memorandum Opinion at 289–290, *New York v. Microsoft Corp.*, 231 F. Supp. 2d 203 (D.D.C., 2002), (No. 98–1233). See also Direct Testimony of Stuart M. Madnick, Apr. 26, 2002, ¶ 183, *Id.*,

⁹⁴ In the District Court hearing on remedy, two computer scientists testified for Microsoft on the problems associated with code removal. For a discussion of how IE relied on a series of modules—including the HTML rendering engine, see Direct Testimony of Stuart M. Madnick, at ¶¶ 181–186, *Id.*,

directories of folders and files on users' hard disks or corporate networks, and the same code used to provide the "shell" for IE was also used for file management and other purposes, including Windows Media Player.

On its face, this approach would seem to be efficient, since the same code is used for multiple purposes. That also means that when the code is revised, updating that file updates all of the functions and applications that rely on it. But it makes it essentially impossible to define "removing IE" via an Add-Remove utility or other means. If the binary code that renders HTML files is removed, for example, important parts of Windows will not work.

In the binary, working version of an operating system or other complex program, code performing different functions is grouped together in files. It is our understanding that the best way to structure these files in any particular case depends on, among other things, how frequently different functions are called close together in time. There are tradeoffs between using fewer, larger files or more numerous smaller files, and part of the final development process is to experiment with alternatives to see how they perform under various likely scenarios.

The original trial judge heard, correctly, that in Windows some code used for Internet browsing was in the same files as code used for other purposes, and that deleting those files would disable other parts of Windows and third-party applications. He did not seem to understand that some code was used for both sorts of purposes, or that there were software engineering reasons for grouping different code modules in larger files for distribution and execution. Accordingly, the Findings of Fact stated that Microsoft had bound IE to Windows 98 "by placing code specific to Web browsing in the same files as code that provided operating system functions" and that this "ensure[s] that the deletion of any file containing browsing-

specific routines would also delete vital operating system routines and thus cripple

Windows...”⁹⁵ In his Conclusions of Law, this “commingling” became a violation of Section II of the Sherman Act:

[C]onsumers today perceive operating systems and browsers as separate “products,”... This is true notwithstanding the fact that the software code supplying their discrete functionalities can be commingled in virtually infinite combinations, rendering each indistinguishable from the whole in terms of files of code or any other taxonomy... Microsoft’s decision to offer only the bundled—“integrated”—version of Windows and Internet Explorer derived not from technical necessity or business efficiencies; rather, it was the result of a deliberate and purposeful choice to quell incipient competition before it reached truly minatory proportions.⁹⁶

On appeal, Microsoft challenged these particular findings as clearly erroneous, characterizing as uncontradicted expert testimony that “[t]he very same code in Windows 98 that provides Web browsing functionality’ also performs essential operating system functions—not code in the same files, but the very same software code.”⁹⁷ Thus the grouping of code into files or the inclusion of IE in an Add/Remove utility had nothing to do with the inability of OEMs to delete IE without adverse consequences; that was determined by the basic architecture of the operating system. Apparently not grasping that some code was used for both purposes, the court of appeals found that this testimony *was* contradicted by testimony that some code used for Web browsing was in files with code not used for web browsing.⁹⁸ Finding

⁹⁵ *Microsoft*, 253 F.3d 34 at 65, citing Findings of Fact ¶ 164.

⁹⁶ Conclusions of Law at 29, 33, *U.S. v. Microsoft Corp.*; *New York v. Microsoft Corp.*, Civil Action Nos. 98–1232 and 98–1233 (TPJ)

⁹⁷ *Microsoft*, 253 F.3d 34 at 66.

⁹⁸ It is interesting to note that elsewhere in its decision, in a discussion of possible benefits from tying, the court of appeals seemed to understand quite clearly both that multi-use code was present in Windows and that it could reflect efficient design: it pointed to “...the ‘shared’ library files that perform OS and browser functions with the very same lines of code and thus may save drive space from the clutter of redundant routines and memory when consumers use both the OS and the browser simultaneously.” *Microsoft*, 253 F.3d 34 at 87.

contradictory testimony, the appeals court ruled that the judge’s findings were not clearly erroneous and thus upheld his conclusion that “commingling” violated the Sherman Act.⁹⁹

The settlement negotiated subsequently between Microsoft and the U.S. Department of Justice, and agreed to by nine states, dealt with both the commingling and Add-Remove violations by enabling OEMs to block end-user access to IE, as well as a range of other Microsoft “middleware,” such as Windows Media Player and Windows Messenger.¹⁰⁰ The litigating states argued that this provision was inadequate. Since the commingling offense had the effect of making it difficult for OEMs to remove code, they argued, the remedy must be to require Microsoft to produce versions of Windows with the code for Internet Explorer and, upon request, for a wide range of other middleware removed entirely. The litigating states’ economic expert refused to endorse this provision of their proposed remedy.¹⁰¹

B. Multi-Use Code and Multi-Sided Platform Markets

An important source of the commingling confusion was the trial and appeals courts’ apparent failure to recognize the implications that software, like the HTML rendering engine, could perform both browsing and non-browsing functions. In the presence of such software, it is unclear as an operational matter what it means to “delete” Internet Explorer and it is clear that what code is in what files is irrelevant to any substantive issue. The courts presumably could eliminate this ambiguity by requiring Microsoft not to have any code perform more than one function or to block access by application developers to some APIs, but the first remedy

⁹⁹ *Id.*, at 38–39.

¹⁰⁰ Final Judgment at §III.H, *U.S. v. Microsoft Corp.*, 2002 U.S. Dist. LEXIS 22864 2002-2 Trade Cas. (CCH) P73, 860 (D.D.C., 2002) (No. 98–1232). Note that during the trial, the “removal” program developed by the government’s computer science expert witness actually removed very little code because he recognized that removing more code would disable other parts of Windows and various applications. *See* Trial Transcript, *New York v. Microsoft Corp.*, (No. 98–1233), Dec. 14, 1999, A.M. Session (Felten Cross), pp. 42, 63–64.)

¹⁰¹ Trial Transcript at 3271–3272, 3277, 3284, 3289, 11 Apr. 2002, A.M. Session (Shapiro Cross), *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002)(No. 98–1233); Memorandum Opinion at 304, *Id.*

would make Windows more complex and less efficient, and the second remedy would force applications developers to write code to perform functions that could be performed for them by Windows. Neither remedy would benefit consumers.¹⁰²

A second source of the commingling confusion, we believe, was the failure of any party to understand clearly the antitrust policy implications of the fact that Windows is a multi-sided market platform.¹⁰³ This is hardly a surprise, since the economic literature on multi-sided platform markets post-dates most of this proceeding, and most of it has been concerned with payment cards rather than software platforms.¹⁰⁴ In essence, a firm providing a multi-sided market platform needs to attract two or more groups because the value of the platform to one group depends on the participation of the other group and vice versa. Singles bars need to attract both men and women; shopping malls need stores and shoppers; payment card ventures like American Express need to attract both merchants and consumers; video game console makers need game software developers and game users; and operating system vendors need to attract both applications software developers and end users.¹⁰⁵ As Microsoft management

¹⁰² The district court addressed the two solutions discussed here, as well as two others put forward by the government's computer science expert, Dr. Appel. The court found that none of the proposed solutions would benefit consumers. Memorandum Opinion at 297–299, *Microsoft Corp.*, 224 F. Supp. 2d. *see also*, Direct Testimony of Stuart M. Madnick, ¶¶ 180–185, *Id.*,

¹⁰³ The government and Microsoft both recognized that software platforms had indirect network effects, which created a positive feedback loop between users and applications developers. There is extensive economic literature on industries with indirect network effects that was developed in the 1980s and early 1990s. For a summary, *see* Michael L. Katz and Carl Shapiro, *Systems Competition and Network Effects*, 8 J. OF ECON. PERSP. 93 (1994); *see also*, David S. Evans & Richard Schmalensee, *A Guide to the Antitrust Economics of Networks*, 16 ANTITRUST (1996). And Microsoft executives clearly understood the business implications of these externalities.

¹⁰⁴ *See, e.g.*, Richard L. Schmalensee, *Payment Systems and Interchange Fees*, 50(2) J. IND. ECON. 103–122 (2002); Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990–1029 (2003); David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 YALE J. REG. 325–381 (2003).

¹⁰⁵ Microsoft receives most of its Windows revenue from OEMs rather than directly from end-users, but to analyze the issues here, it is most useful to think of OEMs as distributors of Windows. When it designs new versions of Windows, however, Microsoft works closely with OEMs to ensure that hardware and operating systems capabilities evolve in compatible ways. In that context it makes sense to think of OEMs as a “side” of the market whose loyalty is important to secure. One can also think of Microsoft's task as three-sided, as it must

clearly understood, an operating system is more valuable to applications developers the more end-users are potential buyers of programs written for it, and an operating system is more valuable to end-users the more attractive applications have been developed to work with it.

One of the insights from the economic literature on multi-sided markets is that both profit-maximizing and socially efficient pricing structures are not driven only by side-specific costs but also by details of demand conditions and indirect network externalities. Even if it is more expensive to serve side A than side B, for instance, it may make business sense and enhance economic efficiency to sell below cost to A because more sales to A have a powerful stimulating effect on sales to B. In the case of computer operating systems, for instance, no vendor charges applications developers for the right to use the system's APIs, even though Microsoft, Apple, and other firms devote substantial resources to wooing and informing ISVs. Operating system vendors receive almost all their income from end-users, in Microsoft's case through OEMs. On the other hand, makers of video game systems receive almost all their net income from license fees charged to game developers; game consoles with operating systems installed break even at best.¹⁰⁶ The economic literature on two-sided markets makes it clear that there is nothing inherently inefficient or anticompetitive in this sort of pricing, even if pricing on one side of the market is below the marginal cost incurred there.¹⁰⁷

Another insight that emerges when one views markets through the multi-sided lens is that the analysis of product design decisions, like the analysis of pricing decisions, must take into account effects on all sides of the market. An important way in which all operating system

work with hardware vendors (most prominently Intel) to ensure that Windows takes advantage of new devices and that those devices are designed to work well with Windows.

¹⁰⁶ David S. Evans et al., *A Survey of the Economic Role of Software Platforms in Computer-Based Industries*, 51 CESifo Economic Studies, No. 2-3 (forthcoming Summer 2005); Rochet & Tirole, *supra* note 104.

¹⁰⁷ Rochet & Tirole, *supra* note 104; Evans, *supra* note 104.

vendors compete for the allegiance of applications developers is by expanding the set of APIs that can be employed to develop attractive applications.¹⁰⁸ Since the marginal cost of distributing additional APIs, once developed, as part of the operating system is zero, while separate distribution would entail additional costs, this sort of bundling makes economic sense.¹⁰⁹ No court in this litigation—or any other of which we are aware—has condemned this form of competition, even though in the case of Microsoft adding features and functionality to Windows may help to preserve its market position. Indeed, the decision in the first appeal explicitly said that “a monopolist does not violate the Sherman Act simply by developing an attractive product.”¹¹⁰

Operating systems also provide services directly to end-users. In the earliest versions of MS-DOS, for instance, tiny programs were provided that enabled end users to rename, copy, move, or delete files by calling the same code that applications programs could call. Similarly, using IE 3 and later versions most commonly involved running a tiny application (itself called by double-clicking the IE icon) to call published APIs (including those for the HTML rendering engine) also available to application developers.¹¹¹

Generally, offering a better product to end-users would also be considered socially valuable competition. Here, however, the courts found that because OEMs licensed Windows

¹⁰⁸ Direct Testimony of Stuart E. Madnick Apr. 26, 2002, §II.B, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233); Direct Testimony of Bill Gates Apr. 18, 2002, §II.A, *Id.*; Evans et al., *supra* note 106; MARCO IANSITI & ROY LEVIEN, *THE KEYSTONE ADVANTAGE* 55–56, 83–91 (2004).

¹⁰⁹ Bakos, Yannis & Eric Brynjolfsson, *Bundling Information Goods: Pricing, Profits, and Efficiency*, 45 *MGMT SCI.* 1613–1630 (1999); David S. Evans & Michael Salinger *The Role of Cost in Determining When Firms Offer Bundles and Ties*, Working Paper Series, 2004, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=555818; David S. Evans & Michael A. Salinger *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 *Yale J. on Reg.* (2005), also *available at* <http://ssrn.com/abstract=550884>.

¹¹⁰ *Microsoft*, 253 F.3d 34 at 68.

in its entirety and were required to distribute and display this product with all of its features to their customers, e.g., by retaining the IE icon on the Windows desktop, OEMs were reluctant to distribute Navigator. The courts found that this at least could have prevented Navigator from attaining the ubiquity it would have needed to become a platform competitor. Thus the offense directly affected the end-user side of the market, not the ISV side, even though the alleged competitive impact ultimately involved ISV behavior.

C. Remedies Hearings and the Second Appeal

The district court in the remedies hearing heard a good deal of expert testimony on multi-use code, including the HTML rendering engine.¹¹² The court did not explicitly contradict the D.C. Circuit’s findings on commingling and add-remove, but it did note that “Plaintiffs [i.e., the litigating states] have been unsuccessful at distinguishing the code which comprises an ‘operating system’ from the code which comprises a non-operating system ‘Microsoft Middleware Product,’ such as a browser” and thus “Plaintiffs have not offered a reasonable way for Microsoft to separate the code in order to comply with the code removal requirements in Plaintiffs’ unbundling proposal.”¹¹³ If multi-use code is important, of course, it is logically impossible to meet these burdens.

The court went on to show an understanding of the multi-sided issues discussed above. It found that even if one could remove middleware code without breaking Windows, “the record is overwhelmed with significant unrebutted evidence that Plaintiffs proposal of code

¹¹¹ IE or its components also can be invoked in various other ways, such as through the Windows Update feature. The appeals court found such invocations legal so long as specific features of IE were needed that other Web browsers did not have necessarily have. *Microsoft*, 253 F.3d 34, at 67.

¹¹² Memorandum Opinion at 289–291, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233).

¹¹³ *Id.*, at 129.

removal would harm ISVs and consumers.”¹¹⁴ The set of APIs available on all Windows computers would be reduced, and thus the quality of the product provided to the ISV side of the market would be degraded.¹¹⁵ ISVs testified that the quality of their products would be reduced because they could not count on the availability of all Windows APIs, and this obviously would be a direct source of consumer harm.¹¹⁶ Moreover, the reliability of Windows would suffer. Microsoft would be required to offer many different versions of Windows¹¹⁷ and it clearly could not test each one as extensively as it now tests the single version it provides to OEMs.¹¹⁸

Finally, the court pointed out that the violation had to do with discouraging OEMs from distributing Netscape Navigator, because they were not free to choose to present Navigator or another non-Microsoft browser by itself. IE always had to remain visible, and earlier decisions found that OEMs were reluctant to present more than one browser because users would find it confusing. Thus, the problem is on the end user side of the market, and “the evidence presented to the Court indicates that the ability to remove end-user access to any commingled functionality would sufficiently address the anticompetitive aspect of the conduct and would prove far less disruptive to consumers and industry participants.”¹¹⁹

¹¹⁴ *Id.*, at 130.

¹¹⁵ One could argue, based on the recent experience discussed in III.D, that no OEM would have licensed a version of Windows with code removed, so that Windows would not in fact fragment. If this is true, of course, the litigating states remedy would have failed to achieve its stated purpose of fragmenting Windows. Memorandum Opinion at 300-301, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98-1233). Moreover, the litigating states proposal would have required disabled versions of Windows to be offered at (arbitrarily) lower prices than the full version, so one cannot rule out the possibility that some disabled versions would have been attractive to some OEMs.

¹¹⁶ Direct Testimony of Scott Borduin, Apr. 17, 2002, § IV, *Id.*; Direct Testimony of Brent Frei Apr. 18, 2002, ¶¶ 33-39, *Id.*,

¹¹⁷ Memorandum Opinion at 301, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98-1233)

¹¹⁸ Microsoft provides several different PC “editions” of its Windows XP operating system, including “Professional”, “Home”, “Tablet”, and “Media Center.” However, all of them support a common set of APIs.

¹¹⁹ *Id.*, at 131.

On (the second) appeal, the D.C. Circuit unanimously and enthusiastically endorsed the District Court’s choice of access removal over code removal: “Far from abusing its discretion, therefore, the district court, by remedying the anticompetitive effect of commingling, went to the heart of the problem that Microsoft had created, and it did so without intruding itself into the design and engineering of the Windows operating system. We say, Well done!”¹²⁰

D. Recent Experience

Microsoft began complying with the terms of the settlement in December 2001. In September 2002, it released an updated version of Windows that included a new feature (Set Program Access and Defaults) that made it easy for end users to disable access to Microsoft middleware; made it easy for end users to set non-Microsoft products as the defaults for related functions; and that made it easy for OEMs and end users to change their default Web browsers and various other pieces of “middleware.”¹²¹ Also in August 2002, Microsoft announced that the client-server communications protocols covered by the decree (roughly 100) had been documented and were available for license.¹²²

After the consent decree, OEMs knew with certainty that shipping rival middleware products would have no effect on their royalty payments or their terms and conditions for Windows. Instead, OEMs make their own software choices and have, in fact, distributed third party middleware in considerable numbers. Indeed, every major OEM has installed at least one non-Microsoft media player on its consumer-oriented (as opposed to business-oriented) PCs,

¹²⁰ *Massachusetts v. Microsoft Corp.*, 373 F. 3d 1199, 15 (D.C. Cir., 2004).

¹²¹ The other features that can be disabled are: Windows Media Player, Windows Messenger, Outlook Express, and Microsoft’s Java Virtual Machine.

¹²² Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 22–23, July 3, 2003, *available at* <http://www.usdoj.gov/atr/cases/f201100/201135.pdf> (last visited Nov. 2, 2004).

but none has blocked access to Windows Media Player.¹²³ Similarly, all major OEMs display an icon for America Online (AOL), but none has removed the icon for Microsoft's competitive service, MSN.¹²⁴

At the very least, this experience casts doubt on the liability theory that OEMs were reluctant to install Navigator because they could not remove end-user access to Internet Explorer. After all, end users always have been free to ignore and/or remove the icon and menu entry for any piece of software that they do not want to use. On the other hand, little harm has been done by giving OEMs this option. Consumers have not been deprived of choice; Microsoft had been required to produce only a single version of Windows (albeit with a new access-disabling feature); and ISVs know what APIs will be exposed by (and thus what applications will run on) a Windows-based computer system.

If the litigating states' code removal proposal had been adopted instead, this experience suggests that it is at least plausible that all major OEMs would nonetheless have licensed the version of Windows from which no code had been removed (the "intact" version). While the litigating states proposal would have made versions from which code had been removed ("disabled" versions) somewhat cheaper than the intact version, the disabled versions would

¹²³ Albert Nichols et al., *Survey and Analysis of Media Players Installed on New PCs Sold in Europe and the United States*, LECG study (2004) (on file with the authors).

¹²⁴ In connection with Microsoft's appeal of the European Commission's decision in Case COMP/C-3/37.792 Microsoft, LECG staff undertook a study to determine the extent to which major OEMs installed media players on computers that are sold for home and small office use. In the United States, they identified six OEMs that each accounted for at least 2 percent of units sold (Dell, eMachines, Gateway, HP/Compaq, Sony and Toshiba). Each of the PCs examined came with at least one third-party media player installed and an icon for America Online. Examination of the PCs also demonstrated that while some OEMs had made other media players the default players for various types of media files (including those using Microsoft's own formats), none of the OEMs had blocked access to either Windows Media Player or MSN. A similar study done in 2002 for Kevin Murphy's testimony in Sun's suit against Microsoft found that home and small office PCs from the leading OEMs included many third-party applications (many of which were classified as "middleware"), including media players. (Declaration of Kevin M. Murphy in Support of Microsoft's Opposition to Sun Microsystems' Motion for Preliminary Injunction, *Sun Microsystems v. Microsoft*, Case No. C02-01150 RMW (PVT), Jul. 2002, Appendix A.)

not only have lacked one or more features aimed at end-users, just as if end-user access had been removed, but they would also have lacked the corresponding APIs. Accordingly, at least some applications that ran on the intact version of Windows would fail to run on one or more disabled versions. If this suggestion is right, and no significant OEM would sell PCs without the intact version of Windows, only Microsoft would bear additional costs—the substantial costs of designing and testing many disabled versions of Windows with ambiguous design requirements.¹²⁵ On the other hand, if this suggestion is wrong and some major OEMs would distribute disabled versions of Windows, additional costs would be borne by consumers and applications vendors (including Microsoft in that capacity), because, absent extensive and expensive redesign, some Windows applications simply would not run on some Windows machines. Accordingly, we believe the courts’ clear rejection of code removal benefited consumers.

Despite the rejection of code-removal by these two U.S. courts and the general access-removal remedy provision in force worldwide since 2002, the European Commission has ordered Microsoft to produce a version of Windows with the code for Windows Media Player removed.¹²⁶ The Commission’s order requires that the versions of Windows with code removed

¹²⁵ Direct Testimony of Stuart M. Madnick, Apr. 26, 2002, ¶¶ 189–190, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233).

¹²⁶ The Commission defined the files that constitute “Windows Media Player” as those identified as part of “multimedia applications” in Windows XP Embedded, a product designed to help manufacturers create very small versions of Windows for special purpose products (such as ATMs) that typically run only one or at most a handful of custom designed applications. (Commission Decision of 24.03.2004 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-3/37.792 Microsoft), ¶¶ 1019, 1021, 1029, Article 1.6, *available at* <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>.) For the current version of Windows, this definition results in the removal of 186 different files. The Korean FTC has been investigating tying claims against Microsoft, first with respect to instant messenger software and more recently with respect to media players, and it apparently is considering ordering code removal.

be priced “no higher” than the intact version.¹²⁷ That presumably recognizes the fact that media players are widely available for free so that there is no basis for having a price difference between software that includes or excludes this “free” feature. Since it is hard to imagine that there would be much demand for Windows without media player, especially given that OEMs and consumers are free to disable access to this feature under the U.S. consent decree, it would appear likely that this remedy will impose costs on Microsoft but have little or no effect on the market.¹²⁸

V. Other Substantive Provisions and Enforcement

A. Other Substantive Remedy Provisions

As Table 3 indicates, the remedy finally ordered went beyond the liability findings in several ways. It defined “middleware” to include numerous features—such as instant messaging and media players—that, unlike Java and Web browsers, had never been held out as likely to become general-purpose platforms that could challenge Windows.¹²⁹ In addition, the remedy addressed Microsoft practices that had not been found illegal by the court of appeals. Notable among these is action A.1 in Table 2: individually negotiated royalty rates and discounts for large OEMs that met the terms of “market development agreements.” Under the remedy, Microsoft has to offer uniform terms to the top 10 OEMs, with prices varying only by volume and with any discounts based on criteria that are objectively verifiable.

¹²⁷ Commission Decision of 24.03.2004 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-3/37.792 Microsoft), ¶ 1013, *available at* <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>.

¹²⁸ John G. Spooner, *Business as Usual for PC Makers*, CNET NEWS, Mar. 24, 2004, *available at* http://news.com.com/Business+as+usual+for+PC+makers/2100-7341_3-5178690.html (last visited Mar. 3, 2005).

¹²⁹ Judge Kollar-Kotelly notes that “an effective remedy must be sufficiently forward-looking to extend beyond the specific middleware threats addressed during the liability phase.” Judge Colleen Kollar-Kotelly, Memorandum Opinion at 88–89,

Similarly, even though the case had focused on “client” PCs, and there had been no allegations of anticompetitive conduct with respect to servers, provision III.E of the remedy required that Microsoft license all communications protocols used to exchange information between Windows clients and servers. Microsoft was allowed to charge reasonable and non-discriminatory royalties, and the licenses were restricted to use in achieving interoperability between Windows clients and non-Microsoft servers. The district court judge stated that this provision, “[i]n all likelihood...is the *most* forward-looking provision in the Court’s remedy.”¹³⁰ This provision was a limited version of what Sun and other server vendors (including Novell and IBM) had been seeking from the European Commission since 1998.¹³¹

As summarized in Table 3, the decree included numerous other provisions limiting Microsoft’s conduct, including prohibitions on taking any retaliatory action against a wide range of firms for their support of products that compete with Microsoft products (III.A, C, and F), a requirement to document any interfaces used between Microsoft middleware and other parts of Windows (III.D), and a prohibition on entering into agreements that require the other party to use any Microsoft platform software exclusively or that place quantitative limits on the use of competing non-Microsoft software by the other party (III.G).

B. Enforcement Mechanisms and Results

The settlement agreement required that Microsoft begin complying with its terms before it was entered by the courts. As noted earlier, that process started in December 2001, a month after the settlement was reached, with Microsoft offering uniform terms for Windows licenses

New York v. Microsoft Corp., 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233) .

¹³⁰ *Id.*, at 157.

¹³¹ The 2004 European Commission decision discussed above requires Microsoft to license a subset of these protocols, but does not restrict their use to client-server communication. More importantly, it also requires that Microsoft license additional protocols used in server-to-server communication.

to the top 20 OEMs.¹³² By September 2002, Microsoft had met all of the deadlines in the settlement/decreed that called for specific actions.

To aid the government in monitoring Microsoft's compliance and resolving technical issues, the remedy set up a "Technical Advisory Committee" with three members (plus staff), to be funded by Microsoft. The committee members were selected in early 2003. Starting in April 2003, the government and Microsoft have submitted status reports to the district court at roughly three-month intervals, with shorter interim reports on specific issues submitted from time to time.¹³³

The status reports indicate that implementation of the remedy has gone smoothly for almost all provisions. To the extent that issues have arisen, for the most part they have been resolved quickly. For example, in response to the government's request, Microsoft moved the icon for the Set Program Access and Defaults feature to a more prominent position¹³⁴ and changed a new feature (Shop for Music Online) so that it used the default browser rather than Internet Explorer.¹³⁵ Government representatives meet with those from Microsoft on a regular basis. Recent status reports indicate that the government is taking a proactive approach to the next major version of Windows—code named Longhorn—which is not scheduled for release until some time in 2006. The government has given Microsoft a list of topics related to the final

¹³² Stipulation and Revised Proposed Final Judgment, *U.S. v. Microsoft Corp.*, Civil Action No. 98–1232, Nov. 6, 2001, available at <http://www.usdoj.gov/atr/cases/f9400/9495.pdf>.

¹³³ See Joint Status Reports on Microsoft's Compliance with the Final Judgments issued in Apr. 2003, July 2003, Oct. 2003, Jan. 2004, Apr. 2004, July 2004, and Oct. 2004, available at http://www.usdoj.gov/atr/cases/ms_index.htm#settlement.

¹³⁴ Joint Status Report on Microsoft's Compliance with the Final Judgments, *U.S. v. Microsoft Corp.*, Civil Action No. 98–1232, 5–6, July 3, 2003, available at <http://www.usdoj.gov/atr/cases/f201100/201135.pdf> (last visited Nov. 2, 2004).

¹³⁵ Joint Status Report on Microsoft's Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 10–11, Jan. 16, 2004, available at <http://www.usdoj.gov/atr/cases/f202100/202129.pdf> (last visited Oct. 19, 2004).

judgment that it wants to be tracked and has asked for “regular briefings...to enable early detection and resolution of any potential areas of concern.”¹³⁶

The licensing program for client-server protocols has been the exception to this pattern of smooth implementation, with the government raising a series of issues starting with the first status report and continuing to the present. That this provision, which does not correspond to any of the acts found illegal, should be the biggest source of friction in enforcement is perhaps ironic, but not surprising.¹³⁷ The licensing program is complicated and open to conflicting interpretations. Microsoft is required to license use of the protocols on reasonable and nondiscriminatory terms. Most of the initial concerns focused on those terms, leading to significant changes in the licenses (e.g., simplifying the terms), the conditions under which potential licensees can review the licenses and protocol specifications, and royalty rates. Those issues appear largely to have been resolved by Microsoft’s changes.¹³⁸

More recently, the government has focused on the completeness of the specifications. Microsoft created about 5,000 pages of technical documentation for the roughly 100 protocols covered by the program. Determining how much documentation is required to implement

¹³⁶ Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 7, Oct. 8, 2004, available at <http://www.usdoj.gov/atr/cases/f205700/205751.pdf> (last visited Oct. 19, 2004).

¹³⁷ It is also interesting to note that implementation of a 1994/95 settlement between Microsoft and the Department of Justice also proceeded smoothly with respect to the provisions related directly to the alleged anticompetitive behavior: certain types of contracts with OEMs. The provision that led to the greatest controversy and conflict, including a 1997 contempt hearing and the 1998 lawsuit that is the focus of this paper, was one that prohibited “tying” except in the case of “integrated products.” Tying had not been an issue during the several years of investigation by the DOJ and the FTC that preceded the settlement, and we understand from participants in the settlement negotiations that it was added at the end, as an afterthought.

¹³⁸ Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 6–9, July 3, 2003, available at <http://www.usdoj.gov/atr/cases/f201100/201135.pdf> (last visited Nov. 2, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 8–9, Jan. 16, 2004, available at <http://www.usdoj.gov/atr/cases/f202100/202129.pdf> (last visited Oct. 19, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 4–5, July 9 2004, available at <http://www.usdoj.gov/atr/cases/f204500/204560.pdf> (last visited Nov. 5, 2004).

complex software protocols in operational code is inherently complex, with differences in interpretation and understanding almost inevitable. Microsoft has supplemented its specifications, and the Technical Advisory Committee (with the aid of consultants and staff) has developed 50 pages of clarifying detail for the specifications (which were already over 2,000 pages).¹³⁹ Microsoft submitted revisions in December 2004, which the plaintiffs characterized in the January 2005 report as an improvement. The report stated that Microsoft had agreed with plaintiffs on a “comprehensive plan to ensure the completeness and accuracy of the technical documentation and to accomplish further work on the documentation.”¹⁴⁰ Earlier, as of the July 2004 report, Microsoft had unilaterally extended the licensing program for an additional two years—from 2007 to 2009—to address concerns about the time it had taken to resolve various related issues.¹⁴¹

On the whole, the remedy appears to be working as intended, but it is much less clear that it has had a material impact on market outcomes. As we noted earlier, for example, apparently no OEM has exercised its right under the decree to disable ready access to IE or any other covered middleware. Nonetheless, OEMs appear to feel free to install non-Microsoft middleware (sometimes several different brands), such as media players and Internet access

¹³⁹ Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 22, July 3, 2003, available at <http://www.usdoj.gov/atr/cases/f201100/201135.pdf> (last visited Nov. 2, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 4–5, Apr. 14, 2004, available at <http://www.usdoj.gov/atr/cases/f203200/203264.pdf> (last visited Nov. 5, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 4–6, July 9 2004, available at <http://www.usdoj.gov/atr/cases/f204500/204560.pdf> (last visited Nov. 5, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 10–11, Oct. 8, 2004, available at <http://www.usdoj.gov/atr/cases/f205700/205751.pdf> (last visited Oct. 19, 2004).

¹⁴⁰ Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft*, Civil Action No. 98–1232, 2–6, Jan. 25, 2005, available at <http://www.usdoj.gov/atr/cases/f207200/207283.pdf> (last visited Feb. 15, 2005).

¹⁴¹ Joint Status Report on Microsoft’s Compliance with the Final Judgments, *U.S. v. Microsoft Corp*, Civil Action No. 98–1232, 4–5, July 9 2004, available at <http://www.usdoj.gov/atr/cases/f204500/204560.pdf> (last visited Nov. 5, 2004).

services, *in addition* to the features in Windows—as they have always been permitted to do under the terms of Windows license agreements, even before this litigation began.

With respect to the protocol licensing program, the government’s status reports have expressed concern that there have not been many licensees (21 as of January 2005) and that virtually all have been for specialized uses, rather than server operating systems or other software seen as posing a significant potential threat to Microsoft’s position in PC operating systems.¹⁴² Some argue that this reveals that the remedy was inadequate, but it seems at least as plausible that the theory behind the licensing provision—that potential competitors in server operating systems or server-based middleware needed access to those protocols in order to compete effectively—was incorrect. The government reports that prospective licensees cite three types of reasons for not obtaining a license: (1) they found certain provisions (such as royalties or the lack of actual source code in addition to specifications) unattractive; (2) they did not need the protocols; or (3) they had not invested the resources to evaluate the terms of the licenses or the value of the technology.¹⁴³ The second and third reasons cast no doubt on the remedy’s adequacy, and complaints about licensing terms may mean that the effective cost is “too high” (by some unspecified standard) or simply that the value to the potential licensees is too low to justify paying even “reasonable” costs.

¹⁴² Joint Status Report on Microsoft’s Compliance with the Final Judgments, U.S. v. Microsoft Corp, Civil Action No. 98–1232, 4–7, Jan. 16, 2004, *available at* <http://www.usdoj.gov/atr/cases/f202100/202129.pdf> (last visited Oct. 19, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, U.S. v. Microsoft Corp, Civil Action No. 98–1232, 9, Oct. 8, 2004, *available at* <http://www.usdoj.gov/atr/cases/f205700/205751.pdf> (last visited Oct. 19, 2004); Joint Status Report on Microsoft’s Compliance with the Final Judgments, U.S. v. Microsoft Corp, Civil Action No. 98–1232, 13, Jan. 25, 2005, *available at* <http://www.usdoj.gov/atr/cases/f207200/207283.pdf> (last visited Feb. 15, 2005).

¹⁴³ Joint Status Report on Microsoft’s Compliance with the Final Judgments, New York v. Microsoft Corp., Civil Action No. 98–1232, Jan. 16, 2004, 7, *available at* <http://www.usdoj.gov/atr/cases/f202100/202129.pdf> (last visited Oct. 19, 2004).

VI. Evaluation and Conclusions

Who won the *Microsoft* case? One could argue that the government won. Microsoft was found to have monopoly power in PC operating systems and to have violated the Sherman Act in trying to keep that monopoly. That finding has enabled various parties—from class actions representing consumers to companies such as AOL and Sun—to obtain billions of dollars in settlements as well as other concessions from Microsoft.¹⁴⁴ Moreover, ultimate relief was much more than the government sought in its initial complaints and more than might have been entered by the trial court, on remand, if it had construed the D.C. Circuit’s instructions narrowly.

Of course, one seldom hears the case’s strongest early proponents declaring victory. More often, there are complaints that Microsoft got off too lightly. Many of the case’s proponents and press accounts suggest that Microsoft benefited from a Republican administration taking over from a Democratic one.¹⁴⁵ We do not believe a careful reading of the two unanimous *en banc* decisions of the D.C. Circuit supports that view.

One can also argue that Microsoft won a victory of sorts—or lost much less than it might have. Most of its challenged behavior—particularly its heavy investment in developing,

¹⁴⁴ Microsoft paid Sun \$700 million to settle antitrust claims and also entered into information-sharing agreements with Sun for supporting and improving Java and collaborating in developing server software. Microsoft Press Release, *Microsoft and Sun Microsystems Enter Broad Cooperation Agreement; Settle Outstanding Litigation*, Apr. 2, 2004, at <http://www.microsoft.com/presspass/press/2004/apr04/04-02SunAgreementPR.asp> (last visited Jan. 10, 2005). In addition to the Sun settlement, Microsoft also entered into settlement agreements in a number of state class action suits, in a federal class action suit, and in suits with Be and Netscape-AOL/Time Warner. Microsoft Press Release, *Antitrust Settlement Fact Sheet*, Oct. 28, 2003, at <http://www.microsoft.com/presspass/legal/10-28SettlementFS.asp> (last visited Jan. 10, 2005).

¹⁴⁵ Mike Pettit, President of ProComp, issued this statement in November 2002 after the release of J. Colleen Kollar-Kotelly’s decision: “Microsoft has terrorized the industry for more than a decade. Victims of Microsoft’s predatory conduct are legion. This was the moment in time when competition could have been restored; that task will be much more difficult in the future. The right case was brought and won resoundingly. Eight federal judges ruled unanimously against Microsoft. And then what happened can only be explained this way: the Bush Justice Department surrendered to Microsoft.” (See, ProComp, *Microsoft Settlement Sets Dangerous Precedent in Antitrust Law*, Nov. 1, 2002, available at <http://www.procompetition.org/headlines/110102.html> (last visited Nov. 8, 2004).)

improving, promoting, and distributing Internet Explorer—was found lawful. The company managed to defeat some remedy proposals that would have been highly damaging. Most importantly, the U.S. courts did not condemn Microsoft’s inclusion of new features in the operating system as a general matter, and the D.C. Circuit at least has specifically ruled that tying issues related to software platforms must be considered under the rule of reason rather than the *Jefferson Parish per se* test.

But Microsoft has not declared victory—in fact it has been conciliatory¹⁴⁶ and vows to do better. While we suspect that many of its executives long for the days of go-for-the-throat competition, willingly or unwillingly, and for better or worse, the company is a more careful competitor than it was seven years ago.

We have argued here that consumers in the aggregate could justifiably declare at least a modest victory. While we, as noted above, believe the appeals court should have required evidence of actual or likely future consumer harm before finding Microsoft to have violated the Sherman Act, it is hard to argue that the remedy ultimately imposed will harm consumers by appreciably restricting Microsoft’s ability to innovate or compete on the merits—though it will certainly make life more complex for Microsoft executives. If one believes that Microsoft is prone to anticompetitive behavior of the sort at issue in the case, then one must believe that the remedy is likely to prevent future at least some violations that might harm consumers. Finally, if one believes that during the relevant period Microsoft was simply an immature company, prone to behavior that the second District Judge described as “unsavory” and

¹⁴⁶ Microsoft Press Release, *Microsoft Responds to U.S. District Court Ruling*, Nov. 1, 2002, <http://www.microsoft.com/presspass/press/2002/Nov02/11-01TunneyStatementPR.asp> (downloaded Feb. 8, 2005).

“reprehensible,”¹⁴⁷ having such an influential firm go through a maturing, near-death experience may not be a bad thing for society.

¹⁴⁷ Memorandum Opinion at 94, 105 *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C., 2002) (No. 98–1233)

TABLES

Table 1. Disposition of Major Antitrust Allegations

| <u>Allegation</u> | <u>District Court</u> | <u>Court of Appeals</u> |
|--|--|--|
| <i>Sherman Act Section I Claims:</i> | | |
| Microsoft exclusive dealing contracts barred Netscape from the market | No Violation | Not Appealed |
| Microsoft's inclusion of Internet Explorer in Windows was a <i>per se</i> illegal tie | Violation | Vacated (dropped on remand) |
| <i>Sherman Act Section II Claims:</i> | | |
| (States Only) Microsoft leveraged its operating system monopoly to monopolize the browser market | No Violation (summary judgment) | Not Appealed |
| Microsoft attempted to monopolize the browser market | Violation | Reversed |
| Microsoft illegally maintained a monopoly in operating systems | No Violation for some allegations Violations for some allegations | Not Appealed Some not addressed Some reversed Some affirmed |

Table 2. Disposition of Monopoly Maintenance Violations

A. *Not Adjudicated by the Court of Appeals*

1. Microsoft used discounts and other devices to reward or punish OEMs, depending on whether they aided or resisted its anticompetitive agenda.
2. In June 1995, Microsoft proposed a division of the market to Netscape.
3. Microsoft withheld important technical information from Netscape.
- 4–7. To further anticompetitive objectives, Microsoft pressured Intel concerning its “Native Signal Processing” (NSP) software, Apple and RealNetworks concerning their media players, and IBM concerning promotion of its “Smart Suite” business productivity software.

B. *Reversed by the Court of Appeals*

Course of Conduct

1. Microsoft’s general course of conduct was predatory, particularly its large investments in Internet Explorer (IE), which it gave away.

Binding Internet Explorer

2. Windows overrode the user’s choice of a default browser by launching IE in some circumstances.

Original Equipment (Computer) Manufacturers (OEMs)

3. Microsoft barred OEMs from causing a user interface other than the Windows desktop to launch automatically.

Internet Access Providers (IAPs)

4. Microsoft provided IE for free to IAPs.
5. Microsoft offered IAPs a bounty for each customer signed up using IE.
6. Microsoft provided at no charge valuable software that IAPs could use to customize IE—the Internet Explorer Access Kit.

Internet Content Providers (ICPs)

7. Microsoft gave some ICPs prominent placement on the Windows “Active Desktop” in exchange for agreeing to limit promotion and distribution of non-Microsoft Web browsers.

Java

8. Microsoft developed a Java Virtual Machine that was incompatible with Sun’s.

C. *Affirmed by the Court of Appeals*

Binding Internet Explorer

1. Commingling code specific to Web browsing with code that performs core operating system functions, so that deletion of browsing-specific code would cripple Windows.
2. Microsoft’s Add/Remove utility for Windows 98, which could be used by consumers to remove some features and functions, could not be used to remove Internet Explorer.

Original Equipment (Computer) Manufacturers (OEMs)

3. Microsoft prohibited OEMs from removing any desktop icons, folders, or “Start” menu entries, thereby preventing them from removing visible means of user access to IE.
4. Microsoft prohibited OEMs from modifying the initial boot sequence, which occurs the first time the computer is turned on, thus preventing them from using that process to promote the services of IAPs distributing Navigator.
5. Microsoft prohibited OEMs from adding icons or folders different in size or shape from those supplied by Microsoft, thereby preventing OEMs from using such folders or icons to promote rival browsers more prominently.
6. Microsoft prohibited OEMs from using the ‘Active Desktop’ feature to promote third-party browsers or IAPs.

continued below...

Table 2 (continued). Disposition of Monopoly Maintenance Violations

Internet Access Providers (IAPs)

7. Microsoft agreed to provide promotion or distribution to IAPs in return for the IAPs' agreement to promote IE exclusively and to ensure that IE comprised at least a specified percentage of the IAPs' distribution of Web browsing software.

Independent Software Vendors (ISVs) and Apple

- 8.* In "First Wave" agreements, Microsoft promised to give preferential technical support to ISVs that agree, among other things, to use IE as the default for any software they developed under the program with a hypertext-based user interface.
9. Microsoft agreed to continue developing Office for the Macintosh only when Apple agreed to make IE the default browser on its operating system and not to put icons for non-Microsoft browsers on the Macintosh desktop.

Java

10. One of the conditions in Microsoft's "First Wave" agreements was that ISVs that developed a Java application under the program make Microsoft's JRE the default and distribute that JRE with the application.
11. Microsoft's Java application development tools deceived developers into writing Java applications that were not portable but ran only on Windows.
12. Microsoft threatened Intel and induced it to stop working with Sun on certain multimedia technologies for Java.
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Table 3. Major Definitions and Substantive Remedy Provisions

Definitions

Microsoft Platform Software: Windows and its successor operating systems, and Microsoft Middleware.

Microsoft Middleware: Includes Microsoft’s Internet browser, Java Virtual Machine, email client software, media player, instant messaging software, and more.

Non-Microsoft Middleware: A product running on Windows “that exposes a range of functionality to ISVs through published APIs” and that could make it easier for an ISV to port an application using that functionality to a non-Microsoft operating system.

Key Provisions

III.A Microsoft shall not threaten or act against an OEM for “developing, distributing, promoting, using, selling or licensing” any product that competes with Microsoft Platform Software or that distributes or promotes any “Non-Microsoft Middleware” or for shipping a PC including or capable of booting with a non-Microsoft operating system.

Addresses: Action A.1.

III.B Microsoft may not negotiate license terms with each of the top 20 OEMs individually but must instead work from a published royalty schedule that meets certain conditions on allowable discounts and allowances.

Addresses: Action A.1.

III.C. 1–2 Microsoft may not restrict any OEM from installing and displaying icons, shortcuts of any size or shape, or menu entries that for any “non-Microsoft Middleware” or any product or service (including but not limited to IAPs) that “distributes, uses, promotes, or supports” any such middleware.

Addresses: Actions C.5 and C.6, with more software covered.

III.C. 3-5 Microsoft may not restrict any OEM from modifying the boot sequence, choosing non-Microsoft middleware to launch if Microsoft middleware would otherwise launch “upon connections to or disconnections from the Internet,” providing the option to launch other operating systems, or presenting its own IAP offer in the initial boot sequence.

Addresses: Action C.4.

III.D Microsoft must document all interfaces used by “Microsoft Middleware” to operate with other parts of Microsoft operating systems.

Addresses: Issues not raised in the trial.

III.E Microsoft must license to third parties on reasonable and nondiscriminatory terms all communications protocols used by Microsoft operating systems to interoperate or communicate directly with a Microsoft server operating system.

Addresses: Issues not raised in the trial.

III.F Microsoft shall not threaten or act against any ISV or IHV (independent hardware vendor, e.g. Apple) for developing, using, distributing or promoting any software that competes with (or runs on software that competes with) “Microsoft Platform Software” nor may it enter into any agreement with an ISV relating to a Microsoft operating system that provides that ISV with consideration for refraining from such acts.

Addresses: Actions C.8, C.9, C.10, and C.12, with more software covered.

III.G Microsoft shall not enter into any agreement that grants consideration on the condition that any Microsoft Platform Software be distributed, promoted, used, or supported exclusively or in a fixed percentage (unless competing software can obtain a higher percentage) or grant any IAP or ICP placement on the Windows desktop on condition that it refrain from distributing, promoting, or using software that competes with Microsoft Middleware.

Addresses: Actions C.7, C.8, C.9, and C.10, with more software covered.

continued below...

Note: Except where explicitly noted, these descriptions are paraphrases, not quotations. With the exception of III.E, which Microsoft unilaterally extended to 2009, these provisions will expire in November 2007 unless the District Court orders an extension. Note that Actions A.1-A.7 were not considered by the Court of Appeals; Actions B.1-B.8 were explicitly found not to be violations; while Actions C.1-C.12 were explicitly found to be violations.

Table 3 (continued). Major Definitions and Substantive Remedy Provisions

Key Provisions (continued)

- III.H. 1-2 Microsoft must make it easy for end users and OEMs to enable or remove access to each Microsoft Middleware Product or non-Microsoft Middleware Product and to designate either a non-Microsoft Middleware Product or a Microsoft Middleware Product as the default, to be invoked whenever Windows would ordinarily launch the Microsoft Middleware Product.
Addresses: Actions C.1, C.2, C.3, with more software covered.
- III.H. 3 Windows may not alter an OEM's configuration of icons, shortcuts, or menu entries without first seeking confirmation from the end user, and any pre-defined alteration must be unbiased between Microsoft and non-Microsoft Middleware.
Addresses: Action C.5, with more software covered.
- III.I Microsoft must license to third parties under reasonable and non-discriminatory terms any intellectual property rights needed to exercise any of the options or alternatives provided to them under this order.
Addresses: Workability of other provisions.
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Note: Except where explicitly noted, these descriptions are paraphrases, not quotations. With the exception of III.E, which Microsoft unilaterally extended to 2009, these provisions will expire in November 2007 unless the District Court orders an extension. Note that Actions A.1-A.7 were not considered by the Court of Appeals; Actions B.1-B.8 were explicitly found not to be violations; while Actions C.1-C.12 were explicitly found to be violations.