

The Microsoft Case

**The Microsoft Case: Antitrust, High Technology,
and Consumer Welfare**

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To Judy, Bekah, and Hannah

To Marie, Ted, and Claire

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Preface

On May 18, 1998, the United States, nineteen states, and the District of Columbia sued Microsoft Corporation, charging that the firm had monopolized the market for personal computer operating systems by crushing a competitive threat posed by Netscape's Web browser and Sun Microsystems' Java technologies. After a widely publicized trial, Judge Thomas Penfield Jackson ruled for the United States on virtually all of its liability claims and accepted its proposed remedy, ordering Microsoft broken up. In the central decision of the litigation, however, the court of appeals in 2001 reversed Judge Jackson's remedial order and some of his liability rulings, and remanded to a different trial judge. Now under a Republican administration, the Department of Justice and some of the states settled for a more limited conduct order, while other states pressed on for more sweeping relief. Ultimately, the courts approved the proposed consent decree and awarded the nonsettling states similar relief. Meanwhile, the government case spawned hundreds of follow-on lawsuits by Microsoft's rivals, business partners, and consumers in both state and federal courts, and European antitrust officials brought their own claims. The total payouts in settlements of the private cases run into the billions.

Microsoft is the defining antitrust case of our era, and will be the focus of scholarly discussion about the proper

role of antitrust for years to come. In this book, we draw on our work over the past decade to tell the story of the litigation and to examine how law, ideology, evidence, and economic theory interacted in the courts' resolution of it. Our positive goal, primarily in the first two chapters, is to provide the historical context of the case, to examine the events leading up to the decision to sue, and to organize the myriad decisions the litigation has produced. This last step is necessary because the sheer magnitude of the litigation is an obstacle to understanding. Our normative goal is to reexamine the most significant issues in the case from the perspective of the consumer interest. Adam Smith wrote in 1776 that "[c]onsumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to only so far as it may be necessary for promoting that of the consumer."¹ He was criticizing the tariffs and quotas of the mercantilist system that protected domestic industries in his era, but his observation also applies to modern antitrust law, which has sometimes served the interests of competitors over those of consumers. Public monopolization cases have been among the worst offenders on this score.

In *Microsoft* itself, the central point of contention, both in theory and rhetoric, was whether Microsoft's actions harmed or benefited consumers and, correlatively, whether antitrust intervention was necessary to protect the consumer interest or was destructive of it. This issue was especially challenging because it required the courts to predict the long-run effects of both Microsoft's actions and the court's remedies on innovation in dynamic, high-technology markets. The government contended that Microsoft's actions stifled innovation and hurt consumers by thwarting promising new rivals. Microsoft emphasized its own innovations, particularly the development and integration of new functionality into the Windows operating system, and warned that government intervention would make it less efficient and undermine its incentives to innovate. The courts struggled to resolve this conflict at every stage, with mixed results. The court of appeals properly validated Microsoft's introduction of certain new products and services at attractive prices. More questionably, it condemned other conduct, including some product design choices, without requiring the government to offer theory and evidence proving the conduct actually harmed or was likely to harm consumers. In doing so, the court overrated its own abilities to correct market processes and underrated the powers of the market itself. Its failing in this respect has been a characteristic of public monopolization decisions for over a century.

In chapter 1, we describe the legal and economic context in which the case arose and the events that convinced the government to sue. We examine the ideological origins of the monopolization law and survey the century-long history of the government's efforts to enforce it. This cautionary tale illustrates some of the challenges courts face in identifying and remedying successful firms' exclusionary practices without deterring the very competition that the law promotes. The saga ends, temporarily, with the Antitrust Division's virtual abandonment of monopolization enforcement in the early years of the Reagan administration, when the division admitted defeat in its disastrous case against IBM and settled its case against AT&T. The hiatus in public monopolization enforcement coincided with the rise of the Chicago School of antitrust analysis, which had exposed the facile assumptions of anticompetitive effect underlying many of antitrust's traditional rules of liability. The experience in *IBM* tended to confirm the Chicago School's skepticism about the courts' capacity to identify genuinely exclusionary conduct and to reshape markets.

In the second part of chapter 1, we describe the convergence of political, theoretical, and competitive trends that persuaded the Antitrust Division to revive the tradition of the public monopolization enforcement by filing the *Microsoft* case. A new body of post-Chicago economics showed that some of the practices classical Chicago analysis found innocuous could be anticompetitive in specified circumstances. The most important of the post-Chicago theories for *Microsoft* was the theory of network effects and the related theory of path dependence, which economists developed during the years Microsoft emerged as a dominant supplier of computer software. The theory provided a key basis for the claim that Microsoft's responses to the introduction of the Netscape browser and the Java technology were predatory. Netscape itself first articulated this view in an extraordinary 1996 white paper making the case for government action against Microsoft. The story of anticompetitive effect in the white paper, which we call the guiding narrative, laid much of the groundwork for the government's case and Judge Jackson's eventual rulings on liability.

In chapter 2, we continue our positive account, analyzing the key rulings on liability and remedies in the government case, surveying the multitude of private lawsuits inspired by the government's victory, and describing the European Commission's closely related opinion on Microsoft's practices in the media player and server operating systems markets. Although much of this part of our account may be familiar to

antitrust insiders, most observers understandably have not kept track of the succession of opinions in the case on both liability and remedy, much less of the multitude of opinions in the follow-on litigation. Even for specialists, however, our presentation may shed new light on the issues and especially the judicial strategies used to resolve them. It will also provide a basis for our more detailed analysis of the issues of liability and remedy the litigation has raised. We show that the appellate court's insistence on record evidence and its refusal to condemn practices with obvious benefits to consumers doomed the guiding narrative, but also introduced inconsistencies that undermined the government's case in ways the court failed to acknowledge. We also show that the court applied a lenient standard of proof of anticompetitive effect to Judge Jackson's liability rulings, but a stricter standard to his remedial order. That strict standard ruled out structural remedies and limited the extent of conduct remedies. Finally, we survey the legacy of the government case in the hundreds of private lawsuits in state and federal court and in the European Commission's *Microsoft* case.

We turn to our normative analysis in the remainder of the book. In chapter 3, we examine the markets at issue in *Microsoft*. We describe the warring concepts of the operating system and its relationship to middleware, such as the browser and Java, and then survey the economic concepts, particularly the theory of network effects, that guided the framing of markets. We then examine critically how courts defined the markets for operating systems and middleware.

In chapter 4, we analyze the courts' treatment of integration of the browser and the operating system. We identify three levels of integration—first, simple bundling of the browser and the operating system; second, preventing users and original equipment manufacturers from removing visible means of access to the browser; and third, commingling the code that provides the browser and the operating system's interface. We argue that the court properly blocked liability for simple bundling, the form of integration that most obviously benefits consumers, but wrongly upheld liability for the other forms of integration. The liability rulings were problematic primarily because of the absence of proof that these forms of integration harmed competition. In the final part of the chapter, we show that the court's own holding that the government failed to prove the existence of a browser market protected by network effects, among other factors, should have precluded a finding that integration was anticompetitive.

In chapter 5, we consider three other practices that played a central role in the litigation: Microsoft's alleged proposal to Netscape to divide

the browser market, its use of exclusive contracts, and its measures against Sun's Java. Although the court of appeals reversed the holding that Microsoft's proposal was attempted monopolization, it did so because of the government's failure to define a market for browsers. Thus, it never considered the proposal itself, even as background for the other alleged exclusionary actions. We reexamine the evidence of what occurred at the key meeting during which Microsoft's representatives proposed a cooperative arrangement to their Netscape counterparts, and we argue that, regardless of market definition, the proposal should not have been held unlawful. We find the treatment of the exclusive contracts the most justified part of the government's case because the exclusivity provisions had little apparent efficiency justification. Nevertheless, the effects of these contracts were probably minimal.

In chapter 6, we examine the remedies in the government case and in the follow-on litigation. We begin by showing why the courts in the government case properly rejected divestiture and other forms of structural relief. We then show how the courts eventually enjoined most, but not all, of the conduct specifically found to be anticompetitive. The court went beyond its focus on specific anticompetitive acts in its definition of covered middleware and in provisions requiring disclosure of communications protocols. Narrowly focused as the remedies are, they have brought about significant changes in Microsoft's competitive practices, both in contracting and software design. We compare the scrupulous approach to remedies in the U.S. case with the sweeping and troubling approach in the European case. We finally examine the follow-on private litigation, focusing on the obstacles to proof of harm, particularly to computer manufacturers and consumers. We criticize the routine certification of consumer class actions against Microsoft.

The analysis in this book builds on work we published earlier. Parts of chapters 1, 3, and 4, and 5 draw on *Antitrust on Internet Time: Microsoft and the Law and Economics of Exclusion*, 7 Sup. Ct. Econ. Rev. 157 (1999). Chapter 1 draws on *Microsoft and the Public Choice Critique of Antitrust*, 44 Antitrust Bull. 5 (1999). Chapter 3 draws on *Microsoft, Monopolization, and Network Externalities: Some Uses and Abuses of Economic Theory in Antitrust Decision Making*, 40 Antitrust Bull. 317 (1995). Chapter 4 draws on *The Dubious Search for "Integration" in the Microsoft Trial*, 31 Conn. L. Rev. 1251 (1999); and *The Price of Unanimity: The D.C. Circuit's Incoherent Opinion in Microsoft*, Antitrust Source, Nov. 2001, available at <http://www.abanet.org/antitrust/at-source/01/11/11-01.html>. Chapter 5 draws on *An Offer Netscape Couldn't Refuse? The Antitrust Implications of Microsoft's*

Proposal, 44 Antitrust Bull. 679 (1999). Finally, chapter 6 draws on *A (Cautionary) Note on Remedies in the Microsoft Case*, 13 Antitrust 25 (1999); *Devising a Microsoft Remedy That Serves Consumers*, 9 Geo. Mason L. Rev. 691 (2001); *Who Suffered Antitrust Injury in the Microsoft Case?* 69 Geo. Wash. L. Rev. 829 (2001); and *Class Certification in the Microsoft Indirect Purchaser Litigation*, 1 J. Competition L. & Econ. 303 (2005).

We owe a debt to our former professors and their colleagues and predecessors at the University of Chicago Law School who founded and developed the Chicago School of antitrust analysis. We have discussed ideas in this book over the years, at various stages of development and in various settings, with many of our past and present colleagues at the University of Florida Levin College of Law and the University of South Carolina School of Law, and with scholars at other institutions, including Jonathan Baker, Roger Blair, Craig Callen, Ronald Cass, the late Donald Dewey, Andrew Gavil, Robert Lande, Stan Liebowitz, Stephen Margolis, David McGowan, and Michael Vita. We especially thank David S. Evans and two anonymous reviewers, who read the entire manuscript and made many useful suggestions. And we thank Lisa Wehrle for her patient and skillful editing. Page presented earlier versions of parts of this book at the law schools of George Washington University, the University of Connecticut, and the University of Western Ontario; Lopatka presented parts at conferences sponsored by George Mason University School of Law and the Independent Institute. Both of us received useful comments from many participants at these conferences. Lopatka was on the faculty of the University of South Carolina School of Law while we were writing the original draft of the book, and we are grateful for research support from that institution as well as from the University of Florida Levin College of Law and the Pennsylvania State University Dickinson School of Law. Finally, we thank Judith W. Page and Marie T. Reilly for their encouragement and patience during this project.

1

Origins

United States v. Microsoft is part of a long tradition of public monopolization enforcement that began in the late nineteenth century and gained a renewed urgency in the latter years of the New Deal. That tradition, however, was interrupted in the early 1980s, when the Antitrust Division of the U.S. Department of Justice voluntarily dismissed its case against IBM and settled its case against AT&T. Those administrative decisions reflected the influence of the Chicago School of antitrust analysis, which had cast doubt on populist ideas about the consequences of large firms' competitive practices, ideas that had shaped the law of monopolization, especially since the New Deal. Cases in the post–New Deal era had seemed to condemn firms that succeeded too well by achieving dominant market shares without any taint of predation. After the *IBM* case, courts and enforcement officials endorsed hard competition even by dominant firms. *Microsoft*, however, revived the tradition of the public monopolization case. A confluence of trends in economic theory and in high technology markets made complaints about Microsoft's competitive strategies both plausible and important.

Ideological Sources of Antimonopolization Law

Congress passed the Sherman Act in 1890 in response to vast business combinations known as trusts that had emerged in an earlier “new economy,” the period of explosive growth in industry and transportation that followed the Civil War.¹ The records of the congressional debates on the statute, though voluminous,² tell us little about its meaning and purpose. Congress evidently saw the trusts as a problem, but understood the problem poorly and had no clear idea how to solve it.³ The eventual statute prohibited “monopolization”⁴ along with contracts, combinations, and conspiracies “in restraint of trade.”⁵ These terms echoed the language of the ancient common law of monopolies and restraints of trade,⁶ but delegated to the federal courts the daunting task of formulating more specific standards of liability and determining which practices violate them.⁷ As Senator John Sherman admitted, the meaning of the act “must be left for the courts to determine in each particular case.”⁸

Congress did intend to make one innovation—public and private rights of action. Under the common law, courts generally declined to enforce agreements in restraint of trade; a few states went further, revoking the corporate charters of monopolistic combinations.⁹ But the law offered no right of action for damages or injunction to those injured by illegal restraints. The Sherman Act, in contrast, made monopolization and restraints of trade both crimes and civil wrongs and authorized public and private enforcement actions in federal court. The public civil remedy presumably was included to provide a weapon against large-scale combinations such as the trusts, whose resources dwarfed those of other private litigants. Whether intended or not, the public monopolization case became a primary instrument of economic and social policy.

Unfortunately, as we will see shortly, many public monopolization cases have actually inhibited competition, the very process they were supposed to foster. In this respect, they have exemplified the phenomenon Robert Bork famously called the “antitrust paradox”¹⁰—the historical tendency of antitrust law to work against its own ideals. Public choice scholars have sought to explain this paradox by arguing that the Sherman Act, despite its public interest guise, was enacted to protect inefficient firms. One scholar, for example, argues that the Sherman Act must have been passed to protect small firms from the more efficient trusts because most trusts formed in markets in which output was increasing and prices were declining.¹¹ Other scholars have found evidence that agricultural interests exerted much of the political pressure for

enactment of state antitrust legislation.¹² These studies shed light on the political origins of an undeniable protectionist theme in antitrust law. They do not, however, show that the collective purpose of a unanimous Congress in passing the Sherman Act was to protect special interests.

Neither the legislative history nor the broad language of the statute identifies special interests that would predictably benefit from its enactment. As leading public choice theorists have conceded, “Unlike occupational licensing requirements and many other forms of public regulation whose winners and losers are easy to identify, antitrust does not consistently promote the interests of any single, narrowly defined constituency.”¹³ This characteristic of the statute undermines the public choice account of its origins, if not its application in particular cases. Antitrust is “a policy without a constituency,”¹⁴ unless, as we contend, that constituency is simply consumers. Congress was unable to resolve many of the fundamental issues the trusts raised and responded by transferring the question to the courts.¹⁵ Like much vague regulatory legislation, the antitrust laws represent an effort by Congress to do something about a politically charged social problem, while leaving the most difficult policy choices to others. It is particularly unlikely that the Sherman Act’s delegation of responsibility was protectionist because Congress knew that it was placing the interpretation of an open-textured statute in the hands of an independent federal judiciary ideologically predisposed to *laissez-faire* social policies.

Ideology played a crucial role in the origins of antitrust. In creating its antitrust regime, Congress drew on two conflicting ideologies of government and the market.¹⁶ These systems of belief are rooted in the eighteenth century, but they had vigorous proponents in the era of the trusts¹⁷ and remain equally influential to this day in shaping perceptions of market outcomes and public policies, including antitrust. One of these ideologies, which we call the evolutionary vision, holds that free markets, framed by common law rules of property and contract, aggregate the preferences of countless consumers and producers, and eventually produce socially optimal and therefore legitimate outcomes that government should disturb only rarely.¹⁸ The other ideology, which we call the intentional vision, holds that markets reflect the conscious choices of powerful firms and produce unfair outcomes that a democratic government must at least supervise closely.¹⁹ The Sherman Act combined elements of both visions. It authorized the government to intervene in markets, but only temporarily and only in infrequent instances in which practices had undermined the market’s self-correcting mechanisms.²⁰ A

judge in antitrust's formative period recognized Congress's ambivalence toward general regulation of the economy:

Congress wished to preserve competition because, among other reasons, it did not know what to substitute for the restraints competition imposes. It has not accepted the suggestions of some influential men that the control of a certain percentage of industry should be penalized. It has not yet been willing to go far in the way of regulating and controlling corporations merely because they are large and powerful, perhaps because many people have always felt that government control is in itself an evil, and to be avoided whenever it is not absolutely required for the prevention of greater wrong.²¹

The evolutionary and intentional visions have influenced public antitrust enforcement for more than a century, both in the government's decisions to sue and in the courts' resolution of cases. Because of the statute's conflicting ideological origins, partisans of the competing ideologies have long advocated their favored interpretations of it. Predictably, the opposing sides in the debate have endorsed very different standards for evaluating business practices like those at issue in the *Microsoft* litigation. Both visions were less sophisticated than they have become in recent decades, as antitrust law has relied more explicitly on economics. The policy implications of the visions have changed as economic theory has formalized the intuitions of one vision or the other.

Nevertheless, the two visions of markets and the role of government are evident in cases throughout antitrust history. Cases from the earliest periods of antitrust continue to be cited as precedent in cases in which experts testify to theories based on the most advanced economics. So it is no anachronism to examine the cases of every period in light of modern economics, as we do in this chapter. Some of the most influential works of antitrust scholarship have reexamined the records in early cases, enriching our understanding of the practices involved and influencing the precedential value of the cases.²² Our application of the standard of economic welfare to the history of the public enforcement action draws on these studies and provides a foundation for a clearer understanding of *Microsoft*.

Microsoft's Predecessors: The Public Monopolization Case

The United States has filed more than 270 monopolization cases,²³ the first on October 13, 1890, scarcely three months after the antitrust law

was enacted.²⁴ By the end of the twentieth century, however, the public monopolization case had fallen into disfavor. Scholars and antitrust enforcers came to see that monopolization cases involve a paradox, if not an outright contradiction: they attack the conduct of firms that have succeeded in the marketplace by providing products that consumers wanted.²⁵ The benefits of these cases are often uncertain, and the costs are always enormous. A case might eliminate a welfare loss caused by the defendant's monopolistic conduct, but in many instances a dynamic market would accomplish the same goal without government intervention. By the time the case is over, the court may be asked to restructure an industry that has already restructured itself.²⁶ Judge Colleen Kollar-Kotelly aptly observed in *Microsoft* itself that crafting a remedy for an innovative market was like "trying to shoe a galloping horse."²⁷ A case may also establish a beneficial rule that deters anticompetitive conduct in other markets, a spillover effect that is of particular concern to the government. But, as we will see, public monopolization cases have not produced rules of sufficient clarity to provide much guidance in subsequent cases.

Whatever the benefits of public monopolization cases, they are often outweighed by the costs. Because of its size and complexity, a major monopolization case entails enormous direct costs of litigation to both the enforcers and the defendant. The indirect costs, moreover, may be even greater. Litigation diverts the attention of employees from productive activities and casts a cloud of legal suspicion that may undermine the defendant's business relationships. These costs multiply as the case drags on and expands to encompass new issues. Any eventual remedy invariably entails its own direct and indirect costs.²⁸ Dissolution of the defendant, especially, may destroy economies of scale and dilute the benefits of managerial expertise.²⁹ The costs of suit also include the risk of error, which may be significant given the complexity of antitrust standards. Even if the government is right about some of the offender's practices, the resulting decision may chill productive practices that come under suspicion because they resemble the illicit conduct.³⁰

This description of the costs and benefits suggests that a public enforcement agency should bring a monopolization case only in extraordinary circumstances. The government should have a credible theory that the defendant's conduct is anticompetitive; that theory should be more consistent with the reasonably available evidence than any benign explanation; and there should be a practical and foreseeable judicial remedy that could end the conduct and restore competition faster or more effectively than will market forces.³¹ Judged by these standards, large-scale

monopolization cases have been more obviously harmful to consumer interests than any other form of antitrust enforcement. Courts in these cases have often erred in defining markets and identifying exclusionary practices and have granted relief that made markets less competitive rather than more so. Many of these shortcomings foreshadowed *Microsoft*.

Early Enforcement: The Attack on the Trusts. Because of restrictive early interpretations of the scope of congressional power under the commerce clause, prosecutions of trusts achieved few victories until the early years of the twentieth century, when Theodore Roosevelt placed trust busting at the center of his economic program. Roosevelt advocated antitrust as a less intrusive social policy than the more extreme populism of William Jennings Bryan and Robert La Follette, who argued for legislatively imposed limits on market shares.³² The Supreme Court's treatment of the early challenges to the trusts became a central feature of the formative period of antitrust doctrine.³³ That period, however, was also the *Lochner*³⁴ era in constitutional law, in which the Supreme Court invoked freedom of contract as a limitation on legislative power. Not surprisingly, the same laissez-faire outlook influenced the treatment of public monopolization cases.

In the most celebrated of Roosevelt's forty-five public antitrust cases, the government won an order dissolving the Standard Oil Company.³⁵ Chief Justice Edward Douglass White's opinion for the Supreme Court reconciled his own laissez-faire perspective with this dramatic intervention in the market by identifying in the common law and legislative history of the Sherman Act an awareness of the self-correcting character of the free market. For White, the role of government under the Sherman Act was to assure that the market functioned properly to eradicate abuses by prohibiting only a small subset of restraints that inhibited free exchange. The common law defined *monopoly* narrowly to encompass only an exclusive privilege granted by the government.³⁶ Early English prohibitions on "engrossing, forestalling, and regrating"—efforts of middlemen to acquire and resell goods—were repealed,³⁷ White believed, because the law came to recognize "the inevitable operation of economic forces and the . . . balance in favor of the protection of the rights of individuals which resulted."³⁸ The Sherman Act likewise assured freedom of trade by prohibiting only *monopolization*, not monopoly itself, and only contracts in *unreasonable* restraint of trade. In these crucial distinctions, the act recognized "that the freedom of the individual right to contract when not unduly or improperly exercised was the most

efficient means for the prevention of monopoly.”³⁹ This language echoed the view of some of White’s contemporaries that, without state support, a “monopoly exists only as long as other citizens choose to keep out of the business.”⁴⁰

Despite his faith in the market, White affirmed the district court’s ruling for the government and its sweeping remedial order. White thought Standard’s acquisition of 90 percent of U.S. oil production was so extraordinary that it justified a presumption that it occurred, not by “normal methods of industrial development, but by new means of combination . . . the whole with the purpose of excluding others from the trade”; that presumption was “made conclusive” by evidence of exclusionary acts such as predatory pricing and exclusive contracts.⁴¹ Thus, White was able to conclude, in part by the aid of his presumption, that the combination was the result of coercive means and not voluntary combinations that left the remaining actors free to form contracts.

White did not explain how Standard’s practices were different from “normal” competition, other than by Standard’s apparent intent “to drive others from the field and to exclude them from the right to trade.”⁴² As others have observed, this standard is all but meaningless because firms may properly and intentionally bankrupt their rivals by superior efficiency and innovation.⁴³ Despite the vacuity of this standard, however, White’s intuition about Standard’s conduct was not wholly incorrect: modern analyses have suggested that Standard Oil did not employ predatory pricing successfully,⁴⁴ but did effectively impose disproportionate transportation costs on its competitors by enforcing a horizontal conspiracy, first among railroads, then among railroads and the Standard pipeline network.⁴⁵

Even though Standard acted predatorily, the public monopolization case against it may not have advanced economic welfare because of the very self-correcting market forces that White identified. In retrospect, at least, we can see that the remedy the Court ordered accomplished little beneficial to consumers that would not have occurred in any event. The order dissolved Standard into the firms it had acquired,⁴⁶ thus creating thirty-four local monopolies owned by Standard’s shareholders.⁴⁷ But by that time, Standard had already lost much of its grip on the industry. The demand for petroleum products was burgeoning, and Standard, which dominated oil production in the East, did not control the vast new oil fields discovered in the South and West.⁴⁸ Between 1900 and 1912, Standard’s shares of domestic crude oil supplies, refinery capacity, and refined product sales all dropped dramatically.⁴⁹ One study found “no evidence” the decree “had a significant effect on output or prices

in the U.S. oil industry.”⁵⁰ *Standard Oil* was thus a case—the first of many—in which the industry outran the legal system. Nor could the costs of pursuing and implementing relief be justified by benefits external to the market, because Chief Justice White’s opaque standard of monopolization offered little guidance for future cases. Thus, the most famous and often-cited public monopolization case of the formative period did little for the consumer interest.⁵¹

Courts in other monopolization cases of the era could tell when the market had overtaken the litigation. In *American Can*, for example, a Maryland district court recognized the defendant’s monopolistic practices but expressed reluctance “to destroy so finely adjusted an industrial machine as the record shows the defendant to be.”⁵² The defendant had long ceased its illegal conduct, instead using its size “rather for weal than for woe.”⁵³ It had become apparent that American Can’s size brought many benefits of quality, scope, and standardization that its customers wanted, while present competition and potential entrants held its monopoly power in check. The court realized it was impossible to restore the conditions that had existed ten years before. Consequently, the court declined to dissolve the defendant, but retained jurisdiction to do so if the relief later appeared necessary.

Revival and Catastrophe: From *Alcoa* to “the Antitrust Division’s Vietnam.” The Great Depression, like the rise of the trusts, tested the faith of the public and policymakers in the ability of markets to correct themselves. During the New Deal, the intentional vision gained control of public policy. At first, Congress and the second President Roosevelt adopted direct forms of regulation through agencies like the National Recovery Administration, which suppressed competition and fostered planning and collaboration among competitors.⁵⁴ During the so-called Second New Deal of the late 1930s, however, the Roosevelt administration turned away from corporatist models of regulation and toward antitrust as its primary vehicle for economic transformation. Although the administration’s “antitrusters” expressed the prevailing hostility to big business and unregulated markets, they rejected centralized state planning in favor of an aggressive policy of antitrust enforcement.⁵⁵

In the ensuing years, until the end of the Warren Court, the intentionalist mindset governed antitrust enforcement policy and the Supreme Court’s antitrust decision making. Far from viewing markets as normally self-correcting, antitrust enforcers and a majority of the Court accepted the intentionalists’ view that markets commonly tended toward monopoly unless checked by government controls. Congress also accepted the

view that the economy was being swamped by a rising tide of industrial concentration and responded in 1950 by enacting the Cellar-Kefauver amendments to section 7 of the Clayton Act.⁵⁶ The stamp of this formalistic version of the intentional vision was apparent in the proliferation of new rules of per se illegality for practices like tying arrangements and other vertical restraints.⁵⁷ It was also apparent in public monopolization cases, in which both the Antitrust Division and courts at times relied on antitrust to shelter small firms, even if it meant hindering the competitiveness of large ones.⁵⁸

In the famous *Alcoa* monopolization case in 1945, for example, Judge Learned Hand held that a dominant firm could illegally monopolize a market by stimulating new demand for its products and meeting the new demand with increased productive capacity.⁵⁹ Unlike the Standard Oil trust, which grew by a series of acquisitions of rivals, Alcoa had achieved its position by internal growth after a period of patent protection that had ended in 1912. Even though Alcoa manufactured 100 percent of domestically produced virgin aluminum ingot, whether it had monopoly power was unclear because recycled aluminum and the threat of increased imports at least to some extent constrained its prices.⁶⁰ Nevertheless, Judge Hand excluded these sources of competitive aluminum from the defined market and concluded that Alcoa's market share was 90 percent.⁶¹

Still more questionable was Judge Hand's characterization of Alcoa's conduct in achieving its position. Alcoa had not engaged in any inefficient or predatory conduct, such as foreclosing potential rivals from raw materials,⁶² but, for Judge Hand, even "honestly industrial" conduct could be exclusionary if the firm actively sought its monopoly position.⁶³ He could "think of no more effective exclusion than progressively to embrace each new opportunity as it opened, and to face every newcomer with new capacity already geared into a great organization, having the advantage of experience, trade connections and the elite of personnel."⁶⁴ He acknowledged the paradox that aggressive competition could bring a monopolist into conflict with a law designed to promote competition, but suggested that any perverse consequences of the law's strictures were justified by the social benefits of preserving small, independent businesses. Congress in passing the Sherman Act was not "actuated by economic motives alone," but by a belief that "great industrial consolidations are inherently undesirable, regardless of their economic results," because of "the helplessness of the individual before them."⁶⁵ Consequently, Judge Hand adopted a standard of monopolization that condemned firms that achieved monopoly power by any active means,

subject only to an “exception” for firms that “do not seek, but cannot avoid, the control of a market.”⁶⁶

Hand’s intentionalist view of markets had important implications for the remedy. The country was at war during the five years between the close of evidence at trial and the decision on appeal in 1945. Recognizing that the record evidence no longer reflected the state of the industry, Judge Hand refused to rule on the government’s request for an order of dissolution to be executed after the war.⁶⁷ Though he approved enjoining Alcoa from engaging in certain conduct at the periphery of the case,⁶⁸ he remanded the request for dissolution to the district court with instructions to wait until after the war to determine whether dissolution would then be proper—as a “remedy,” not a “penalty.”⁶⁹ As part of the war effort, the United States had constructed aluminum plants,⁷⁰ which it leased to three companies, including Alcoa.⁷¹ Judge Hand recognized that the government agency responsible for disposing of surplus properties would take into account competitive concerns when discharging its duties.⁷² It did so by canceling Alcoa’s leases⁷³ and conveying nearly all of the plants to Reynolds Metals and the predecessor of Kaiser Aluminum.⁷⁴ In 1950, the district court denied the government’s petition for divestiture, but retained jurisdiction over the case to determine whether the new firms would be effective competitors during the following five years.⁷⁵ In 1957, the court rejected the government’s argument that Reynolds and Kaiser had not yet proven their ability to compete.⁷⁶

The government demonstrated good sense in not requesting immediate dissolution of Alcoa during the war upon entry of the appellate court’s decision, even if it acted merely out of the recognition that seeking immediate dissolution would have been politically suicidal. But requesting an order of dissolution to be executed at war’s end; pursuing divestiture in 1950, after competition had emerged; and attempting to hold onto the case in 1956 made little sense. The decree did not result in lower prices than would have obtained in the absence of the monopolization case.⁷⁷

Around the time *Alcoa* was winding down following World War II, the government sued United Shoe Machinery Corporation. United provided machines to shoe manufacturers only under long-term leases, an arrangement that, United contended, enhanced quality and efficiency. Decades before, the Supreme Court had held that many of the leases’ restrictive terms did not violate section 1 of the Sherman Act.⁷⁸ In the postwar case, however, the district court held that the leases had illegally preserved United’s monopoly, even though they were not intentionally

predatory and did not independently violate section 1.⁷⁹ In a famous opinion, Judge Wyzanski reasoned that the lease-only policy, together with other restrictive terms, blocked entry into the shoe machinery industry by locking in United's customers and preventing them from switching to other suppliers.⁸⁰ A rival would have to "be prepared for consumers' resistance founded on their long-term, satisfactory relations with United, and on the cost to them of surrendering United's leases."⁸¹ Echoing Judge Hand's *Alcoa* opinion, Judge Wyzanski held that "when control of the market has been obtained in large part by such leases, the market power cannot be said to have been thrust upon its holder through its own skill, energy, and initiative, or through technological conditions of production and distribution, or the inevitable characteristics of the market."⁸²

The exclusionary character of the lease-only policy, however, turns out to be far less clear than Judge Wyzanski found. The *sale* of a durable good like shoe machinery would also have locked in the customer for the useful life of the product.⁸³ The producer cannot compel customers to accept leases longer than the useful life of the product without reducing the profit-maximizing price. Judge Wyzanski seemed to assume that United could both exercise its monopoly power by exacting monopoly profits and impose restrictive terms that "unnecessarily" excluded rivals, all without engaging in outright predation. Later scholarship has confirmed that United's leasing patterns economized on the transaction costs of exchange and dispute resolution.⁸⁴

Because the court asked the wrong questions, no one today can know for sure if the leases were exclusionary or efficient. But the aftermath of the case almost certainly hurt consumers. Judge Wyzanski had wisely rejected the government's proposed remedy of dissolution on the ground that United was a single productive facility: "United conducts all machine manufacture at one plant in Beverly [Massachusetts], with one set of jigs and tools, one foundry, one laboratory for machinery problems, one managerial staff, and one labor force. It takes no Solomon to see that this organism cannot be cut into three equal and viable parts."⁸⁵ More than a decade later, however, the government again petitioned to dissolve United because it continued to dominate the market.⁸⁶ Judge Wyzanski rejected the petition on the ground that the decree need not have actually created workable competition, but only have dissipated the effects of the acts he had found illegal.⁸⁷ The Supreme Court reversed, however, insisting that "it is the duty of the court to prescribe relief which will terminate the illegal monopoly,"⁸⁸ even though United had acquired its monopoly lawfully. In 1971, United acceded to a consent

decree that required it to divest further assets to reduce its market share. It was later acquired by a larger firm and closed in 1987. Though the remedies imposed by the courts certainly reduced United's market share, there is no evidence that they reduced prices or stimulated innovation.⁸⁹

A smaller but more justifiable public monopolization case filed during the postwar period was *Lorain Journal Co. v. United States*,⁹⁰ which has had doctrinal influence far out of proportion to the trivial amount of commerce it involved. A daily newspaper that had long "enjoyed a substantial monopoly" of advertising⁹¹ in a small Ohio town adopted a policy of refusing to sell advertising space to local merchants who also advertised over the only local radio station, WEOL.⁹² The Court held the newspaper's policy was an attempt to monopolize the market for local advertising⁹³ by cutting off WEOL's revenue stream and thus eliminating it as a competitor.⁹⁴ *Lorain Journal* is the rare monopolization case that nearly all commentators endorse.⁹⁵ It was often invoked in arguments in *Microsoft*. Nevertheless, the anticompetitive explanation of the newspaper's conduct is not as clear as most commentators have supposed.⁹⁶

If the newspaper was trying to eliminate a competitor, it was doomed to failure. The newspaper's policy never threatened to drive WEOL out of business⁹⁷ because it affected only half of a market segment that accounted for less than a third of WEOL's revenue.⁹⁸ A more satisfactory explanation for the practice may lie in the differences between advertising that is informational, or fact-intensive, and advertising that merely notifies consumers of events like sales.⁹⁹ The newspaper had a monopoly in the sale of informational advertising, but the radio station was an effective competitor in the sale of notice advertising. The exclusive sales policy effectively tied the sale of the two products, inducing merchants who wanted both to purchase them from the newspaper. Such a tie might be monopolistic if it eliminates competition in the notice advertising market and allows the newspaper to exploit merchants who want only that kind of advertising.¹⁰⁰ But this explanation depends on elimination of the competitor in the notice advertising market, and WEOL was never in danger of going under. Another possibility is that the newspaper employed the tie to assure that it offered an efficient mix of informational and notice advertising¹⁰¹ or for some other benign reason.¹⁰²

The newspaper, however, failed to offer a credible efficiency explanation for its policy.¹⁰³ The case thus attacked a practice that facially harmed competitors without providing an obvious benefit to consumers. Moreover, the remedy simply enjoined the newspaper from using the exclusive advertising policy and required it to notify readers that the

policy was no longer in force.¹⁰⁴ The only controversy surrounding the remedy concerned its constitutionality under the First Amendment, not its economic effects. *Lorain Journal* may have been incorrectly decided, and the economics of the challenged practice were certainly not well understood. But this kind of public monopolization case—a case that is litigated quickly, challenges a specific practice that appears exclusionary and unjustified, and results in a modest decree prohibiting the practice—deserves little criticism.

By contrast, the *IBM*¹⁰⁵ case, filed in January 1969 against the leading firm in the computer industry of the day, was misguided in many ways. The government alleged that IBM had monopolized a market of general-purpose digital computers, mainly through the marketing of its popular System/360 family of mainframe computers. The government claimed that though IBM had lawfully acquired its dominant market share,¹⁰⁶ it had maintained that share by predatory pricing, bundling hardware, software, and support services, prematurely announcing new products, and granting discriminatory price discounts to educational institutions, all aimed at excluding rival computer manufacturers.¹⁰⁷ The government later amended its complaint to allege that IBM monopolized computer “systems” and various submarkets by using similar practices to exclude peripheral equipment manufacturers.¹⁰⁸ Most of the practices challenged, however, were efficient responses to consumer demand and the actions of competitors. For example, the government claimed that bundling hardware, software, and support services for sale at a single price erected entry barriers by locking customers into IBM products. But the practice, which customers wanted and all computer manufacturers used, was more likely an efficient method of stimulating demand by allocating to the supplier some of the risks associated with a new product. In any event, the focus of the case on IBM’s bundling became obsolete as the industry shifted during the 1970s to a microcomputer standard characterized by modular designs.¹⁰⁹

Its theory aside, the *IBM* litigation was a study in breathtaking excess.¹¹⁰ Discovery lasted six years. Trial consumed 700 days during the course of nearly seven years, and featured 87 live witnesses, more than 100,000 pages of transcript, and 17,000 exhibits. During 70 trial days, transcripts of the testimony of 860 deposition witnesses were read aloud to an empty bench. In one legendary episode, IBM’s counsel, David Boies, cross-examined Alan McAdams, the lead government economist, for 38 days. The government estimated that it spent \$16.8 million, not including expert witness fees, litigating the case; the defendant estimated that the total annual cost to all parties was between \$50 million and \$100

million, in addition to the incalculable indirect costs of litigation. In 1982, the government voluntarily dismissed the case. It was a miserable defeat that led Robert Bork to describe the experience as “the Antitrust Division’s Vietnam.”¹¹¹

Perhaps the greatest failing in *IBM* was the government’s proposal for structural relief. Even when the case was filed, industry participants commonly believed that such relief would be ineffectual or even counterproductive.¹¹² A radical restructuring of *IBM* threatened to destroy the efficiencies that made the firm innovative. Any benefits from such a remedy would likely have been achieved by competition itself in such a dynamic market.¹¹³ If the government failed to foresee the pace of market progress at the beginning of the litigation, it surely should have realized that the proposed remedy had become obsolete long before it dismissed the case.

Eclipse: The Chicago School Critique of Monopolization Standards. The repeated failures of public monopolization enforcement demonstrate the shortcomings of the law’s definition of monopolization. As we have explained, the leading monopolization cases of every era relied on vague standards, often to condemn efficient practices. Three years before the *IBM* case was filed, the Supreme Court in *United States v. Grinnell Corp.* had settled on the canonical statement of the offense of monopolization: the plaintiff must show “(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.”¹¹⁴ Though courts still routinely cite this formulation in monopolization cases, it is not very helpful in practice.

The most important function of a standard of liability in a monopolization case is to define the burdens on the parties: what the plaintiff must prove to support a finding that the defendant’s conduct was exclusionary, and what, if anything, the defendant must prove to justify its actions. The language of *Grinnell* seems, at least, to foreclose *Alcoa*’s placement of these burdens. Recall that there, Judge Hand permitted the government to prove exclusion merely by showing that *Alcoa* had expanded output to meet new demand. Judge Hand insisted that *Alcoa* could escape liability only by showing that its actions were passive or unavoidable. *Grinnell*’s reference to “superior product” and “business acumen” apparently approves active competition. Yet, beyond this minimum, the language does little to help courts characterize complex practices as exclusionary or as legitimate competition. In *Microsoft*,

both the district court and the court of appeals cited the *Grimmell* standard, even though they placed the burdens on the parties in very different ways.

In practice, the most important determinant of the placement of the burdens is the court's perception of how markets normally function and how a single firm might come to dominate one. Cases like *Alcoa* and, to a lesser extent, *United Shoe Machinery* rest on the intentionalist view that dominant firms often sustain their monopoly power by actions that would be legitimate if adopted by firms in competitive markets, but that are exclusionary when adopted by the dominant firm.¹¹⁵ The cases also display great confidence that courts can identify, enjoin, and penalize this sort of conduct without imposing undue costs or deterring innovation and productive efficiency. In this view, proof that a firm has achieved persistent monopoly power at the expense of its rivals should shift the burden to the firm to justify its actions by establishing one of a handful of narrow defenses.¹¹⁶

Although this view of section 2 was widely held when *IBM* was filed in 1969, it was in retreat by the time the case was dropped in 1982, largely because of a renewed evolutionary critique developed by scholars associated with the University of Chicago.¹¹⁷ In the Chicago School view, firms normally become dominant through superior efficiency; a firm can maintain a durable, inefficient monopoly only in the rare case of overt predation. Moreover, courts have only limited capacity to distinguish truly predatory means of achieving monopoly from efficient ones, and their mistakes are likely to be costly. At the core of the Chicago School's critique were models of practices, like tying arrangements, exclusive dealing contracts, and predatory pricing, that the courts and enforcers of the post-New Deal era had thought exclusionary. The Chicago models showed that these practices were not often rational methods of acquiring or preserving monopoly power. Chicago scholars explained some of the practices as methods of increasing efficiency and others as methods of price discrimination and therefore not exclusionary.

The Chicago School advanced a policy program that condemned conduct—even by monopolists—only if it reduced economic efficiency, measured by the effect of the practice on total social wealth. The Chicago School's influence shifted the focus of antitrust liability from the protection of small business to the protection of consumers.¹¹⁸ Aggressive practices such as price cutting may well harm rivals, but, Chicago scholars argued, they should usually be lawful because they normally benefit consumers. Actions by dominant firms against their rivals should be

unlawful only if they also demonstrably harm consumers. In keeping with this tradition, we argue at some length in chapter 4 that the burden of proving, by theory and evidence, that a practice harms consumers should always be on the plaintiff.

The Chicago School has had enormous influence on the development of antitrust law generally.¹¹⁹ The watershed year was 1977, when the Supreme Court reversed the per se illegality of vertical territorial restrictions, specifically endorsing the Chicago view that these sorts of restraints could actually benefit interbrand competition by limiting free riding by a firm's dealers and encouraging them to provide costly services.¹²⁰ The Chicago critique's influence was also discernable in the Second Circuit's 1979 decision in *Berkey Photo*,¹²¹ which refused to condemn a dominant supplier of film and cameras for failing to predispose to smaller rivals its innovations in product design:

It is the possibility of success in the marketplace, attributable to superior performance, that provides the incentives on which the proper functioning of our competitive economy rests. If a firm that has engaged in the risks and expenses of research and development were required in all circumstances to share with its rivals the benefits of those endeavors, this incentive would very likely be vitiated. . . .

Because . . . a monopolist is permitted, and indeed encouraged, by § 2 to compete aggressively on the merits, any success that it may achieve through "the process of invention and innovation" is clearly tolerated by the antitrust laws.¹²²

The Chicago School had a dramatic and immediate effect on the public monopolization case through the exercise of prosecutorial discretion. William Baxter, a Chicago School antitrust scholar and Stanford law professor who became assistant attorney general for antitrust in 1981, dismissed the *IBM* case on the grounds that the government had not proven "significant instances of socially undesirable behavior."¹²³ He characterized the government's evidence of predatory pricing as "pathetic."¹²⁴ Consequently, for the government to win, section 2 would have to "be regarded as creating a status offense."¹²⁵ Equally important, he noted that the Second Circuit, which would hear any appeal in *IBM*, had recently decided *Berkey Photo*.¹²⁶ The government dropped the case in January 1982, stipulating that "the case is without merit" and that "continued litigation would offer 'little prospect of victory or meaningful recovery.'"¹²⁷ The court of appeals observed that "developments

in the industry since the commencement of the action . . . have rendered many of the underlying products commercially outmoded.”¹²⁸ The market had eliminated whatever justification there might have been for a conduct remedy, and structural relief had never been warranted.¹²⁹

The *AT&T* case, the last major public monopolization action before *Microsoft*, was filed in 1974 and ended in a 1984 consent decree (the Modified Final Judgment or “MFJ”)¹³⁰ that governed U.S. telephony until it was displaced by the Telecommunications Act of 1996.¹³¹ *AT&T* was compatible with Chicago School principles because of its regulatory setting. The Bell System had long held regulated monopolies of local and long distance telephony. Technological changes had made competition in long distance service feasible, while local exchange service remained a natural monopoly that was regulated under state law. But if the Bell System continued to operate in both markets as well as in the equipment market, it could evade local regulation and use its legally protected monopoly power in local exchange service to disadvantage rivals in unregulated adjacent markets to the detriment of rivals and consumers.

The MFJ separated regional Bell operating companies (RBOCs) from the rest of the Bell System and placed them under “quarantines,” limiting their ability to enter adjacent markets, particularly long distance, while other parts of the former Bell System were freed to compete in long distance and equipment markets. The breakup fostered competition by removing the RBOCs’ incentives to favor AT&T in long distance service and in equipment. Studies have shown that the decree stimulated competition and enhanced the efficiency of the RBOCs even more than deregulatory measures by the states.¹³² Richard Posner concludes that this divestiture was arguably “the most successful antitrust structural remedy in history.”¹³³ Nevertheless, the administration of the decree during a 12-year period was a major undertaking and cast the supervising federal district judge in the role of a regulator.¹³⁴ Arguably some of the benefits of the decree might have been obtained without divestiture through other measures, such as requiring equal access to local exchanges and deregulating output prices.¹³⁵

It is less widely known that the MFJ affected the market for operating systems at issue in *Microsoft*.¹³⁶ The 1956 antitrust consent decree that the MFJ technically modified had limited AT&T’s business to common carriage of communications services.¹³⁷ Consequently, when scientists at Bell Laboratories developed the Unix operating system in the early 1970s, AT&T at first chose not to exploit its intellectual property in the software and instead licensed it to universities for research.¹³⁸ As a result of these early divergent research efforts, several versions of Unix

emerged.¹³⁹ When AT&T began to assert its intellectual property rights, particularly after the MFJ removed its line of business restrictions, it was too late to reestablish order. Despite numerous lawsuits, many versions of Unix and clones of Unix, like Linux, exist to this day.¹⁴⁰ Whether the divergence in research paths in the early 1970s helped or hindered the development of Unix is not clear, but it is at least plausible that the government's 1956 consent decree hindered AT&T's ability to coordinate development of Unix and thus limited the acceptance of Unix as a standard.¹⁴¹

The Antitrust Division's actions in *IBM* and *AT&T* essentially ended the public monopolization case until the *Microsoft* investigations in the 1990s. But private cases alleging violations of section 2 continued to reach the Supreme Court during the interval. As we show in the next section, the Court did not resolve all of these cases using Chicago School models. In some, however, especially those involving predatory pricing, the influence of the Chicago School was pronounced. Recall that in the *Standard Oil* case, the government alleged that Standard relied in part on predatory pricing to maintain its dominance. Chicago scholars, however, have long argued that the practice rarely, if ever, is a plausible means of securing or maintaining monopoly power because it almost certainly would impose greater costs on the predator than the predator could hope to recapture in future monopoly profits.¹⁴² In 1986, the Court in *Matsushita*¹⁴³ endorsed this analysis.¹⁴⁴ It rejected a claim by U.S. producers that Japanese firms were conspiring to monopolize the U.S. market by predatory pricing, which they subsidized by charging cartel prices in the Japanese market. The Court further reasoned that the alleged predatory campaign made "no economic sense"¹⁴⁵ because the Japanese firms could never have expected to garner profits in the U.S. market that would compensate for the years of losses the plaintiffs alleged. The Court further reasoned that rules governing predatory pricing should be framed cautiously: "[C]utting prices in order to increase business often is the very essence of competition [and] mistaken inferences in cases [alleging this sort of predation] are especially costly, because they chill the very conduct the antitrust laws are designed to protect."¹⁴⁶

In 1993, the Court adopted an approach to predatory pricing claims that reflected the Chicago School skepticism and its own desire to avoid chilling competition. It held in *Brooke Group*¹⁴⁷ that plaintiffs alleging predatory pricing must show not only that the prices are below an "appropriate measure" of the defendants' costs, but also that there is a "dangerous probability" (that is, a coherent theory supported by evidence) that defendants could recoup their losses during the allegedly predatory

campaign by monopoly prices in the future. It emphasized that “[e]ven an act of pure malice by one business competitor against another does not, without more, state a claim under the federal antitrust laws.”¹⁴⁸ These requirements have made it extraordinarily difficult for plaintiffs, including the government, to survive summary judgment in predatory pricing cases.¹⁴⁹

The Court’s imposition of special burdens on plaintiffs in predatory pricing cases was part of an explicit reorientation of antitrust law toward protection of the consumer interest. Harm to rivals from competitive practices is relevant only to the extent it suggests harm to consumers. Price cutting benefits consumers, so it should be illegal only if it would lead to monopoly pricing, and the definition of the practice should err on the side of underinclusion. This reorientation is also apparent in the Court’s shaping of the law of attempted monopolization generally. In *Spectrum Sports, Inc. v. McQuillan*,¹⁵⁰ the Court required plaintiffs alleging attempted monopolization to show that the defendant’s exclusionary conduct posed a dangerous probability of success in achieving monopoly power.¹⁵¹ Even allegedly “unfair or predatory”¹⁵² actions aimed at harming rivals cannot harm competition generally unless the actions are likely to give the predator monopoly power. The Court emphasized that inferences of competitive harm are less appropriate for unilateral conduct than for concerted conduct.¹⁵³

Microsoft’s Beginnings: A Post-Chicago Convergence

As the sobering tale we have just told suggests, the federal antitrust agencies began their examination of Microsoft’s competitive conduct in the early 1990s in an antitrust environment that was deeply suspicious of market losers’ claims that their rivals had defeated them by anticompetitive exclusion.¹⁵⁴ To make matters worse, many believed that the economy was undergoing a fundamental change that rendered the antiquated tools of a nineteenth-century regulatory statute all but irrelevant to the high technology markets in which Microsoft operated, as Jeff MacNelly’s cartoon (fig. 1) suggests. But other trends were at work. It was widely believed, as Gary Trudeau’s cartoon (fig. 2) suggests, that Microsoft’s success had less to do with its innovative prowess than with depredations against rivals that recalled the days of the robber barons.

Microsoft’s rivals began a long-term, well-organized campaign to lobby the Antitrust Division to file suit. The complaints were not entirely foreclosed by the ambiguous law of monopolization, and indeed found some support in new economic theory. Though, as we have seen,

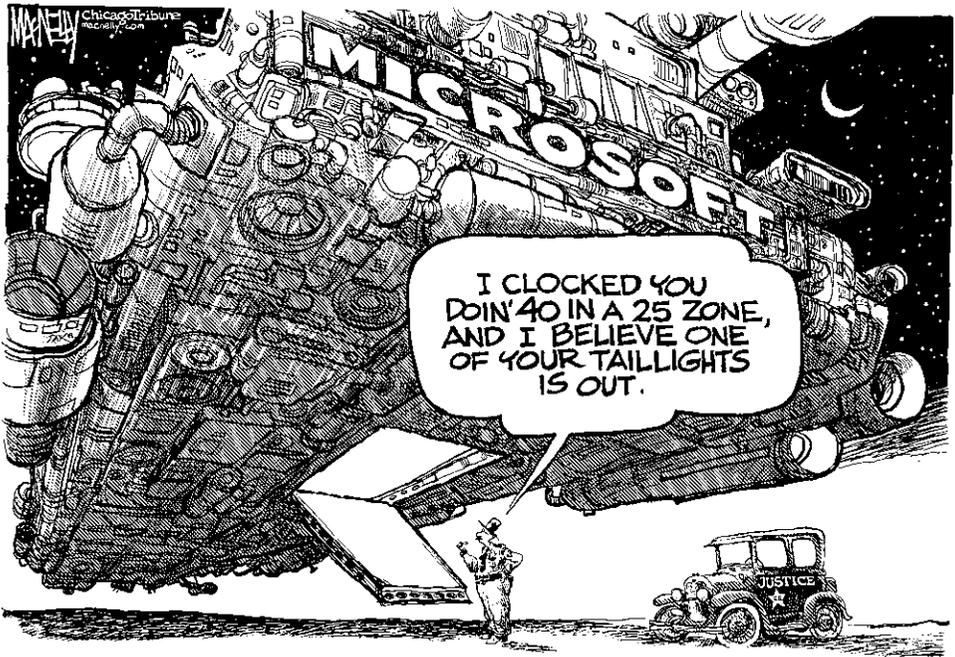


FIGURE 1 Jeff MacNelly political cartoon, November 11, 1999. © 1999 Tribune Media Services; reprinted with permission.

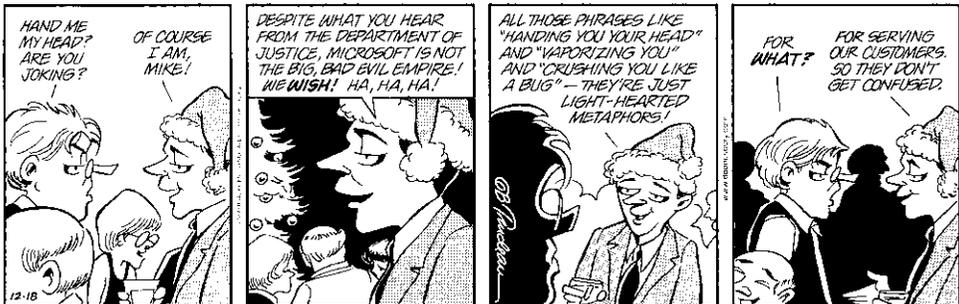


FIGURE 2 Doonesbury cartoon, December 18, 1999. Doonesbury © 1999 G. B. Trudeau. Reprinted with permission of Universal Press Syndicate. All rights reserved.

antitrust law began in the 1970s to accept the Chicago School’s legal prescriptions, it never fully embraced them. In the late 1980s, courts and scholars began to take notice of so-called post-Chicago theories that support liability in some instances in which the Chicago School had opposed it.¹⁵⁵ One important set of post-Chicago models was developed specifically to account for the distinctive characteristics of network markets, those in which the value of a good increases with the number of

users, including the ones in which Microsoft competed. These theories provided the conceptual basis for the 1998 government case against Microsoft.

Post-Chicago Theories of Monopolization. We explained in the last section that the Chicago School's analysis influenced both antitrust law and enforcement policy. In the domain of monopolization, Chicago ideas played a key role in the Antitrust Division's choices in the *IBM* and *AT&T* cases and in the reshaping of the law of predatory pricing. More generally, they contributed to the view that antitrust should not be concerned with the fate of rivals of dominant firms, except to the extent that the rivals' injuries were instrumental in harming consumers. Beginning in the 1980s, however, post-Chicago theories have challenged some of the more far-reaching assertions of the Chicago policy program. Post-Chicago analyses use sophisticated models, often involving game theory, to show that many of the practices Chicagoans had found benign could be anticompetitive after all, in carefully defined circumstances. The post-Chicago models thus formalize and justify some pre-Chicago prohibitions, albeit in qualified ways.

Interestingly, the most often cited post-Chicago victories in the Supreme Court have come in monopolization cases involving refusals to deal.¹⁵⁶ In *Kodak*,¹⁵⁷ for example, the Court held that a producer who sold copiers in a competitive market could have monopolized the "market" for repair of its copiers by refusing to sell replacement parts to rival service providers.¹⁵⁸ The Chicago analysis was that Kodak could not have real market power in a repair service market because it faced competition in the equipment market;¹⁵⁹ "a rational consumer considering the purchase of Kodak equipment will inevitably factor into his purchasing decision the expected cost of aftermarket support."¹⁶⁰ The majority, however, echoing both pre-Chicago notions of market coercion and post-Chicago concepts of network effects, held that Kodak's equipment customers were "locked in" and therefore might have been forced to accept inferior, overpriced service from Kodak.¹⁶¹ Similarly, in *Aspen*,¹⁶² the smaller of two ski area operators in Aspen, Colorado, alleged that the larger operator monopolized the market by refusing to continue participating in a popular joint pass on terms acceptable to the smaller firm and then hindering the smaller firm's efforts to offer substitute arrangements that would have made it easier for its customers to use the larger operator's facilities. The Supreme Court refused to set aside a jury verdict for the plaintiff, pointing out that the termination of the joint pass irritated many skiers. Moreover, the Court noted, after

the termination of the joint ticket, the defendant appeared to sacrifice short-run profits in its efforts to thwart its competitor, an action that would be rational only if the firm expected to recapture its losses by gaining greater monopoly power.¹⁶³

Notice that the Supreme Court ruled for the plaintiffs in these refusal-to-deal cases, but for the defendants in the predatory pricing cases, *Matsushita* and *Brooke Group*. This pattern suggests that, in evaluating the likely effects of alleged exclusionary practices on consumers, the Court gives greater weight to obvious and immediate effects than to theoretical predictions of more remote effects.¹⁶⁴ Because price wars necessarily benefit consumers in the short run, the Court has required plaintiffs to make an unusually strong showing that the low prices they challenge will harm consumers in the long run. In *Aspen* and *Kodak*, by contrast, the plaintiffs produced at least some evidence that consumers were unhappy in the short run with the defendants' refusals to deal with rivals. Consequently, the Court was unwilling to rule for the defendants as a matter of law, even though theory suggested that the defendant's conduct could not have reduced market output in the long run.

Microsoft was a quintessential post-Chicago case because it drew on a novel economic theory of network effects to support a claim of liability for product design decisions, tying arrangements, and exclusive dealing contracts, all practices long thought by Chicagoans to be efficient except in rare circumstances.¹⁶⁵ In advancing its case, the government faced the problem that many of Microsoft's actions benefited consumers in the short run by reducing prices and enhancing the functionality of widely used software. Indeed, the gist of the case seemed to be a form of predatory pricing. The new economic theory of network effects, however, provided a lens through which Microsoft's victories over its rivals appeared anticompetitive. The development of network effects theory paralleled the development of the very software markets in which Microsoft competed.

The Emergence of Microsoft, the Theory of Network Effects, and the Browser Wars. In 1980, not long before the government's dismissal of the monopolization case against it, IBM chose Microsoft to supply the necessary computer languages for the new IBM personal computer and picked Intel to provide the necessary microprocessors.¹⁶⁶ Digital Research famously refused, at first, to develop a version of its dominant CP/M operating system for the PC, so IBM asked Microsoft to develop one. Microsoft acquired the rights to a CP/M clone called QDOS, which it modified and licensed to IBM as MS-DOS. IBM, in turn, included it on its PCs as

PC-DOS. Though IBM sought to foster competition among operating systems by reaching licensing deals for CP/M and another operating system, MS-DOS emerged as the industry standard. It succeeded in part because the terms of its license allowed IBM to charge less for it.¹⁶⁷ In addition, however, Microsoft retained the sole right to license the operating system and did so (at very low prices) to manufacturers of clones of the IBM PC.¹⁶⁸

In the 1980s, Microsoft developed Windows, software that gave the user both a graphical user interface (GUI) with MS-DOS and the ability to execute several applications simultaneously.¹⁶⁹ With MS-DOS alone, a user could control a computer's functions only by typing textual commands at an on-screen prompt and was limited to running only one application at a time. To make computers more accessible to the non-technical consumer, the early versions of Windows, mimicking Apple's Macintosh,¹⁷⁰ created a graphic representation of a stylized desktop on the user's monitor.¹⁷¹ With a mouse, the user could click on-screen icons, buttons, and menus to execute commands in a more intuitive way than by using commands. Equally important, the new interface allowed multiple applications to run in their own "windows," which could be opened and closed or arranged on the screen to allow the user to switch easily among several applications. Though Windows demanded far greater computer memory, disk storage, and processing power, it proved a turning point in the emergence of the computer market and Microsoft's role in it. Version 3.1 of Windows, introduced in 1990, was an overwhelming success, and each new version of Windows has built on that early triumph by adding new capabilities.¹⁷²

As we show in chapter 3, the definition of an operating system would become a contentious issue in the *Microsoft* litigation. But the earlier versions of Windows were not operating systems by any definition because they relied on MS-DOS to control the critical internal functions of the computer. MS-DOS was sold and loaded separately; Windows provided a shell, or environment, that allowed the user to direct its functions.¹⁷³ In essence, Windows was a form of what would later be called "middleware"—software that functions between the operating system and applications.¹⁷⁴ Middleware has applications capability, but it also exposes its own applications programming interfaces (APIs) that allow developers of compatible software to take advantage of standard functionality in the middleware. Windows 3.1 was a particularly important form of middleware, not only because it provided an attractive shell for MS-DOS, but also because it promised to become the platform for most users' applications. Windows 95 (and later 98) purported to "integrate"

MS-DOS into Windows, and thereafter MS-DOS was no longer sold as a separate product. Nevertheless, the MS-DOS technology remained until the introduction of operating systems based on Windows NT technology, particularly Windows XP. Users, however, have not necessarily been aware of these changes because Windows has been the only visible platform. This trajectory of the Windows interface provided a plausible model for the evolution of other middleware platforms to displace an underlying operating system.

Microsoft has also produced successful applications software, including Word, Excel, PowerPoint, and Outlook, the components of Microsoft's Office suite of programs. In tandem with Windows, many, though not all, of Microsoft's leading applications have grown to dominate their markets. Windows itself has always included a number of simple applications, or applets, such as a rudimentary word processor, drawing program, and calculator. In later versions, Windows added other functions, such as screen savers, fonts, hardware drivers, file management and data recovery software, and data compression and disk maintenance utilities.¹⁷⁵ The most important addition to Windows, for both practical and legal reasons, has been its Web browser, Internet Explorer (IE),¹⁷⁶ which has become the most widely used browser, surpassing Netscape.¹⁷⁷

The economic theory of network externalities,¹⁷⁸ or more generally network effects, emerged at roughly the same time Microsoft began to dominate the operating system market. Indeed, economists formulated the theory in part to explain the emergence and periodic displacement of dominant standards like Windows in high-technology markets.¹⁷⁹ As we explain more fully in chapter 3, network effects are scale economies on the demand side. They arise when the user of a product receives not only the product's inherent benefit, but also a network benefit that increases with the number of other users of the product. A telephone network, for example, is more attractive if it is larger and thus allows a member of the network to communicate with more people. *Indirect* network effects can arise where complementary products are combined to form systems. The value of a hydrogen-powered car increases as the number of hydrogen filling stations increases.¹⁸⁰ Similarly a computer operating system is used with various complementary goods, especially applications.¹⁸¹ Software vendors tend to write applications for the most popular operating system to reach the largest market,¹⁸² and the greater availability of applications in turn induces new users to choose that operating system. This positive feedback loop may cause the market to

standardize on the product that gets the early lead in competition among incompatible standards. The theory even suggests that consumers may be locked in to a durable good with inferior intrinsic qualities, simply because of its enormous network benefits.

Microsoft's operating systems, many believe, became dominant at least in part because of network effects and closely related phenomena.¹⁸³ As we discuss in chapter 3, only recently have economists recognized the importance of the two-sided character of the operating system market—operating systems are effectively marketed both to application software developers and to end users. Microsoft thus has an incentive to invest in system services and promote them at extremely low prices to developers to enhance the attractiveness of its products to users. Under the pure network effects story, however, Microsoft gained a first-mover advantage because of the fortuitous licensing arrangement with IBM, and the market has followed the predicted path toward a single standard. This perception about the market has influenced the behavior of the firms in the market. Informed of the importance of the first-mover advantage, for example, firms in network markets eschewed profits for years to build a dominant market share and thus tip the markets in their favor.¹⁸⁴

Microsoft has stayed ahead of all of its rivals in the market for operating systems.¹⁸⁵ IBM's PC-DOS was essentially identical to MS-DOS in its early releases, but later diverged substantially and posed a competitive threat for a time. Digital Research, whose CP/M operating system once competed with MS-DOS as the operating system for the IBM PC, modified CP/M to be compatible with MS-DOS and named later versions of this operating system DR-DOS.¹⁸⁶ Version 5.0 of DR-DOS achieved some success, garnering 10 percent of new operating system sales in 1990. Both PC-DOS and DR-DOS, however, faded in importance with the development of Windows, amid allegations that Microsoft had hastened their demise by a variety of unsavory practices.¹⁸⁷ During the 1980s, IBM developed the OS/2 operating system in a partnership with Microsoft. (Interestingly, it was Microsoft's announcement of its alliance with IBM and its intention to deemphasize development of Windows that first attracted the attention of antitrust enforcement officials.)¹⁸⁸ But after a major technological breakthrough in the development of Windows, the partnership collapsed. IBM pursued development of OS/2, but its market impact dwindled to insignificance with the rise of Windows. In recent years, a few attempts have been made to develop a full operating system. The most important challenger to Windows is Linux, a product of the Open Software movement.¹⁸⁹ It has

begun to challenge Microsoft in the market for server operating systems, which we examine in chapter 3.¹⁹⁰

The threat to Microsoft that became the basis for the 1998 monopolization case, however, was not an operating system at all, but middleware, particularly the browser, which allows users with an Internet connection to visit sites on the World Wide Web. The Web's popularity increased dramatically after the development of the browser, a client program that permits a user to request a Web server to transmit Web pages, typically using a standard protocol called HTTP (Hypertext Transfer Protocol), to the user's computer.¹⁹¹ The user can view hypertext documents and graphics residing on Web servers and follow the hyperlinks that connect them. The first browser was Mosaic,¹⁹² some of whose developers formed Mosaic Communications, later renamed Netscape Communications, to market the browser.¹⁹³ That browser, Netscape Navigator, was posted free on the Internet in October 1994 and soon became the dominant browser in the market.¹⁹⁴ Once Navigator became established, Netscape began to charge for Navigator, at least in retail stores.

In its early years, at least one Netscape representative made extravagant claims that its browser would become the primary interface through which users operated their computers; the operating system would become a mere "plug-in," or ancillary utility.¹⁹⁵ The browser would have to be "ported," or tailored to each operating system, but applications would not. Bill Gates evidently took the prediction seriously, stating in the famous *Internet Tidal Wave* memo on May 26, 1995, that Netscape's product threatened to "commoditize" the underlying operating system by making it possible to write Internet-based applications to the browser's APIs that would run regardless of the underlying operating system.¹⁹⁶ Microsoft officials believed the threat was real, in part because they had internalized the lessons of the theory of network effects and in part because Netscape's optimistic narrative echoed the story of the rise of Windows itself, which began as middleware and eventually displaced the underlying operating system as the primary interface.¹⁹⁷

Microsoft responded to the threat in several ways. Most important, it introduced its own browser, built on the same foundation as Netscape's. In December 1994, Spyglass, Inc., a firm founded by other developers of Mosaic,¹⁹⁸ licensed Mosaic to Microsoft.¹⁹⁹ That browser became IE, the heart of Microsoft's aggressive Internet strategy. Netscape, of course, was the most direct target of the strategy. In early 1995, there were 5 or 6 employees in Microsoft's browser department; by 1999, there were

more than 1,000.²⁰⁰ One of the outcomes of these development efforts was the “componentization” of IE—breaking the various functions of the browser into separate libraries, which exposed APIs that software developers could use to link their products more seamlessly to resources on the Internet. In addition to its efforts at enhancing IE’s quality, Microsoft consistently distributed IE free beginning with its initial release, a policy that forced Netscape, in January 1997, to return to its original practice of giving away its browser.²⁰¹

Also crucial for future antitrust litigation, Microsoft began to integrate IE with Windows. The first version of IE had been released with Windows 95 in July 1995.²⁰² Indeed, Microsoft included the first three versions of IE on the Windows 95 disks it sent to original equipment manufacturers (OEMs). It distributed IE 4.0 on a separate CD-ROM and, beginning in February 1998, required OEMs to install it with Windows 95. Browser functionality was even more fully incorporated into Windows 98, which was released in June 1998, shortly after the filing of the lawsuit that is the focus of this book. Microsoft did not permit OEMs to remove or hide IE. In addition, Microsoft distributed IE free to Internet access providers (IAPs) and gave them a variety of incentives to use IE and not to distribute Netscape’s browser.

Another perceived middleware threat to Microsoft was Java, software developed and owned by Sun Microsystems.²⁰³ Java consists of several components: a programming language, “class libraries” of programs that developers of Java programs can access, a compiler that translates the developer’s code into “bytecode,” and a “virtual machine” (JVM) that translates the bytecode into machine code for the underlying operating system.²⁰⁴ During 1995 and 1996, Sun licensed Java to several software firms, including both Netscape²⁰⁵ and Microsoft.²⁰⁶ The role of Java in both browsers also was central to the antitrust litigation. A Java program, because of the JVM, can run on a computer with any type of microprocessor or operating system. But the JVM and the class libraries—together constituting a Java runtime environment—have to be installed on the computer, and Navigator became a principal vehicle by which Sun placed copies of its Java runtime environment on Windows computers.²⁰⁷ Shortly thereafter, Microsoft included a Java runtime environment on Windows. Microsoft responded to Java’s cross-platform threat in several ways, including the introduction of its own Windows-specific version of Java.²⁰⁸ Programs that developers wrote in the Windows-specific version of Java would not function across platforms.

The Antitrust Investigations, the Netscape White Paper, and the Case. The first investigation of Microsoft focused on Microsoft's actions aimed at rival operating systems, including DR-DOS and OS/2. Begun in 1989 by the Federal Trade Commission (FTC) but abandoned, the investigation was carried forward by the Antitrust Division, which later filed a complaint and an accompanying consent decree that blocked Microsoft's use of "per processor" licenses, those that required OEMs to pay a license fee for every computer they sold, even if it did not include Windows.²⁰⁹ These licenses were thought to be exclusionary because they lessened the incentive of OEMs to install a non-Windows operating system on new PCs. Another portion of the decree, little noticed at the time, prevented Microsoft from tying the sale of other products to Windows, but specifically allowed Microsoft to offer "integrated" products. After a round of litigation under the Tunney Act²¹⁰ to determine if the decree was in the public interest, the decree was entered in August 1995.²¹¹

In the second investigation, the Department of Justice (DOJ) challenged Microsoft's acquisition of Intuit, the producer of the popular home finance program Quicken, a direct competitor of Microsoft's Money. That investigation ended in 1995, when Microsoft abandoned the acquisition.²¹² In the third investigation, the DOJ examined Microsoft's plans to include access software for its own online service, the Microsoft Network (MSN), in Windows 95. The DOJ, however, chose not to object to the release of Windows 95 despite the presence of MSN software,²¹³ and ultimately the investigation faded when MSN failed to attract a dominant base of subscribers. The 1998 *Microsoft* case that this book examines grew out of the fourth investigation, which began in August 1996 and focused on Microsoft's responses to Netscape's browser.

All of the antitrust investigations of Microsoft required antitrust enforcers to field and evaluate incessant complaints and submissions from Microsoft's rivals.²¹⁴ Though some rivals brought private antitrust cases based on Microsoft's conduct before 1995, most adopted the cost-saving strategy of initially advocating a government suit. By far the most sophisticated of these campaigns began in 1996 with the submission of a white paper prepared by attorneys Gary Reback and Susan Creighton on behalf of Netscape, setting out a legal and economic rationale for a public monopolization case against Microsoft.²¹⁵ Reback, with the assistance of others, had submitted an amicus curiae brief on behalf of anonymous parties that had helped persuade a trial judge to disapprove the earlier consent decree under the Tunney Act.²¹⁶ He had also submitted a similar white paper urging the government to challenge

Microsoft's acquisition of Intuit.²¹⁷ The 1996 white paper was more ambitious. Stamped "HIGHLY CONFIDENTIAL" on each of its 191 pages, the document characterized the public monopolization suit it proposed as

at bottom a very simple case. It is about a monopolist (Microsoft) that has maintained its monopoly for more than 10 years. That monopoly is threatened by the introduction of new technology (Web software) that is a partial substitute—and, in time could become a complete substitute for the monopoly product. Before that can happen, the monopolist decides to eliminate its rival Netscape, and thereby protect its continued ability to receive monopoly rents.²¹⁸

Antitrust cases, like other lawsuits, turn on the persuasiveness of the stories the parties tell in support of their positions; the story provides a schema that fact finders use to assess testimony and documentary evidence. Reback and Creighton's white paper presented an unusually persuasive case that we call the guiding narrative. To reinforce its credibility, the white paper's cover sheet announced that its economic arguments were "prepared in extensive consultation with Garth Saloner," one of the pioneers of the economics of network effects.²¹⁹

The guiding narrative rested on the commonly accepted observation that indirect network effects protected Microsoft's monopoly of operating systems by drawing both developers and consumers to the Windows standard. One chapter of the white paper, entitled "The Microsoft Juggernaut," recounted the development of Windows as a process of "leverag[ing] from the OS [operating system] to control of the Windows platform" by integrating MS-DOS with the Windows GUI and shifting developers to the new platform, which was then insulated from competition by its wide acceptance.²²⁰ The next chapter portrayed Microsoft's actions against Netscape as an effort to prevent the browser from accomplishing a similar displacement of Windows. It described the browser as "a 'front end' that allows the user to access resources and information across a network" rather than, like Windows or other GUI software, only on the client computer.²²¹ It quoted Bill Gates's expressed fear that such a platform could "replac[e] Windows as the mainstream set of software standards."²²² In this story, then, Netscape's browser was a partial substitute for Windows, but could become more; if it became the platform of choice for developers and computer users, it would weaken the network effects that impeded entry into the market for operating systems. Consequently, Microsoft adopted various aggressive

measures to slow the adoption of the Netscape browser sufficiently to prevent its adoption as the platform of choice. According to the guiding narrative, Microsoft first proposed to divide the browser market with Netscape; when Netscape rebuffed the overture, it included its Internet Explorer browser in Windows free of charge, a form of predatory pricing, and formed exclusive contracts with computer manufactures and Internet businesses.

The white paper reached the DOJ's Antitrust Division, where it attracted the attention of enforcers, who began to listen to Microsoft's competitors more attentively. Another Microsoft rival, Sun Microsystems, recruited Dennis Carlton, a prominent economist at the University of Chicago, to make its case for government intervention. In a daylong presentation to DOJ officials in April 1998, Carlton reportedly detailed the anticompetitive effects of Microsoft's practices and proposed a radical structural remedy—forced licensing of Microsoft's software code to several new companies.²²³ The guiding narrative eventually won the hearts and minds of the enforcement agencies. In 1997, the government brought a preliminary lawsuit alleging that Microsoft was violating the anti-tying provision of the 1995 consent decree by bundling IE with Windows 95. Judge Thomas Penfield Jackson issued a preliminary injunction in that case, but the court of appeals reversed, holding that IE and Windows were “integrated” within the meaning of a proviso of the consent decree.²²⁴

While Judge Jackson's order in the 1997 case was on appeal, in May 1998, the DOJ and the states brought a new suit. This action alleged that Microsoft's practice of bundling IE with both Windows 95 and Windows 98, along with various provisions in its contracts with Internet service providers (ISPs), Internet content providers (ICPs), and OEMs, violated the antitrust laws independently of the 1995 consent decree.²²⁵ The complaint in that case echoed the guiding narrative in explaining the motivation and effects of Microsoft's actions.²²⁶ The complaint alleged:

Internet browsers pose a competitive threat to Microsoft's operating system monopoly in two basic ways. First . . . one of the most important barriers to the entry and expansion of potential competitors to Microsoft in supplying PC operating systems is the large number of software applications that will run on the Windows operating system (and not on other operating systems). If application programs could be written to run on multiple operating systems, competition in the market for operating

systems could be revitalized. The combination of browser technology and a new programming language known as “Java” hold out this promise. Java is designed in part to permit applications written in it to be run on different operating systems. As such, it threatens to reduce or eliminate one of the key barriers to entry protecting Microsoft’s operating system monopoly.²²⁷

The guiding narrative also appeared in accompanying declarations of two distinguished economists.²²⁸

Libertarian and public choice scholars have suggested that the decision to sue exemplifies the protectionist character of antitrust enforcement. Milton Friedman, for example, concluded that antitrust “does more harm than good” because it “tend[s] to become prey to special interests. Right now, who is promoting the *Microsoft* case? It is their competitors, Sun Microsystems and Netscape.”²²⁹ Thomas Sowell wrote that “although the Justice Department’s antitrust division claims to be trying to protect ‘competition,’ it is in fact trying to protect competitors.”²³⁰ And Fred McChesney and William Shughart have suggested that the initial FTC investigation of Microsoft “exemplif[ied] the now-familiar story of unsuccessful firms appealing to government for antitrust action that would handicap a highly successful rival.”²³¹ Microsoft itself at one time took a similar view. In 1997, Bill Gates complained, “[T]he interests of the consumer seem to be less important than the complaints of a handful of our competitors who want the government to help them compete by preventing Microsoft from enhancing its products.”²³² In the public choice story, the *Microsoft* litigation has done more harm than good specifically *because* Microsoft’s competitors influenced the DOJ to bring the case. By identifying the winners and losers in the case, and by pointing to the pattern of contacts between the enforcement agencies and the affected interest groups, public choice analysis claims to have unveiled the true determinants of antitrust enforcement and its likely effects. The decision to bring the *Microsoft* case, from this perspective, could not be the result of a mistake or simply a different view of the public interest.

As our account of the ideological origins and evolution of antitrust suggests, however, concepts of the public interest are sufficiently elastic to cover cases like *Microsoft*. The case is consistent with the intentionalist view that antitrust intervention is necessary to prevent markets from spiraling toward monopoly, or at least toward the wrong monopoly. Difficult as it is for libertarians to accept, *Microsoft* has defenders

among scholars who have no personal interest in protecting inefficient firms. One should not infer from our account of the extensive and well-organized lobbying campaign of contacts by rivals that the government's eventual decision to sue was made to serve rivals' interests. Multitudes of unhappy rivals of successful firms mount similar campaigns and almost always fail. The Antitrust Division staff must sift through thousands of complaints each year, and they select only a few for prosecution. Their choices must be based on something more than the fact that wealthy, well-organized, and politically connected interest groups have complained. Indeed, the computer industry, despite its wealth, was by no means the most politically effective at the time *Microsoft* was filed.²³³ The Division had no apparent reason to serve the interests of Netscape.²³⁴ The industry had been unsuccessful in persuading the FTC to sue and has continued to be disappointed in the Division's litigation positions after the case was filed.

A more plausible explanation for *Microsoft* is that the interest groups provided the information that the Antitrust Division needed to trigger its own prior criteria of the public interest. Those criteria, as we have seen, are deeply influenced by ideology. Of course, a regulator's own self-interest may influence his or her concept of the public interest. An assistant attorney general, for example, may initiate a "campaign" not simply because he or she believes the practice at issue is most harmful to consumers, but because it is theoretically interesting or innovative, or because it adds a memorable signature to his or her tenure as head of the Antitrust Division. The *Microsoft* case is certainly theoretically interesting. It rested on a new and exciting economic theory that was the height of fashion in legal scholarship. It has also lent a sense of special urgency to enforcement decisions involving high-technology markets. But an antitrust enforcer would not be inclined to bring a case, even if it promised to be famous and the issues would be interesting, unless he thought he could win the case, and do so expeditiously. The specter of the IBM catastrophe hovers over all public monopolization cases.

2

Decisions

Our considerable task in this chapter is to impose order on the more than 150 opinions in the antitrust cases against Microsoft. Although the litigation has attracted an unusual amount of press attention,¹ few observers have attempted to grasp its full scope. We provide an overview of the litigation, at the same time exposing the most important judicial strategies used at each stage. At the center of the galaxy of *Microsoft* decisions is the line of opinions by the district court and court of appeals in the 1998 government case. (Although the decisions of both Judge Jackson and Judge Williams for the court of appeals in the 1997 consent decree proceeding were important, we defer consideration of them until our analysis of integration in chapter 4.) After a brief chronology of the litigation, we focus first on the decisions of Judge Jackson in the 1998 case on questions of liability, and then on the per curiam decision of the court of appeals affirming in part and reversing in part. We next examine the decisions of both Judge Thomas Penfield Jackson and Judge Colleen Kollar-Kotelly on questions of remedy, and the decisions of the court of appeals reviewing them. Finally, we survey the private follow-on litigation and the decision of the European Commission in its closely related *Microsoft* case.

Chronology

The trial of the Sherman Act case began in October 1998 and continued until June 1999. In an effort to avoid the *IBM* quagmire, Judge Jackson adopted a number of procedural shortcuts, including the limitation of the parties to twelve witnesses, who submitted all of their direct testimony in written form and then were cross-examined during the trial.² Judge Jackson issued findings of fact³ in November 1999, largely following the guiding narrative of Microsoft's monopolistic conduct that was first articulated in Netscape's white paper and later became the basis of the government's case.⁴ Intensive settlement negotiations mediated by Judge Richard Posner, a leading antitrust authority, failed in April 2000,⁵ reportedly because some of the states held out for more extensive relief than the Department of Justice accepted.⁶ Immediately thereafter, Judge Jackson issued conclusions of law,⁷ holding Microsoft violated section 2 by both maintaining a monopoly of operating systems for Intel-compatible personal computers and by attempting to monopolize the market for Internet browsers. He also concluded that Microsoft violated section 1 by illegally tying the Internet Explorer (IE) browser to the Windows operating system. He refused to hold, however, that Microsoft's exclusive contracts violated section 1, even though they were among the acts of monopolization; the government did not appeal this ruling. After a short round of hearings, Judge Jackson in June 2000 issued a sweeping remedy, later stayed pending appeal, that ordered Microsoft broken up into an applications company and an operating systems company and imposed a variety of conduct restrictions.⁸ The Supreme Court denied Microsoft's petition for expedited review, returning the case to the Court of Appeals for the District of Columbia Circuit.⁹

Near the end of June 2001, the court of appeals, sitting en banc, issued a per curiam, unanimous opinion affirming most of Judge Jackson's holdings on monopoly maintenance, but reversing his holdings on attempted monopolization and illegal tying.¹⁰ The court accepted Judge Jackson's characterization of the market and Microsoft's monopoly power, but departed from his approach to exclusionary conduct, focusing narrowly on each legal category, requiring record support for findings of fact, and applying more exacting standards of liability. As a result, the court reversed some of the important liability holdings and the entire remedial order, and remanded the case to a different judge.¹¹

On remand, Judge Kollar-Kotelly, to whom the case was now assigned, arranged for another mediation. In part because a new Republican administration had taken office and a new assistant attorney general

was in charge of the Antitrust Division, the negotiation effort was partially successful: the United States and nine states agreed on the terms of a proposed consent decree in November 2001, while the remaining states pursued stricter terms. At this point, Judge Kollar-Kotelly conducted two procedures simultaneously. The first was a Tunney Act proceeding to determine whether the proposed consent decree was in the public interest.¹² In this process, the decree was published and public comments accepted for a period of weeks. The second proceeding was the continuation of the 1998 case by the nonsettling states. In this proceeding, new evidence was taken from expert witnesses on both sides. Judge Kollar-Kotelly upheld the consent decree¹³ and limited the nonsettling states to essentially the same relief.¹⁴ Her rulings closely followed the court of appeals' liability holdings, enjoining most of the acts found unlawful and imposing a few broader remedies aimed at restoring competition generally. One by one, the nonsettling states dropped out of the litigation as the appeal progressed, until only Massachusetts remained to pursue the claims for additional relief; two industry groups pursued a simultaneous appeal of the determination that the consent decree was in the public interest. In 2004, the court of appeals, with undisguised relief, upheld Judge Kollar-Kotelly's decisions in their entirety.¹⁵ The district court has closely monitored compliance with both final judgments.

In follow-on private litigation, consumers, rivals, and at least two computer manufacturers have sought to rely in part on the findings in the government case to sue Microsoft for treble damages; most of these cases have now been settled for amounts totaling nearly \$9 billion. The European Commission enforcement action, also a follow-on action of sorts, focused on Microsoft's actions in markets actually covered by the U.S. consent decree, but went well beyond the U.S. courts in both the conduct examined and the relief granted.¹⁶ Oral argument in the review by the European Court of First Instance took place in April 2006.

The Liability Decisions

In this section, we contrast the reasoning of Judge Jackson and the per curiam court of appeals decision on the liability questions. Table 1 summarizes the holdings.

Monopoly Power. All cases alleging monopolization and most alleging exclusionary contracts require the court to define the relevant market and to determine whether the defendant possesses monopoly power in it.¹⁷ Market definition is closely linked to market power because the breadth

Table 1. Summary of Holdings

Judge Jackson	Court of Appeals
Microsoft monopolized in violation of § 2, by	
Possessing monopoly power in the market for Intel-compatible PC operating systems	Affirmed
Engaging in these monopolistic acts:	
1. Imposing license restrictions barring OEMs from	
• removing IE icons, menu items, etc.	Affirmed
• altering the initial boot sequence	Affirmed
• adding unusually shaped icons or folders for competing products	Affirmed
• using the Active Desktop to promote competing products	Affirmed
• causing a new interface to load in place of Windows	Reversed
2. Designing Windows to	
• exclude IE from the Add/Remove Programs utility	Affirmed
• override user's choice of a default browser in some cases	Reversed
• commingle IE-only and shell code in the same files	Affirmed
3. Inducing IAPs to sign exclusive agreements by	
• providing IE free for inclusion in Internet access packages	Reversed
• paying a bounty for persuading users to "upgrade" to IE	Reversed
• creating an IEAK that allowed IAPs easily to create access software	Reversed
• offering the IEAK free	Reversed
4. Entering agreements with:	Affirmed
• IAPs to promote only IE and limit their shipments of Navigator	Affirmed
• ICPs to favor IE technologies	Reversed
• ISVs to use IE in preference to Navigator	Affirmed
• Apple for preferential inclusion if IE in the Mac OS	Affirmed
5. Undermining Sun's cross-platform Java by	
• developing an incompatible Java Virtual Machine	Reversed
• forming First Wave agreements with ISVs to distribute the Windows-specific JVM	Reversed as to low pricing, but affirmed as to exclusivity
• deceiving developers to unwittingly write Windows-specific Java	Affirmed
• threatening Intel not to aid Sun in developing Java	Affirmed
6. Generally undermining Navigator and Java by "conduct as a whole"	Reversed
These actions harmed consumers and competition by forestalling a "nascent" threat to Microsoft's monopoly	Affirmed
Microsoft attempted to monopolize the browser market in violation of § 2 by	
Proposing to Netscape to divide the browser market	Reversed
Microsoft engaged in illegal tying in violation of § 1 by	
Contractual and technological bundling of IE and Windows	Reversed
Microsoft did <i>not</i> engage in illegal exclusive dealing under § 1 by	
Exclusive contracts with IAPs, ISVs, etc.	[No cross-appeal]

of the chosen market determines market share, which courts view as an indicator of monopoly power.¹⁸ In *Microsoft*, the issues of market definition and monopoly power were contested, despite Microsoft's undoubted dominance as a supplier of operating systems, because of the subtle conception of the boundary lines among software products at the heart of the guiding narrative.¹⁹ In the guiding narrative, Microsoft used its power over operating systems to hurt Netscape in the market

for browsers, but it did so primarily because of the threat the browser and Sun Microsystems' Java technologies, the most important forms of middleware, posed to the Windows operating system monopoly. Were Netscape or Java to become the platform of choice for software developers and consumers, the applications barrier to entry into the operating systems market would be breached.

The plausibility of this story depends on the narrator avoiding two slippery slopes. First, the story suggests that Microsoft's actions may have prevented the Netscape/Java platform only from becoming the "new monster." The court of appeals expressed this concern during oral argument,²⁰ but did not address it in its opinion. We shelve this issue for now, but return to it in chapter 4. Second, the story suggests that Microsoft was under threat from any number of potential platforms for applications and thus might compete in a larger market for all types of platform software. This concern formed the centerpiece of Microsoft's defense on the issue of market definition and monopoly power, and was the focus of much of the reasoning of Judge Jackson and later the court of appeals on the subject.

Judge Jackson's reasoning on the second slippery slope issue rested on the guiding narrative's reliance on the concept of *partial* substitutes. If the browser with Java were really a substitute for Windows, then all comparable platforms would be competitors, and Microsoft's account of itself as under constant threat of annihilation from any direction would be plausible; if Netscape/Java were not a substitute even in prospect, then there was no middleware threat, and the account of consumer harm would be weakened. But if Netscape and Java are only *partial* substitutes, then they (and other middleware) may be disregarded in calculating Microsoft's monopoly power in the market for operating systems, yet still be considered a "nascent" threat to that monopoly power worthy of antitrust protection. Both Judge Jackson and the court of appeals accepted this resolution of the issue.

Judge Jackson found as a "fact" that the relevant market in which to judge Microsoft's conduct was operating systems for Intel-compatible personal computers.²¹ His analysis echoed the approach to market definition of the Department of Justice and the Federal Trade Commission in their *Horizontal Merger Guidelines*. The *Guidelines* define a market as a group of products for which a hypothetical firm with 100 percent of the production of the products could unilaterally raise price by a small but significant amount without causing enough substitution to make the price increase unprofitable.²² Judge Jackson found this condition satisfied under his delineation of the market because existing users

of Intel PCs would find it difficult to switch to the MacOS for Apple computers,²³ and even new buyers would tend to prefer the Intel system because it is cheaper and supports more applications software.²⁴ Similarly, server operating systems are too costly and lack sufficient applications capability to allow consumers to switch based on an increase in the price of a PC operating system.²⁵ (Server operating systems, which we examine in chapter 3, would become the focus of the European Commission's investigation of Microsoft.) Most important, middleware such as Java and the Netscape browser expose applications programming interfaces (APIs) and may evolve eventually into full-featured platforms, but they do not *presently* provide a reasonable alternative for a consumer who faces a significant increase in the price of PC operating systems.²⁶ Just as network effects constrain consumers from substituting toward other operating systems or platforms, they constrain the ability of a firm to begin production of a reasonable substitute. According to Judge Jackson, any new operating system, other than one limited to a highly specialized demand, would lack an extensive base of compatible applications for years.²⁷

While describing the advantages that network effects confer on the Wintel standard—the proprietary technology embodied in the combination of the Windows operating system and Intel microprocessor—Judge Jackson emphasized, even in the discussion of market definition and market power, the potential for erosion of the advantages from various directions, such as network computing or middleware.²⁸ These findings were necessary to the ultimate finding of anticompetitive effect because the motivation for Microsoft's actions and the source of its anticompetitive potential lay in delaying innovation in cross-platform technologies. But it was likewise essential that these technologies be cabined as nascent threats, and not present competitors in the operating systems market, to conclude that Microsoft had a monopoly.

Judge Jackson then found, again as a “fact,” that Microsoft had substantial monopoly power stemming from its control of more than 90 percent of the defined market²⁹ and, most important, the shelter of the applications barrier to entry, which he described in terms that followed the theory of network effects. Because of the high fixed costs of developing software and the trivial marginal costs of manufacturing it, software developers naturally prefer to write programs for the operating system that most consumers use;³⁰ consumers, in turn, want the operating system for which most software is written.³¹ Thus, to succeed, a developer of a new operating system would have to develop, or persuade others to develop, thousands of programs.³² Independent software vendors

(ISVs) as a group would benefit by writing programs for a new operating system, but they lack the incentives individually to undertake the costs of development.³³ Microsoft still must persuade ISVs to write to the latest versions of Windows, but because Windows was the first operating system to become the standard, Microsoft has had an easier time convincing ISVs to stick with Windows than a new potential operating system entrant would have in convincing them to switch to a new standard.³⁴

Judge Jackson found evidence of the strength of the applications entry barrier in the failure of rival operating systems, like the Mac OS, OS/2 Warp, or Linux, to garner a substantial consumer or developer following.³⁵ Nor is cloning of Windows APIs practical.³⁶ Original equipment manufacturers (OEMs) uniformly have concluded that there are no viable alternatives to loading Windows on essentially all of the PCs they sell.³⁷ Microsoft's installed base only weakly constrained its present power, according to Judge Jackson, because the pace of innovation in hardware requires consumers to upgrade regularly; Microsoft encouraged this tendency by raising the price of older versions of Windows when it introduced a new one.³⁸ Middleware, the Internet, and Linux were not yet sufficiently strong presences to prevent Microsoft from exercising monopoly power by raising prices or imposing other costs on buyers.³⁹

Judge Jackson also pointed to direct evidence that Microsoft exercised monopoly power. Microsoft demonstrated its pricing discretion, for example, when it upgraded versions of Windows. Judge Jackson conceded that the evidence did not show that Microsoft was charging a short-run profit maximizing price, but dismissed that gap in the proof on the ground that Microsoft might have been charging lower prices temporarily to expand its installed base and reap rewards in the future.⁴⁰ Nor did the fact that Microsoft innovates indicate a lack of monopoly power, because even a monopolist has an incentive to innovate to expand its market and delay the erosion of its position by other firms' entry.⁴¹ Moreover, Microsoft used some of its monopoly power to impose restrictive conditions that preserve the applications barrier, rather than simply charging higher prices.⁴² Some of these restrictions made no sense other than as a means of protecting a monopoly position.⁴³

Unsurprisingly, when Judge Jackson came to apply legal standards explicitly, he concluded that Microsoft had monopoly power as a matter of law as well as fact.⁴⁴ A hypothetical monopolist of PC operating systems could raise prices without facing demand or supply substitution sufficient to make the increase unprofitable.⁴⁵ The structural data⁴⁶

created a presumption of monopoly power,⁴⁷ which Microsoft failed to rebut by proof that it was subject to competitive constraints⁴⁸ or that it had behaved in a way inconsistent with its having monopoly power.⁴⁹ In any event, the presumption was confirmed by the perceptions of Microsoft and OEMs that there is no alternative to Windows,⁵⁰ and by Microsoft's conduct, which was rational only for a firm intent on using monopoly power to protect the applications barrier.⁵¹ This standard is important because Judge Jackson also used it to confirm that Microsoft's conduct was illegally exclusionary. Thus, it was Judge Jackson's assessment of the rationality of Microsoft's conduct that determined both the existence of monopoly power and the illegality of its conduct.

The court of appeals affirmed the monopoly power determination. It accepted the market definition because Microsoft failed to contradict or avoid Judge Jackson's findings that products like the MacOS, information appliances, and portal Web sites were insufficiently substitutable with Intel-based operating systems.⁵² The court also affirmed the exclusion of middleware, but offered a more extensive explanation because of the importance of middleware in evaluating Microsoft's conduct.⁵³ Citing directly to the record (unlike Judge Jackson) as well as to the findings, the court recited the role of the operating system, the function of APIs, and the expense of porting applications between operating systems. It endorsed Judge Jackson's findings that middleware, by exposing APIs that displace the platform functions of more than one operating system, might eventually reduce or eliminate the costs of porting other applications.⁵⁴ But it added that no middleware, Netscape and Java included, "could now, or would soon, expose enough APIs to serve as a platform for popular applications, much less take over all operating system functions."⁵⁵ Thus, middleware is not "reasonably interchangeable" because it could not constrain pricing "in the reasonably foreseeable future."⁵⁶ The court rejected Microsoft's argument that it was inconsistent to exclude middleware from the market, yet to hold that Microsoft monopolized the market by suppressing middleware. Middleware is a *nascent* threat, and one may monopolize an existing market by suppressing it; but it is not now reasonably *interchangeable* with Windows, as required by the standards of market definition.⁵⁷ This point became crucial in the court's disposition of the issue of anticompetitive effect.

Microsoft argued that its large share of Intel-based PC operating systems did not establish market power. The court of appeals acknowledged that market share figures may overstate monopoly power, but agreed with Judge Jackson that the applications barrier to entry insulated

Microsoft's dominant share.⁵⁸ The fact that developers wrote programs for other operating systems, like OS/2, did not contradict the finding that the applications barrier deterred many from doing so.⁵⁹ The fact that consumers only used a few applications did not contradict the finding that many prefer an operating system for which more applications are and will be available.⁶⁰ Middleware might eventually erode this advantage, but had not yet done so.⁶¹

The court thought it irrelevant that the applications barrier may have come into existence because of Microsoft's popularity, because the barrier had come to protect Microsoft, even from a better operating system.⁶² Thus the barrier is "a characteristic of the operating system market, not of Microsoft's popularity, or [its] efficiency."⁶³ It is a barrier to entry, moreover, even under the Stiglerian definition,⁶⁴ which requires that it confer on the incumbent firm a long-term cost advantage over new entrants, because Microsoft's operating systems never had to overcome a rival with a large installed base,⁶⁵ and it could overcome its own installed base when introducing new versions by including the old versions' APIs.⁶⁶ (As we show in the next chapter, neither the parties nor the court addressed the relevance of the two-sided character of platform markets, which casts the emergence of a standard platform in a very different light.) The court also agreed with Judge Jackson's rejection of Microsoft's argument that the dynamism of software markets required more proof that Microsoft actually exploited monopoly power.⁶⁷

Monopolistic Conduct. Monopoly power, by itself, does not violate the antitrust laws; a firm must also engage in monopolistic conduct.⁶⁸ Though some private litigants have claimed Microsoft *acquired* its monopoly power illegally, the government in the 1998 Sherman Act case charged only that Microsoft had illegally *maintained* its power by exclusionary practices that violated both sections 1 and 2 of the Sherman Act. As our account in chapter 1 of the history the public monopolization case suggests, however, the courts have failed to articulate adequate standards for identifying illegal exclusionary conduct.⁶⁹ The problem, as the court of appeals aptly put it, is to craft "a general rule for distinguishing between exclusionary acts, which reduce social welfare, and competitive acts, which increase it."⁷⁰ Although the court of appeals affirmed much of Judge Jackson's decision, it also reversed some substantive rulings and the entire remedy. This pattern reveals similarities and differences in the courts' approaches to isolating and remedying monopolistic conduct. Both courts agreed that while the government must show harm to the

competitive process rather than mere harm to competitors, it was not required to show that, absent Microsoft's conduct, the particular forms of middleware at issue would have actually evolved into a standard or rival platform. They also agreed that Microsoft's intent was relevant in evaluating the likely effects of its conduct, although the court of appeals stressed that its focus was on the conduct itself.⁷¹ Finally, they agreed that the same conduct by a monopolist might be lawful under section 1 of the Sherman act and yet still violate section 2—and this finding was all the more important because the court of appeals reversed all of Judge Jackson's holdings of liability under section 1.

But the differences between the two courts' approaches were equally important. Judge Jackson's opinion viewed virtually all of Microsoft's conduct in response to the browser and Java threats as one campaign⁷² that no rational profit-maximizing firm would have undertaken except to monopolize.⁷³ Though Microsoft's conduct could be "broken down into discrete categories of activity" that violated section 2 independently, "only when the separate categories of conduct are viewed, as they should be, as a single, well-coordinated course of action does the full extent of the violence that Microsoft has done to the competitive process reveal itself."⁷⁴ The conduct was "predacious" because Microsoft spent "vast sums of money, and renounced many millions more in lost revenue every year, in order to induce firms to take actions that would help enhance Internet Explorer's share of browser usage at Navigator's expense," actions that would be irrational except as a means of preserving monopoly power.⁷⁵ Moreover, once the government made its prima facie case, Microsoft failed to offer procompetitive justifications that "*explain the full extent* of its exclusionary conduct."⁷⁶ This global, undifferentiated approach carried over into Judge Jackson's sweeping remedy. He would have divided Microsoft into two companies and imposed stringent conduct remedies, all without linking the relief to particular anticompetitive acts.

The court of appeals, by contrast, viewed each of Microsoft's actions individually, insisting in each case on record support for both the finding of anticompetitive effect and the absence of procompetitive justification. It suggested in a theoretical note at the outset of its opinion that the twin characteristics of network markets—that they are prone both to lock-in on a dominant standard and to leapfrog competition—offset each other. The net effect was that the court could not "formulate categorical antitrust rules absent a particularized analysis of a given market."⁷⁷ To this end, it adopted a structured approach that placed the initial burden of establishing an anticompetitive effect on the government. If the

government made its prima facie case, the burden shifted to the defendant to offer a procompetitive justification, that is, 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.”⁷⁸ If a justification was forthcoming, the government was required either to rebut it, showing it to be pretextual, or to “demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit.”⁷⁹

Using this approach, the court of appeals sharply limited the scope of Judge Jackson’s holdings. It brushed aside as unsupported the holding that Microsoft’s conduct viewed as a whole was illegal⁸⁰ and ignored Judge Jackson’s profit-sacrifice test in evaluating Microsoft’s product innovation and pricing, insisting instead that the plaintiff meet the exacting standards for predatory pricing.⁸¹ Similarly, it held that Microsoft had offered an unrebutted justification for one of its design choices that Judge Jackson had condemned.⁸² Finally the court reversed Judge Jackson’s decision on remedy and admonished the new judge on remand to explain how each remedial order will correct a proven harm to competition.⁸³

While the court of appeals’ focus on specific practices was more rigorous than Judge Jackson’s broad brushstrokes, it was less coherent. The court held that Microsoft monopolized the operating system market mainly by actions aimed at building its “usage share” of browsers, apparently assuming there was a browser market to share. Yet it held Microsoft could not have attempted to monopolize the browser market because the government had failed to prove that a browser market exists.⁸⁴ Compounding the confusion, it reversed Judge Jackson’s finding that Microsoft had illegally tied the browser to the operating system and remanded the issue for a new trial, with the puzzling instruction that, to establish liability, the government would be required to prove the tie had an anticompetitive effect in the browser market, but would be precluded from proving that a browser market even exists. If the court recognized that its action doomed the government’s case on the tying issue, it did not say so forthrightly. These and other difficulties undermined the strengths of the appellate court’s approach. Yet, as the case developed on remand, the practical effect of the difficulties was to limit the grounds of liability and eventually to end the case with a sensible remedy, which the court of appeals then enthusiastically affirmed.

The court of appeals structured its opinion to reinforce its focused approach: it first classified Microsoft’s conduct within a few categories and then mechanically applied its burden-shifting analysis to each. In the

process, much of the narrative force of the findings of fact was obscured. Consequently, rather than adopt the court of appeals' organization of the issues, we return to the guiding narrative as the organizing principle for analyzing the courts' decisions, thereby highlighting contrasts among them and their consequences for the government's case. In later chapters, we show that the court of appeals' inconsistencies had far more dire implications for the theory of the government's case than the court acknowledged.

Responses to the Browser Threat. In the guiding narrative, Microsoft feared the emergence of rival platforms, especially the Netscape browser and Java technologies, that might either displace Windows or build on top of it in a way that would erode network effects. One of the ambiguities of the guiding narrative was whether Java and Netscape posed a single threat or separate ones. In some early statements of the narrative, Netscape was a threat primarily because it included Java technologies, which allowed developers to write programs that could run on any operating system. Thus Judge Jackson found that "Microsoft focused its antipathy on two incarnations of middleware," Netscape and Java, "that, *working together*, had the potential to weaken the applications barrier severely without the assistance of any other middleware."⁸⁵ Navigator, for a time, incorporated Sun's Java runtime environment and thus became Java's primary means of distribution to Windows PCs.⁸⁶ Had Navigator and Java emerged as the dominant platform, they would have eroded the applications barrier, and thus allowed the entry of new PC operating systems and possibly new network-based alternatives to PCs.⁸⁷ By 1998, however, Netscape had stopped including the Sun-compliant version of the Java Virtual Machine.⁸⁸

Despite this account of a joint threat, both Judge Jackson and the court of appeals treated actions against *either* Netscape or Java as attacks on "nascent" middleware threats. One can see the logic: if Netscape with Java was a nascent threat, then an attack on either Netscape or Java was an attack on a still more nascent—perhaps embryonic—stage of the combination. Moreover, Netscape and Java each qualified as middleware and could conceivably have platform pretensions independently. For example, in describing the threat Netscape posed to the applications barrier, Judge Jackson noted that it ran on top of Windows and other operating systems, exposed APIs, and was linked to the Internet and other networks.⁸⁹ Moreover, Judge Jackson characterized Microsoft executives as concerned about Netscape⁹⁰ and Sun's Java⁹¹ as

independent potential threats to the applications barrier. The “symbiosis between Navigator and Sun’s Java” was thus only a “further reason to dread the increasing use of Navigator.”⁹²

Judge Jackson’s account of Microsoft’s responses to the browser threat occupied more than 300 of his 412 findings of fact, and addressed three primary strategies, each of which he held unlawful in his conclusions of law. First, he described Microsoft’s efforts to dissuade Netscape from developing its browser as a platform and characterized those efforts as an attempt to monopolize the browser market, a decision later overturned by the court of appeals. Second, Judge Jackson described Microsoft’s efforts to develop its own browsing technology and its decisions not only to offer the browser free, but also to pay other firms to build its usage share. He held some of these inducements to be monopolistic conduct, but the court of appeals reversed these holdings as well. Finally, Judge Jackson traced Microsoft’s actions aimed at “constrict[ing] Netscape’s access to the distribution channels that led most efficiently to browser usage,”⁹³ particularly OEMs’ inclusion of browsers on new computers and Internet access providers’ inclusion of browsers with Internet access software.⁹⁴ Judge Jackson held all of the restrictions unlawful, and the court of appeals generally affirmed, with a few exceptions.

Proposing to Divide the Browser Market with Netscape. The chapter of the 1996 Netscape white paper entitled “Breaking the Rules” begins with a description of a June 21, 1995, meeting at which Microsoft proposed to divide the browser market with Netscape.⁹⁵ The meeting also has pride of place in Judge Jackson’s findings of fact, which describe how Microsoft representatives tried to persuade Netscape not to develop its own APIs for “network centric” applications on Windows 95, but instead to rely on Microsoft APIs.⁹⁶ If Netscape chose to develop its own APIs, Microsoft would treat it as a competitor; if it accepted the offer, then Microsoft would treat it as a partner, but Netscape would have to forfeit its platform goals,⁹⁷ and Microsoft would gain such a large share of the APIs that no other browser could likely arise as a rival platform.⁹⁸ Though the meeting “ended cordially,”⁹⁹ Microsoft executives sensed that Netscape would not accept the offer, and Gates ordered them not to pursue the matter.¹⁰⁰ In the months that followed, Judge Jackson found, Microsoft withheld from Netscape technologies necessary to complete its Windows 95 browser, so Netscape was not able to release its browser until after Windows 95 was released.¹⁰¹

This “market division proposal,” on the eve of the introduction of IE and Windows 95, established Microsoft’s anticompetitive goals and its motivation. As David Boies said in the government’s closing argument, the meeting not only was an attempt at monopolization, but it also

provide[d] a context for everything that went ahead. *It provide[d] an insight, if you will, into Microsoft’s soul as to what was really involved.* Were they really after simply better products for consumers and how to figure out what consumers wanted and give it to them? Or were they attempting to preserve their operating system monopoly and to crush an incipient competitor before that competitor could begin to facilitate an erosion of the applications barrier to entry?¹⁰²

Judge Jackson accepted this view of the meeting as emblematic of Microsoft’s darker intentions. He recounted Microsoft’s similar efforts to persuade other computer firms to drop projects that might “weaken the applications barrier to entry or compete[] directly with Microsoft’s most cherished software products.”¹⁰³ Microsoft induced Intel to drop its development of Native Signal Processing (NSP) software that would have exposed APIs developers could use to write multimedia programs that took advantage of Intel’s advanced chip technology.¹⁰⁴ Microsoft also, Judge Jackson found, tried unsuccessfully to block development of software media players;¹⁰⁵ these latter findings had continuing significance because, as we later show, the European Commission’s decision focused in part on Microsoft’s actions in the market for media players. Judge Jackson saw a similar pattern in Microsoft’s dealings with IBM.¹⁰⁶

Judge Jackson thus endorsed the guiding narrative’s characterization of Microsoft’s proposal to Netscape and its similar efforts aimed at Intel, Apple, RealNetworks, and IBM, as its first pass at securing its platform monopoly. Only when its efforts to co-opt the Netscape threat failed did it turn to exclusionary practices. For this reason, Judge Jackson placed the proposal to Netscape and the efforts aimed at Intel and the rest at the beginning of the section of the findings that described Microsoft’s response to the browser threat.¹⁰⁷ He again referred to the proposal at the beginning of the corresponding section of the conclusions of law¹⁰⁸ to “illuminate the context in which Microsoft’s subsequent behavior . . . must be viewed.”¹⁰⁹ Interestingly, he never again mentioned the actions aimed at Intel and the other firms; they, like many colorful findings, remained “context” and not independently unlawful. As we

demonstrate later, Judge Kollar-Kotelly refused to address conduct of this sort in the final judgments.

The proposal to Netscape, however, Judge Jackson held illegal in itself as an attempt to monopolize the market for browsers. The offense of attempted monopolization requires proof of predatory conduct, with a specific intent to monopolize and a dangerous probability of success.¹¹⁰ Judge Jackson pointed to the June 1995 proposal and all of Microsoft's subsequent efforts to "overwhelm Navigator's browser usage share" as satisfying the conduct element.¹¹¹ Microsoft evidenced specific intent when it asked Netscape to abandon development of "platform-level browsing software for the 32-bit versions of Windows," knowing that Netscape's capitulation would have given Microsoft a dominant share of the browser market.¹¹² And there was a dangerous probability of success because had Netscape accepted the market division proposal, its then-dominant market share would instantly "have devolved upon Microsoft."¹¹³ Moreover, "the predatory course of conduct Microsoft has pursued since June of 1995 . . . revived the dangerous probability that Microsoft will attain monopoly power in a second market."¹¹⁴ We examine the evidence concerning the June 21 proposal in detail in chapter 5.

Despite the centrality of the market division proposal to the guiding narrative and to Judge Jackson, the court of appeals managed to avoid discussing it at all. Consistent with its focus on particular practices rather than Microsoft's soul, the court never mentioned the meeting on the issue of monopolization, even as context. More important, it reversed the attempted monopolization holding, again without discussing the meeting, because the government had failed to prove that a browser market existed, or that, if such a market did exist, that it was protected by entry barriers—both of which were required to establish the element of a dangerous probability of success.¹¹⁵ The court of appeals' treatment of the proposal to Netscape was typical of its analytical approach, in that it insisted on specific evidence to support each element of each legal claim, without consideration of the implications of evidentiary deficiencies for the case as a whole. The court's disposition of the issue came at a far greater cost for the government's case than the loss of the claim for attempt to monopolize. We show in chapter 4 that the absence of substantial network effects in a browser market should have precluded a finding of anticompetitive effect entirely.

Predatory Pricing? Microsoft's primary strategy for challenging Netscape was to develop a good browser of its own, at great expense, and offer it at

no charge in all channels of distribution. Netscape's white paper devoted an entire chapter to an argument that Microsoft's pricing strategies for IE amounted to predatory pricing:

Microsoft's free pricing . . . is not for purposes of promoting sales of IE. . . . Instead, Microsoft's intent is that of a classic predatory monopolist: it is to drive Netscape out of the market in a war of attrition. Microsoft's plan of recoupment is simple. It can drop the price of the Web client and server markets to zero, while still generating a revenue stream from its existing franchise. . . .

If circumstances are particularly favorable for the use of price predation [because of Microsoft's greater resources,] Microsoft has been characteristically aggressive in pursuing such a strategy: it has offered "marketing funds," "bounties," free consulting and support services, and so forth. All of these costs—amounting almost certainly to hundreds of millions of dollars—must . . . be included in assessing the predatory nature of Microsoft's conduct. . . .

Microsoft's below-cost pricing scheme is in many ways an archetypal (albeit extreme) form of conduct for a predatory monopolist. Because the predation takes place in a market subject to network effects, however, the effects of this predation are magnified.¹¹⁶

Although the government did not allege predatory pricing explicitly, a version of that theory remained implicit in the government's contentions and reappeared in Judge Jackson's findings and conclusions. Judge Jackson repeatedly emphasized Microsoft's enormous investments in the browser campaign, and the absence of income streams from it. He noted, for example, that Microsoft invested more than \$100 million each year after 1994 in developing a browser as good as Netscape's.¹¹⁷ Nevertheless, he found, Microsoft believed from the outset that it would have to do more to overcome consumer inertia and persuade Netscape users to switch.¹¹⁸ Consequently, it gave the browser away and even paid other firms to increase usage of it, all in an effort to build usage share and thus preserve the applications barrier.¹¹⁹ Though Netscape was charging for its browser in 1995, Microsoft "decided not to charge an increment in price when it included Internet Explorer in Windows" and not to charge for IE when distributed separately, maintaining this policy over all other priorities.¹²⁰

Moreover, it did not charge Internet service providers (ISPs) and others who distributed IE separately from Windows, and it did not charge firms like Internet access providers (IAPs) for valuable services that Microsoft provided to them. Most important, Microsoft's Internet Explorer Access Kit (IEAK), which we describe more fully in a later section, gave IAPs, at no charge, the ability to create a customized Internet access package and to distribute the package along with IE to consumers.¹²¹ Netscape, in contrast, charged IAPs almost \$2,000, and \$20 per copy of Netscape, for a similar service.¹²² The attractiveness of these terms "beguiled" IAPs into distributing more copies of IE.¹²³ Microsoft also gave IAPs, for a nominal referral fee, the valuable service of including the IAP in a referral server linked to the Internet Connection Wizard on the Windows desktop.¹²⁴ Moreover, if an IAP persuaded an existing customer to "upgrade" to IE, Microsoft either reduced the referral fee or contributed to a co-marketing fund. Judge Jackson noted that the costs of Microsoft's referral server program exceeded any revenue it generated.¹²⁵ Thus, Microsoft transferred to other firms many opportunities for ancillary revenue from the browser; its internal e-mails made clear that the pursuit of browser share was in spite of its inability to generate revenue.¹²⁶

In a critical passage, the court of appeals recognized that the government's theory of price predation differed from the conventional theory:

Plaintiffs argued before the District Court that Microsoft's pricing was indeed predatory; but instead of making the usual predatory pricing argument—that the predator would drive out its rivals by pricing below cost on a particular product and then, sometime in the future, raise its prices on that product above the competitive level in order to recoup its earlier losses—plaintiffs argued that by pricing below cost on IE (indeed, even paying people to take it), Microsoft was able simultaneously to preserve its stream of monopoly profits on Windows, thereby more than recouping its investment in below-cost pricing on IE.¹²⁷

Notice that this theory of price predation with simultaneous recoupment is identical to the theory advanced in the Netscape white paper. Though "[t]he District Court did not assign liability for predatory pricing . . . and plaintiffs [did] not press this theory on appeal,"¹²⁸ Judge Jackson emphasized as evidence of Microsoft's exclusionary intent the enormous expenditures it made on IE without hope of recoupment and held that some of the pricing practices associated with the IEAK were unlawful. In his

section 2 analysis of the IAP agreements, Judge Jackson cited his findings that Microsoft licensed IE free in the IEAK,¹²⁹ offered “valuable promotional treatment” to persuade the “ten most important IAPs” to promote IE to the exclusion of Navigator,¹³⁰ and made rebates and direct payments to IAPs to persuade them to try to upgrade existing subscribers to IE.¹³¹ These agreements “contributed significantly” to Netscape’s loss of usage share and, thus, to preserving the applications barrier.¹³² Moreover, Judge Jackson held that no business reasons justified “the full extent” of these actions.¹³³ The extensive promotional expenditures benefiting IAPs, without any expectation of repayment, for example, could not be justified by a desire to “foster brand association” with IE.¹³⁴

The court of appeals reversed all of these holdings. It read Judge Jackson as holding that Microsoft acted “to preserve its monopoly by offering IE to IAPs at an attractive price,”¹³⁵ but without analyzing those actions under the rigorous standards of predatory pricing. Absent proof of predatory pricing, however, “the antitrust laws do not condemn even a monopolist for offering its product at an attractive price, and we therefore have no warrant to condemn Microsoft for offering either IE or the IEAK free of charge or even at a negative price.”¹³⁶ Nor did the development of the IEAK itself violate section 2 because “a monopolist does not violate the Sherman Act simply by developing an attractive product.”¹³⁷ This reasoning departed radically from Judge Jackson’s criterion for identifying exclusionary conduct. It also greatly complicated the question of how much Netscape was harmed by Microsoft’s illegal actions as opposed to Microsoft’s legitimate competition.

Product Design and Contractual Restraints on OEMs. From the beginning, Microsoft linked IE to Windows, as a matter of both functionality and marketing, and sought to cement that bond by a variety of means. First, it included IE with Windows and required OEMs not to delete it. Second, it designed IE and Windows in such a way that it was difficult for anyone, OEMs or end users, to delete IE. The legality of Microsoft’s contractual and technological linking of the browser and the operating system arose first in the interpretation of the 1995 consent decree and then in the 1998 case in the application of sections 1 and 2 of the Sherman Act. The issue in the consent decree case was whether the browser and the operating system were “integrated,” and therefore specifically exempt from the decree’s anti-tying provisions. The Sherman Act section 1 issue was whether the browser was illegally tied to Windows, either contractually or by design. The Sherman Act section 2 issue was whether the technological and contractual linking of the browser and

the operating system constituted illegal maintenance of a monopoly in operating systems. These allegations formed the core of the government case and are the subject of chapter 4, but it is important at this stage to understand the courts' differing approaches to the issues.

In his findings of fact, Judge Jackson treated Microsoft's contractual and technological bundling of IE and Windows as a single strategy to constrict the OEM channel. He first found that browsers are separate from operating systems. Consumers think of the browser as simply software that allows them to gain access to information on the Web.¹³⁸ Some consumers want the browser provided separately from the operating system, either because they want a browser other than IE or because they do not use a browser and do not want one taking up space on the hard drive.¹³⁹ Other operating system producers bundle a browser with their operating systems, but they allow OEMs and users to delete it. Microsoft prohibits deletion, even though it offers different versions of its browser separately for non-Windows operating systems.¹⁴⁰

Judge Jackson found that Microsoft chose to include the browser with the operating system and to "bind" it there by prohibiting deletion to preserve the applications barrier "rather than for any pro-competitive purpose."¹⁴¹ Microsoft originally planned to offer the first version of IE as an add-on to Windows 95, but then chose, as a competitive move against Netscape, to bundle it by requiring OEMs to install it on new systems and preventing OEMs from removing it.¹⁴² Although these actions did not prevent OEMs from installing Netscape's browser, they deterred OEMs from doing so because adding a second browser would use disk and desktop space and increase support costs.¹⁴³ Microsoft actively prevented OEMs from deleting IE, even when doing so antagonized important customers.¹⁴⁴ When Compaq planned to delete the Microsoft Network and IE icons, and to install others (including Navigator) as a result of deals with AOL and another ISP, Microsoft blocked the plans by threatening to terminate Compaq's license for Windows.¹⁴⁵

Microsoft also, Judge Jackson found, prevented OEMs from altering the initial boot sequence of Windows. OEMs began modifying the boot sequences of their computers to lead new users through the setup process and to offer various alternatives, including Navigator, and even to provide a different user interface from the standard Windows desktop.¹⁴⁶ Fearing Netscape would be promoted more prominently than IE, Microsoft responded by prohibiting OEMs from removing any icons, folders, or Start menu entries from the standard Windows desktop; modifying the initial boot sequence; installing programs that would launch automatically after the initial boot sequence; adding icons or folders

to the desktop that differed in size and shape from Microsoft's; and using Active Desktop to display non-Microsoft products.¹⁴⁷ Despite OEM complaints that these changes undermined their investments and increased support costs, Microsoft maintained the restrictions to raise the costs of installing Navigator.

Microsoft also, according to Judge Jackson, bound IE to Windows by arbitrarily placing browser code in files with code for operating system functions. These actions were calculated to prevent users from removing IE and to "complicate" the experience of using Navigator.¹⁴⁸ Microsoft allowed users to delete the means of launching IE in Windows 95,¹⁴⁹ but it later decided winning the usage war with Netscape required greater integration with the next version of its operating system, to "leverage the OS asset,"¹⁵⁰ even if that meant delaying release of Windows 98.¹⁵¹ Integration in this sense prevented users from deleting the visible evidence of IE¹⁵² and overrode the user's selection of a different default browser in certain instances, to the confusion and harm of Netscape users.¹⁵³ Commingling code and barring deletion hurt users who did not want a browser at all¹⁵⁴ and even those who used IE.¹⁵⁵ None of these measures, Judge Jackson found, was technically justified. A prototype removal program developed by Edward Felten, a government expert, showed that Web browsing functionality could be removed from Windows without harming other performance.¹⁵⁶ Denial of means of launching IE was not necessary to preserve the integrity of the Windows platform.¹⁵⁷ Nor was forced inclusion of IE justifiable as providing the "best of breed" browser to facilitate use of complementary software because IE was not demonstrably the best.¹⁵⁸

Judge Jackson rejected the notion that consumers benefited from Microsoft's actions. True, the growth of the Web created consumer demand for browsing functionality, which operating system vendors like Microsoft had an interest in satisfying.¹⁵⁹ But while many consumers benefited "as an abstract proposition" from inclusion of IE in Windows, they did not benefit by being denied the means to remove the program.¹⁶⁰ Microsoft could easily offer a version of Windows without IE¹⁶¹ and offer IE as a service pack upgrade,¹⁶² as it did when it offered IE 4.0 as an upgrade of Windows 95.¹⁶³ The fact that installation of IE as an upgrade would require removal and replacement of some operating system files did not make IE part of the operating system.¹⁶⁴ Judge Jackson recognized that Microsoft did not prohibit OEMs from installing Navigator in addition to IE, but found that mandatory inclusion of IE deterred them from doing so because multiple browsers increased "clutter" and confused some new users.¹⁶⁵

Judge Jackson found Microsoft's related prohibition of OEMs from altering the boot sequence and substituting an alternate interface for Windows was not justified, at least to its full extent, by any desire to preserve the integrity of the Windows interface. OEMs would not want to increase consumer confusion, so there was no reason to fear that changes would be harmful.¹⁶⁶ Substituting a new interface did not change the Windows API,¹⁶⁷ it only added new APIs, and thus new functionality, which Microsoft feared because it threatened the applications barrier.¹⁶⁸ The changes also did not infringe Microsoft's copyright.¹⁶⁹

As evidence of the anticompetitive nature of the restrictions, Judge Jackson pointed out that competing operating system vendors, such as Apple and IBM, did not impose restrictions on deleting software or altering the interface. Microsoft moreover offered promotional payments and favorable price terms to OEMs, such as Compaq, that promote IE in various ways,¹⁷⁰ and it treated unfavorably OEMs, such as Gateway and IBM, that refused to use IE internally or to stop shipping Navigator with new PCs.¹⁷¹ All of these actions largely foreclosed Netscape from the OEM channel, at great expense to Microsoft and at the cost of making PCs less accessible to consumers, all to boost usage share.¹⁷²

Judge Jackson held these actions were unlawfully exclusionary. Recall that the dispute over contractual and technological bundling of IE and Windows had arisen in the government's 1997 suit¹⁷³ to enforce a provision in the consent decree that prohibited Microsoft from tying products to Windows, but specifically permitted it to develop "integrated products."¹⁷⁴ In June 1998, the D.C. Circuit reversed Judge Jackson's preliminary injunction that had enforced the consent decree by requiring Microsoft to permit OEMs to remove IE functionality from Windows 95.¹⁷⁵ The court held, on the facts before it,¹⁷⁶ that IE and Windows 95 were integrated because Microsoft had offered a "facially plausible"¹⁷⁷ claim that the bundling "combines functionalities . . . in a way that offers advantages unavailable if the functionalities are bought separately and combined by the purchaser."¹⁷⁸ It was unclear whether the court intended its standard to apply to a case alleging essentially the same conduct as a tying arrangement that violated Sherman Act section 1 and an exclusionary practice that violated section 2.¹⁷⁹ Ultimately, Judge Jackson applied very different standards in holding Microsoft liable in both contexts.

The court of appeals reversed Judge Jackson's decision under section 1, holding that the per se rule he applied was inappropriate, but largely affirmed his decisions under section 2. Once again, the approaches were characteristic of both courts. At this stage, we merely note the many

inconsistencies and ambiguities of the court of appeals approach; we defer until chapter 4 a full analysis of their implications for the theoretical basis of the government case.

Tying Arrangements under Section 1. In evaluating tying under section 1, Judge Jackson declined to apply the lenient standard of integration the court of appeals had used in the consent decree case, on the ground that it was technically inapplicable and inconsistent with precedent.¹⁸⁰ It immunized asserted product “improvements” regardless of their anticompetitive effects.¹⁸¹ The Supreme Court’s standard for tying, by contrast, looks to “commercial realities”¹⁸² and does not excuse anti-competitive ties simply because they improve the product.¹⁸³ Under the Supreme Court’s test, the government was required to prove the following elements: the defendant had “market power” in the market for operating systems; the browser and the operating system were separate products; the arrangement affected a substantial amount of commerce in the market for browsers; and Microsoft “forced” buyers to take the browser to get the operating system.¹⁸⁴

For Judge Jackson, the bundling of IE and Windows was illegal under this test. First, Microsoft had a monopoly in the operating system market and thus necessarily had economic power over the tying product.¹⁸⁵ Second, the drop in Netscape’s browser usage share and revenues showed that the tying foreclosed an appreciable amount of commerce in the market for the tied product.¹⁸⁶ Third, the products were separate. Whether products are distinct depends not on whether they are “integrated,” but on the character of consumer demand. The browser and the operating system were thus separate products because software code can be combined and divided in infinite ways,¹⁸⁷ and Microsoft integrated Windows and IE not for technical reasons, but to inhibit competition.¹⁸⁸ By contrast, other operating system manufacturers permit removal of their bundled browsers. The tie was particularly “pernicious” because it involved a “partial substitute” that “bore the potential, but had not yet matured sufficiently, to open up the tying product market to competition.”¹⁸⁹

Finally, Microsoft’s actions forced buyers to pay for both Windows and IE at a single price, even if they would have preferred Windows alone.¹⁹⁰ Microsoft conditioned OEMs’ Windows licenses on their purchase of IE and prohibited the deletion of any part of IE.¹⁹¹ It thus prevented OEMs from satisfying demand for a browserless version of Windows.¹⁹² And it forced consumers to accept IE by not including it in the Add/Remove Programs utility and by not “respect[ing] their selection

of another browser as their default.”¹⁹³ Judge Jackson rejected the argument that there was no forcing because the browser was free. He observed that both the browser and the operating system are purchased for a single price, which includes the value of both, just as when a machine is sold with “free” service. Further, even if there was no increment in price, the tie raised rivals’ costs, “thereby depriving consumers of the opportunity to evaluate a competing product on its relative merits.”¹⁹⁴

The court of appeals reversed Judge Jackson’s per se analysis as inappropriate to “technological integration of added functionality into software that serves as a platform for third-party applications,” and remanded for rehearing under a rule of reason standard.¹⁹⁵ Where products are tied or sold only at a bundled price, a buyer of the tied product might not buy a competing version of the tied product, even if he would have preferred it on the merits. But ties also economize on transaction costs and may create economies of scope—for example, the sharing of code that performs both operating system and browser functions may save drive and memory space. The consumer demand test for separate products provides a rough proxy to screen out obvious instances of efficient ties within the per se framework. The absence of separate demand implies there are efficiencies of integration because if all firms, even competitive ones, offer the products bundled, it must be for efficiency reasons.¹⁹⁶ But the consumer demand test is “backward-looking and therefore systematically [a] poor prox[y] for overall efficiency in the presence of new and innovative integration.”¹⁹⁷ Consequently, applying the per se analysis in this limited context may deter innovation.

The court agreed with Judge Jackson that the deferential standard for integration it had applied in the consent decree case was inappropriate in evaluating a tie under section 1.¹⁹⁸ But a rule of reason analysis was nevertheless appropriate in cases involving innovation in platform software because a “first mover” might be able to show that the efficiencies of its integration outweighed any constraint on consumer choice.¹⁹⁹ Efficiencies are plausible in this context because many firms that lack market power in platform software routinely “incorporate basic internet plumbing and other useful functionality into their operating systems,” evidently for efficiency reasons.²⁰⁰ Moreover, including a standard set of APIs in platform software specifically may allow developers of applications software to write to those APIs, without having to include them in their own products.²⁰¹ Interestingly, however, the court acknowledged that it did not find Microsoft’s asserted efficiencies in software integration sufficient to avoid liability under section 2, as we see in the next section.

In a puzzling section, the court then undertook to instruct the district court in how to proceed, “[s]hould plaintiffs choose to pursue a tying claim under the rule of reason.”²⁰² First, it noted the plaintiff would be required to show that the “actual effect” of the tie on the *browser* market was on balance anticompetitive, weighing the anticompetitive effects against Microsoft’s procompetitive justifications. But the government had failed to define a browser market, as the court held in reversing the holding that Microsoft had attempted to monopolize it. Consequently, the government would be precluded on remand “from arguing any theory of harm that depends on a precise definition of browsers or barriers to entry (for example, network effects from Internet protocols and extensions embedded in a browser) other than what may be implicit in Microsoft’s tying arrangement.”²⁰³

The court then attempted to distinguish this inquiry from the section 2 claim. As we will see, the court held that some of the same conduct alleged as tying (particularly Microsoft’s refusal to allow OEMs to uninstall IE and its failure to include IE in the Add/Remove Programs utility) was illegal as monopoly maintenance; it also held that some of Microsoft’s conduct (particularly its override of the user’s choice of a default browser) was legal. Nevertheless, the court insisted that those holdings “do[] not resolve the § 1 inquiry, because the plaintiff must prove that the practices have a net anticompetitive effect in the *tied* product market.”²⁰⁴ The court did not explain how that would be possible given that the plaintiff was foreclosed from proving that such a market exists.

Finally, the court directed the district court on remand to consider whether Microsoft had engaged in “price bundling” by charging more for Windows and IE than it “would have” for Windows alone.²⁰⁵ The question is odd because, in an earlier part of the section, the court referred to price bundling as offering products both separately and bundled, but charging the same amount for the bundle. Microsoft never offered Windows and IE separately, however, so the question of what Microsoft would have charged had it done so was purely hypothetical. More important, the court seemed to suggest that charging more for the unbundled products than for the bundle would have been the anticompetitive practice. The court pointed out that Judge Jackson’s findings of fact suggested that Microsoft did not price-bundle in the sense of charging more for Windows with IE than it would have charged for Windows separately, while his conclusions of law suggested that it did.²⁰⁶ On remand, under the new rule of reason, the district court was directed to decide whether price bundling was on balance anticompetitive. Once

again, the court suggested that the best yardstick was whether competitive operating system manufacturers used the practice. If they sold operating systems bundled with a browser and did not offer a discounted browserless version, then the inference would be that the efficiencies of the practice outweighed any harm to consumer choice.

Monopolization. Judge Jackson also analyzed Microsoft's design of Windows and its contractual restrictions on OEMs as part of Microsoft's efforts to monopolize the operating system market by restricting the OEM channel. First, Microsoft "bound" IE to Windows by contract and product design; second, Microsoft limited OEMs' ability to modify Windows to promote Navigator; and finally, Microsoft offered inducements to OEMs to promote IE over Netscape.²⁰⁷ These practices increased consumer confusion and led OEMs to limit their distribution of Navigator. Consequently, Navigator's usage share dropped, and Navigator could not become the "the vehicle to open the [operating system] market to competition on the merits."²⁰⁸ Microsoft failed to offer a business justification for the "the full extent of this significant exclusionary impact."²⁰⁹ There were no technical or business justifications for not offering browserless versions of Windows or allowing OEMs to uninstall the browser.²¹⁰

The court of appeals affirmed most of Judge Jackson's holdings on monopolization, with some important exceptions. For purposes of its discussion, the court of appeals separated the contractual restraints and the design choices. The court of appeals read Judge Jackson as holding unlawful Microsoft's license restrictions prohibiting OEMs from taking a number of actions: (1) removing the visible means of access to IE, including desktop icons and menu entries; (2) altering the initial boot sequence; and (3) otherwise altering the Windows desktop interface. It considered first whether these restrictions were anticompetitive and then whether Microsoft had offered a legitimate business justification for them. Preventing OEMs from removing the visible means of access to IE deterred them from installing Navigator, because they believed the sight of two browser icons on the desktop would confuse consumers.²¹¹ Because this action built Microsoft's usage share at Netscape's expense, it was anticompetitive.²¹² The restriction on altering the initial boot sequence was likewise anticompetitive because it inhibited OEMs' promotion of IAPs that featured Netscape. The prohibitions on altering the Windows desktop by, for example, removing icons, installing unusually shaped icons, using Active Desktop to promote rival products, or causing a different user interface to launch automatically, were

anticompetitive because they prevented OEMs from using these methods to promote rival browsers and IAPs.²¹³ All of these actions increased Microsoft's usage share "not by improving its own product but, rather, by preventing OEMs from taking actions that could increase rivals' share of usage."²¹⁴

The court then rejected most of Microsoft's proposed justifications. The copyright in Windows did not allow Microsoft to prevent OEMs from altering the desktop or boot sequence.²¹⁵ The claim of a general copyright defense to an antitrust claim was "no more correct than the proposition that use of one's personal property, such as a baseball bat, cannot give rise to tort liability."²¹⁶ Nevertheless, there was a legitimate copyright interest in preventing "substantial alteration" of the copyrighted work, a justification that applied to OEMs' alteration of the boot sequence to substitute an entirely different interface than the Windows desktop. This interest outweighed any "marginal anticompetitive effect" of prohibiting such a substitution. The court rejected Microsoft's position that the restrictions were necessary to preserve the value of Windows as a "consistent platform" because the alterations at issue did not involve removal of any code.²¹⁷ Even if OEMs' "liberality" confused users, the costs would be borne by OEMs in their support operations. Nor was it a defense that the restrictions did not foreclose all of Netscape's avenues of distribution, so long as they foreclosed the most efficient ones.

The court of appeals read Judge Jackson to condemn as monopolization only three of Microsoft's design choices: "excluding IE from the 'Add/Remove Programs' utility; designing Windows so as in certain circumstances to override the user's choice of a default browser other than IE; and commingling code related to browsing and other code in the same files, so that any attempt to delete the files containing IE would, at the same time, cripple the operating system."²¹⁸ In contrast to its solicitude for the possible efficiencies of software integration in the context of tying (where, as we have seen, the court concluded that only a full rule of reason inquiry could adequately take into account the possible benefits of integration), in the context of monopolization, the court noted only that "[j]udicial deference to product innovation . . . does not mean that a monopolist's product design decisions are per se lawful."²¹⁹ Indeed, applying its burden-shifting standard for monopolization, the court resolved the legality of the three acts of monopolization without ever having to balance competitive and integrative effects.

The court found that all of the acts of integration were anticompetitive for essentially the same reason—they deterred OEMs and consumers

from using other browsers. The exclusion of IE from the Add/Remove Programs utility dissuaded OEMs from installing Navigator, and thus built IE's usage share "through something other than competition on the merits."²²⁰ Similarly, overriding the user's choice of a default browser by designing Windows to launch IE in certain circumstances is also anti-competitive because it "prevents some people from using other browsers."²²¹ Commingling code "by placing code specific to Web browsing in the same files as code that provided operating system functions" deters deletion of files containing "browsing-specific routines" because deletion of browser code "would also delete vital operating system routines and thus cripple Windows."²²² On the other hand, "had OEMs been able to remove IE, they might have chosen to pre-install Navigator alone."²²³ Microsoft contended that it did not commingle code, but the court of appeals found evidence in the record to support the finding,²²⁴ including an internal Microsoft document indicating that a file contained three types of code: "IE only, shell only, and combined IE and shell."²²⁵ Presumably, including IE-only code with the other two kinds constituted commingling.

The showing of anticompetitive effect made only a *prima facie* case, however, shifting the burden to Microsoft to offer procompetitive justifications. Microsoft asserted the general benefits of integration, but the court held it had failed to specify or to substantiate them with respect to excluding IE from the Add/Remove Programs utility and commingling code.²²⁶ Microsoft did, however, offer evidence that overriding the default browser for Windows Help, Windows Update, and the Channel Bar was necessary because they used controls and formats that Navigator did not support. It also argued that Windows did not launch Navigator "if a user accesses the Internet through 'My Computer' or 'Windows Explorer' because doing so would defeat one of the purposes of those features—enabling users to move seamlessly from local storage devices to the Web *in the same browsing window*."²²⁷ Because the government failed to rebut these justifications or offer any evidence that the anticompetitive effect outweighed them, this "aspect of [Microsoft's] product design" was lawful.²²⁸ This holding was critical because it assured that any eventual remedy could not order the removal of the full browsing functionality of IE. To invoke that functionality in any context, Windows would require all of the necessary code.

Contractual Restraints on IAPs, ICPs, and ISVs. Microsoft entered into contracts obligating IAPs, including ISPs and online services (OLSs), Internet content providers (ICPs), independent software vendors (ISVs),

Compaq, and Apple to “promote and distribute Internet Explorer to the partial or complete exclusion of Navigator” in exchange for “promotional patronage, substantial financial subsidies, technical support, and other valuable consideration.”²²⁹ The courts evaluated this conduct under section 1 of the Sherman Act as exclusive dealing and under section 2 as acts of monopolization, but only the section 2 claims survived the district court. Judge Jackson found that Microsoft thought it would lose to Netscape in the IAP channel if IAPs offered consumers a choice between IE and Navigator, because of Netscape’s established position. Consequently, it sought to exclude Netscape from the IAP channel by three means: the IEAK, the Referral Server Agreements, and the OLS Folder Agreements, each of which involved sacrifice of revenue opportunities in order to distribute IE and limit distribution of Navigator.²³⁰ As we showed in our discussion of the disguised predatory pricing issues, the court of appeals reversed Judge Jackson’s holding that Microsoft’s *pricing* of the Referral Server was unlawfully low. But Judge Jackson also held illegal the restrictions that the agreements placed on IAPs, particularly their requirements to promote IE preferentially by, for example, making it the default browser for their customers, and to limit their distribution of Navigator.²³¹ Similarly, Microsoft agreed to allow AOL to customize IE to AOL’s brand, and to place AOL’s icon in an OLS folder on the Windows desktop in return for AOL’s agreement to limit distribution of Navigator to 15 percent of its shipments and to obscure from users the fact that they could use Navigator with AOL’s service.²³² As a result of the agreement, almost all of AOL’s customers used the IE browsing engine.²³³ Other OLSs signed similar agreements with Microsoft.²³⁴ The inducements paid to IAPs as well as the restrictive conditions imposed on them have combined to exclude Netscape from the IAP channel.²³⁵

Microsoft offered ICPs placement on the desktop in the Channel Bar in return for their agreement to promote IE and to provide content best viewed with IE.²³⁶ These terms sought to hinder distribution of Netscape, particularly by having content appear degraded on Netscape’s browser.²³⁷ But “to Microsoft’s dismay,” these arrangements had little impact on usage share, mainly because the Channel Bar was a flop with consumers and was eventually abandoned.²³⁸ Microsoft also entered into “First Wave” agreements with ISVs that gave them preferential access to beta versions of Windows in return for the ISVs’ exclusive use of IE for HTML-based software.²³⁹ Microsoft also induced Apple to install IE as the default browser on the Mac OS and to promote it more prominently than Navigator, by threatening to cancel its support

of Mac Office, the profitable version of Microsoft Office for the Mac OS.²⁴⁰ “By extracting from Apple terms that significantly diminished the usage of Navigator on the Mac OS, Microsoft severely sabotaged Navigator’s potential to weaken the applications barrier to entry.”²⁴¹

Judge Jackson, surprisingly, held that Microsoft’s exclusive contracts did not violate section 1 of the Sherman Act. He read the case law under that provision to condemn exclusionary contracts only if they foreclosed a rival from around 40 percent of the market.²⁴² Though some of the exclusive contracts with OEMs, ICPs, and ISVs undoubtedly disadvantaged Netscape by “preempt[ing] the most efficient channels for Navigator to achieve browser usage share,”²⁴³ Judge Jackson concluded that they were not restrictive enough to warrant illegality under section 1 because Netscape could still distribute its browser by downloads, retail, and free mailings of CD-ROMs.²⁴⁴ The government did not appeal its defeat on the section 1 claim for exclusive dealing.²⁴⁵

Nevertheless, Judge Jackson held that the same contracts violated section 2 of the Sherman Act.²⁴⁶ Despite the relative insignificance of the ICP and ISV channels, Microsoft was willing to invest “substantial resources to enlist ICPs, ISVs, and Apple in its campaign against the browser threat.”²⁴⁷ It was willing “to make the sacrifices involved in cancelling Mac Office” to induce Apple to favor IE, which limited Navigator’s chances as a cross-platform threat.²⁴⁸ Giving IE away and paying ICPs and ISVs to bundle IE with their products and to promote IE instead of Navigator focused developers on Windows APIs.²⁴⁹ The “full extent” of these restrictions could not be explained by procompetitive goals.

The court of appeals affirmed, except as to the agreements with ICPs, which the evidence failed to show had any effect on Navigator’s usage share.²⁵⁰ The agreements with all of the major ISPs and OLSs, however, covered a majority of Internet access subscriptions in the United States and required the ISPs and OLSs to disfavor Navigator in return for favorable placement on the Windows desktop. These agreements reduced competition by “help[ing] keep usage of Navigator below the critical level necessary for Navigator . . . to pose a real threat to Microsoft’s monopoly.”²⁵¹ Microsoft’s interest in “keep[ing] developers focused upon its APIs”²⁵² was not a justification, but a euphemism for preserving monopoly power in the operating system market. The agreements with ISVs were also anticompetitive²⁵³ because they gave ISVs that produced “many of the most popular Web-centric applications” early access to technical information in return for their use of IE as their default browser. These inducements meant that “millions of consumers”

would use IE rather than Netscape.²⁵⁴ Again, Microsoft's desire "to persuade ISVs to utilize Internet-related system services in Windows rather than Navigator" was not a justification, but a simple desire to preserve the Windows monopoly.²⁵⁵ This repudiation of Microsoft's efforts to justify its actions by its interest in preserving the integrity of the Windows API would become an important issue at the remedial phase of the case.

Responses to Java. Sun Microsystems' Java also functions as middleware. Java consists of four components.²⁵⁶ It contains a programming language and a set of "class libraries" of prewritten Java code that expose APIs for Java programmers. Java also includes a compiler that translates a programmer's Java code, but not directly into instructions for a specific operating system; instead, it translates the Java code into "bytecode" for the last component of Java technologies, the Java Virtual Machine (JVM). The JVM, in turn, translates the bytecode into instructions for the PC's operating system. Thus, a program written in Java can run on any PC, regardless of its operating system, that has a "Java runtime environment," consisting of the class libraries and a JVM.²⁵⁷ Because Java was intended to enable applications written in the Java language to run on multiple operating systems with minimal porting, Judge Jackson found it "threatened to demolish Microsoft's coveted monopoly power."²⁵⁸ The browser and Java were closely linked because Netscape agreed to include a copy of Sun's Java runtime environment with every copy of Navigator.²⁵⁹ As a result, Navigator was for a time the principal, but not the only, method by which Sun placed copies of its Java runtime environment on Windows computers. Consequently, the court viewed Microsoft's early efforts aimed at Navigator along with efforts aimed specifically at Java as responses to the Java threat.

Judge Jackson found that Microsoft sought to protect the applications barrier to entry by thwarting Sun's effort to enhance the portability of programs through its Java technologies.²⁶⁰ The Java class libraries did not expose enough APIs to support a complex application by themselves, so developers necessarily relied on some platform-specific APIs. In its own implementation of Java, Sun tried to ensure that programs that called on platform APIs could be easily ported to other platforms.²⁶¹ Sun licensed Java to Microsoft as part of its cross-platform strategy of making the Java runtime environment ubiquitous, but Microsoft sought to undermine this goal by developing Windows-specific Java tools and a Java runtime environment that were (1) easier to use and created programs that ran faster than those written with Sun's Java, and (2)

incompatible with Sun's Java and not easily ported to other operating systems.²⁶² Judge Jackson also found Microsoft attempted to subvert the functionality of Sun's Java by, for example, including keywords in its developer tools that it did not identify as Windows-specific, thus leading developers unknowingly to write Windows-specific applications.²⁶³

Netscape's inclusion of a Sun-compliant Windows JVM in Navigator threatened to make Sun's Java ubiquitous,²⁶⁴ Judge Jackson found, but Netscape stopped distributing the JVM "[p]artly as a result of the damage that Microsoft's efforts against Navigator inflicted on Netscape's business."²⁶⁵ Microsoft, in contrast, developed its own technically attractive JVM to include in IE, which gave it "enduring ubiquity."²⁶⁶ Microsoft pressured Intel not to allow its Sun-compliant Java runtime environment to be shipped with Navigator.²⁶⁷ Microsoft also offered its version of Java to ISVs for inclusion in their products instead of Sun's Java.²⁶⁸ In the First Wave agreements, it gave valuable technical inducements to ISVs that included Windows-specific Java, a choice that left ISVs with no reason to distribute other JVMs.²⁶⁹ The greater prevalence of Microsoft's Windows-specific Java induced developers to use it.²⁷⁰

Judge Jackson held that Microsoft illegally sought to hinder the porting of applications "written in Java . . . from Windows to other platforms, and *vice versa*."²⁷¹ Microsoft created a Windows-specific Java implementation and then sought, by "subterfuge and barter" and by its attack on Navigator, to induce developers to use Microsoft's Java rather than a Sun-compliant one.²⁷² He noted Microsoft's actions included persuading Intel not to help assist Sun in developing Java; designing its development tools to trick developers into "unwittingly" using Windows-specific Java; and inducing ISVs, in the "First Wave agreements," to distribute only the Windows JVM. These actions, he held, deterred the creation of portable applications and "interfered with the development of new cross-platform Java interfaces." Though Judge Jackson could not find that Java, absent Microsoft's actions, would have facilitated portability sufficiently to break down the applications barrier, he did find that Microsoft's actions "markedly impeded Java's progress to that end" and thus restricted competition in the operating system market.²⁷³

The court of appeals' analysis of the actions aimed at Java followed the pattern of their analysis of the actions aimed at Navigator—introducing a new product and pricing it attractively were not predatory, but the creation of contractual and technical obstacles to effective competition by rivals could be. The court reversed the finding that Microsoft's development of a high-performance, Windows-specific JVM, and bundling it with IE were illegally exclusionary.²⁷⁴ As in the case of

IE, Microsoft did “not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals.”²⁷⁵ Microsoft’s JVM allowed Java applications to run faster on Windows than did the Sun-compliant JVM.

Offering inducements to ISVs to sign the First Wave agreements, like development and free pricing of the IEAK, was simply “low but non-predatory pricing,”²⁷⁶ and therefore not anticompetitive. But the First Wave agreements themselves contained a clause requiring developers to make the Windows JVM the default. That provision, though not “literally exclusive,” was “exclusive as a practical matter.”²⁷⁷ The agreements therefore had an anticompetitive effect because they applied to many leading developers, including Symantec, and were introduced in tandem with the measures taken against Navigator, which was the main vehicle for distribution of Sun’s JVM.²⁷⁸ Microsoft offered no procompetitive justification.²⁷⁹

The court of appeals also affirmed the finding that Microsoft had intentionally designed its Java development tools, J++, in such a way that developers would unknowingly write programs that were incompatible with Sun’s Java.²⁸⁰ Despite the absence of evidence that any developer was actually deceived, the court pointed to Microsoft documents that expressed the goal of “kill[ing] cross-platform Java by grow[ing] the polluted Java market.”²⁸¹ These actions “served to protect [Microsoft’s] monopoly of the operating system in a manner not attributable either to the superiority of the operating system or to the acumen of its makers, and therefore was anticompetitive” and lacked a business justification.²⁸²

Harm to Consumers and the Competitive Process. The most vexing and crucial issue in the case was whether Microsoft’s actions harmed competition, and therefore consumers, rather than merely Netscape and Sun. This issue had both factual and normative dimensions: first, what exactly did the evidence show was the effect of Microsoft’s conduct, and second, could that effect be characterized as harm to competition? The courts agreed that the government had not proven that, absent Microsoft’s illegal actions, Navigator and Java would have become a standard platform rivaling Windows and thus reduced the applications barrier to entry. But both courts concluded that no such showing was required on the issue of liability, so long as the conduct harmed the “competitive process.”

Judge Jackson found that Microsoft’s actions harmed competition by hindering middleware from evolving into an alternative platform.

This strategy was based on keeping developers focused on the Windows APIs rather than those of middleware. In the case of the browser, the strategy hinged on the browser's share of the usage of "all browsing software,"²⁸³ and especially its share of *incremental* browser usage (a predictor of future share),²⁸⁴ which determined the attractiveness of that browser's APIs to developers of network-centric applications.²⁸⁵ During the relevant period, IE's share rose from negligible levels to around 50 percent, while Netscape's dropped from dominant levels to around 50 percent.²⁸⁶ The respective shares of incremental usage changed even more,²⁸⁷ indicating that the trends would continue,²⁸⁸ as indeed they have until recently. These changes reflected "the substantial impact of Microsoft's actions"²⁸⁹ in hurting Netscape and blocking its "potential threat to the applications barrier to entry" by preventing its browser's APIs from becoming the standard.²⁹⁰ These effects meant Netscape would not become an alternative platform. Even though Netscape's installed base more than doubled during the relevant period, and it and other browsers would remain in the market,²⁹¹ its usage *share* declined so much that "the APIs that Navigator exposes will not attract enough developer attention to spawn a body of cross-platform, network-centric applications large enough to dismantle the applications barrier to entry,"²⁹² at least for a few years, even if AOL were to drop IE in its favor.²⁹³

Microsoft's introduction of IE and inclusion of it free on Windows benefited consumers by increasing their familiarity with the Internet and by spurring innovation by Netscape.²⁹⁴ But other Microsoft actions against Navigator and Java harmed consumers both directly and indirectly.²⁹⁵ The direct ways included preventing OEMs from providing consumers a browserless version of Windows that would have economized on memory and disk space; inducing OEMs not to install Navigator, even when consumers might have preferred it; assuring that IE would launch automatically in certain circumstances, thus confusing consumers; preventing OEMs from altering the initial boot sequence in ways that would have made PCs more user-friendly; and preventing Intel from innovating by development of its NSP software.²⁹⁶

The less direct harms stemmed from hindering innovation in middleware that might have eroded the applications barrier to entry and enabled new competition in the operating systems market that would have "conducted to consumer choice and nurtured innovation."²⁹⁷ Although "[t]here is insufficient evidence to find that, absent Microsoft's actions, Navigator and Java already would have ignited genuine competition" in the operating systems market, "[i]t is clear . . . that Microsoft has

retarded, and perhaps altogether extinguished, the process by which these two middleware technologies could have facilitated the introduction of competition into an important market.”²⁹⁸ Microsoft also deterred innovation by signaling “every enterprise with the potential to innovate in the computer industry” that it will use its resources to crush innovations that threaten Microsoft.²⁹⁹

All of the harms Judge Jackson identified hinged on usage share because, given network effects, that factor determined the attractiveness of a platform to users and developers. The court of appeals accepted this theory of anticompetitive effect.³⁰⁰ The government was not required to prove that Microsoft’s actions actually preserved its monopoly position; it needed to prove only that Microsoft’s conduct “reasonably appear[ed] capable of making a significant contribution to . . . maintaining monopoly power.”³⁰¹ Even though the court could not “reconstruct a product’s hypothetical technological development in a world absent the defendant’s exclusionary conduct,”³⁰² it could infer the causal effects from the nature of the conduct itself. The defendant must “suffer the uncertain consequences of its own undesirable conduct.”³⁰³

Ultimately, then, the issue of harm to consumers rested on the characterization of likely effects of the practices involved as anticompetitive, applying both economic theory and antitrust policy considerations. Judge Jackson’s approach to this difficult question was to ask whether the conduct was rational for the firm, other than as a means of preserving monopoly power. By that standard, many of Microsoft’s promotional expenses in building usage share were predatory because they did not promise revenue any time soon. But the court of appeals rejected this approach, holding that Microsoft’s pricing practices must meet the exacting standards for predatory pricing. Nevertheless, the court affirmed much of Judge Jackson’s analysis of Microsoft’s nonprice exclusionary practices under the same general theory as Judge Jackson’s: the practices built usage share and thus protected the applications barrier to entry without a procompetitive justification. The only further requirement it imposed was that Netscape and Java “reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue.”³⁰⁴ Microsoft conceded that they did—indeed it argued that they were such a threat because they were in the same market as Windows. This “edentulous” (toothless) test for causation, however, applied only to the liability inquiry and the availability of an injunction against specific practices, because “[a]bsent some measure of confidence that there has been an actual loss to competition that needs to be restored, wisdom counsels against adopting radical structural relief.”³⁰⁵

We reexamine the court of appeals' reasoning on anticompetitive effect in chapter 4.

Judge Jackson's Misconduct. Before tracing the remedial decisions in the case, we pause briefly to address an issue that cast a cloud over all of Judge Jackson's decisions. Beginning in at least September 1999, shortly after the parties had finished presenting evidence but two months before Judge Jackson issued findings of fact, the judge, without the parties' knowledge, gave a series of interviews to reporters, including Ken Auletta of the *New Yorker* and Joel Brinkley and Steve Lohr of the *New York Times*.³⁰⁶ The judge "embargoed" these interviews, insisting that the reporters agree not to publish his comments until the case had left his courtroom.³⁰⁷ He also gave interviews and spoke at public events after he entered his final judgment but before the case was decided on appeal.³⁰⁸

Judge Jackson discussed several topics related to the case during what reporters characterized as "friendly, informal and unstructured" meetings.³⁰⁹ Several common themes emerged. Judge Jackson was skeptical that technological integration benefited consumers.³¹⁰ He doubted the veracity of Microsoft officials, including Bill Gates, and became convinced that they were arrogant and unethical.³¹¹ In explaining his order to break up the company, he commented, "Falsus in uno, falsus in omnibus," translated as "Untrue in one thing, untrue in everything."³¹² He continued, "I don't subscribe to that as absolutely true. But it does lead one to suspicion. It's a universal human experience. If someone lies to you once, how much else can you credit as the truth?" He told Auletta that "Gates & Co.'s 'crime' was hubris—a refusal to acknowledge that the nation's antitrust laws applied to them."³¹³ He compared Microsoft's behavior to that of drug traffickers and gangland killers.³¹⁴ He likened Microsoft to Japan at the end of World War II, justifying his refusal to give Microsoft a meaningful opportunity to contest the government's proposed remedy by posing the rhetorical question, "Were the Japanese allowed to propose terms of their surrender?"³¹⁵ In explaining why he imposed a more drastic remedy than he said he had anticipated, he recited the story of a North Carolina mule trainer, who "whopped [the mule] upside the head" with a 2-by-4 to get the mule to "do all kinds of wonderful tricks."³¹⁶ The trainer had gotten the mule's attention, and Judge Jackson hoped he had likewise gotten Microsoft's attention.

Judge Jackson told a group of antitrust scholars at a conference in October 2000 that he had violated no rules of professional conduct by giving interviews to the press while the trial was going on because the

information he provided was embargoed. The court of appeals thought otherwise. It held that the judge committed “deliberate, repeated, egregious, and flagrant” violations of three separate canons of the code of conduct for federal judges and a provision of the United States Judicial Code.³¹⁷ All of his interviews violated a canon forbidding judges to comment publicly “on the merits of a pending or impending action.”³¹⁸ The prohibition takes effect when there is reason to believe a case may be filed and does not end until completion of the appellate process. Judge Jackson’s comments pertained to the merits of the case, and by talking to reporters, he commented “publicly,” even though the meetings were conducted in private under the condition that the information would not be reported before entry of the final judgment.³¹⁹ Indeed, according to the appellate court, the judge’s insistence on secrecy worsened his offense because it implied knowledge of impropriety and prevented Microsoft from objecting to his behavior in a timely fashion.³²⁰ Another canon prohibits a judge from receiving *ex parte* communications on the merits of a pending case, and the court of appeals surmised that the reporters conveyed their personal feelings about the case during their lengthy interviews.³²¹ Yet another canon instructs that “a judge should avoid impropriety and the appearance of impropriety in all activities,” and a corollary requires a judge to “respect and comply with the law” and to “act at all times in a manner that promotes public confidence in the integrity and impartiality of the judiciary.”³²² The court of appeals had no trouble finding that Judge Jackson’s “rampant disregard” for his ethical obligations jeopardized “public confidence in the integrity” of the proceedings.³²³ And the judge violated the Judicial Code by not recusing himself when his “impartiality might reasonable be questioned.”³²⁴

The question for the appellate court, therefore, was not whether Judge Jackson had breached his ethical obligations, but rather what the remedy for that breach would be. The court nominally imposed retroactive disqualification as of the time immediately prior to entry of his remedial order; the court refused to order disqualification retroactive to entry of the findings of fact or conclusions of law. But as we explain in the next subsection, the appellate court had independent reasons for reversing the remedy, and the retroactive disqualification encompassing the remedial order by itself had no impact.³²⁵ The effective sanction, therefore, was prospective disqualification, or removal of the case from Judge Jackson for further proceedings, including retrial of the remedy phase. The intriguing question is this: Why would the judge’s misconduct warrant setting aside the remedial order, but not the prior determinations?

After reviewing “the record with painstaking care,” the court could “discern no basis to suppose that actual bias infected [Judge Jackson’s] factual findings,”³²⁶ but it concluded that his ethical breaches created an appearance of bias. At a minimum, an appearance of bias requires prospective disqualification, from the time of the appellate court’s decision. Moreover, in this case, the conclusion seemingly justified either complete retroactive disqualification or no retroactive justification. The inappropriate interviews began before Judge Jackson issued his findings of fact, and so those findings and his subsequent conclusions of law would be tainted by the appearance of impropriety. Indeed, a reasonable observer surely might suspect that a judge biased in his issued opinions was biased in conducting the trial.

Judge Jackson told Auletta that he intended to craft his findings of fact and conclusions of law to be impervious to judicial review—he wanted to “confront the Court of Appeals with an established record which is a *fait accompli*”—in part because he was miffed at the court for reversing his preliminary injunction in the consent decree case.³²⁷ The appellate court dismissed the remarks as legally insignificant.³²⁸ But the appellate court’s ability to find record support for the trial judge’s determinations would not dispel the reasonable suspicion that a judge determined to protect his decision from reversal would manipulate the record and avoid making equally supportable determinations inhospitable to his desired outcome. Again, the mere appearance of bias, not actual bias, was enough to call all of Judge Jackson’s decisions into question.

The court of appeals reasoned that the “most serious judicial misconduct occurred near or during the remedial stage.”³²⁹ And yet the court detailed the inappropriate comments and interviews that occurred before the entry of findings of fact. Apparently well before that time, Judge Jackson concluded that Bill Gates has “a Napoleonic concept of himself and his company,” that Gates is “a smart-mouthed young kid who . . . needs a little discipline,” and that Microsoft executives “don’t act like grown-ups.”³³⁰ The court itself observed, “Given the extent of the Judge’s transgressions in this case, we have little doubt that if the parties had discovered his secret liaisons with the press, he would have been disqualified, voluntarily or by court order.”³³¹ The idea, then, that Judge Jackson’s apparent bias crossed some critical threshold just before entry of his remedial order is hard to accept.

In the end, the appellate court’s determination was less principled than pragmatic. *Microsoft* had been a long and expensive trial by most sensible standards, and it had attracted widespread publicity. To start

over would multiply those costs and embarrass the court system. Further, the rapid pace of technological development in the software industry threatened to render even an expeditious remedy based on the existing liability record obsolete.³³² A new trial would have increased the risk of a meaningless or counterproductive remedy. The court's implicit calculation was that the cost of retrying the case was greater than the loss of public confidence in the judicial process, given its refusal to find any actual prejudice to Microsoft.³³³ But because the variables in this calculation are unquantifiable, the court's compromise is not entirely satisfying.

The Remedial Decisions

Although the government proposed and initially won radical structural remedies, the court of appeals reversed that order. The ensuing settlement eventually brought the case to a close on much more sensible grounds. In chapter 6, we scrutinize from a policy perspective the proposed structural remedies and the eventual conduct remedies. At this stage, we limit our task to understanding the sequence of events and the resulting remedies.

Judge Jackson's 2000 Order. The government's proposed remedy, supported by the statements of expert economists, called for dividing Microsoft into two firms, one limited to operating systems and one limited to applications. In addition, it called for a variety of conduct orders, including prohibitions on exclusive dealing and tying, and a requirement that Microsoft disclose APIs and other information necessary for developers to ensure that their software was compatible with Windows. Microsoft objected to the proposed remedy, offering its own expert statements, and proposed a schedule of discovery and an evidentiary hearing on the proposals. Judge Jackson, however, entered his judgment on June 7, 2000, essentially adopting the government's proposed remedy, without further proceedings.³³⁴

The court of appeals reversed the remedial order entirely. It noted that although the case had been tried with admirable dispatch, any remedy would address actions six years old, "an eternity in the computer industry."³³⁵ Consequently, conduct remedies might be pointless because the anticompetitive conduct had become obsolete, and structural remedies might make no sense because it was difficult to "restor[e] competition to a dramatically changed, and constantly changing, marketplace."³³⁶ It went on to reverse the remedial order on three

grounds apart from Judge Jackson's misconduct. First, due process had required that Judge Jackson conduct an evidentiary hearing to resolve the many contested factual issues on remedy.³³⁷ Microsoft had identified twenty-three witnesses who would have testified that it was not feasible to divide Microsoft into two companies, and that to do so would hurt consumers and shareholders.³³⁸ The fact that these sorts of factual issues involve predictions did not remove the obligation of providing an adequate hearing. The court observed acridly that "[t]rial courts are not excused from their obligation to resolve such matters through evidentiary hearings simply because they consider the bedrock procedures of our justice system to be 'of little use.'"³³⁹ Second, Judge Jackson failed to offer an explanation of how the remedy would restore competitive conditions,³⁴⁰ asserting only that Microsoft was unrepentant and that the government, having won the case, should be allowed to choose the remedy.³⁴¹ Finally, because the court of appeals had reversed some of Judge Jackson's liability holdings, it was necessary to remand to the trial court to determine, in its sound discretion, what the structural or conduct remedies are necessary to rectify the remaining proven violations.³⁴²

The court then offered some further "guidance" to the district court that would decide the remedial issue on remand. Although it recognized the district court's broad discretion, it noted that structural remedies are more problematic for firms that have grown by internal expansion rather than by merger, because dissolution poses more difficult practical problems.³⁴³ The court also suggested that, to win structural relief, the government would have to meet a heightened standard of proof that Microsoft's conduct caused the continuation of its monopoly in operating systems. The court noted that it had inferred causation in upholding liability, despite the district court's concession that it could not find Netscape and Java would have restored competition in operating systems absent Microsoft's conduct. But that concession would essentially foreclose structural relief, unless the government could produce better evidence of causation than it had offered in the trial.³⁴⁴

The Consent Decree and Nonsettling States' Remedy. After the case once again reached the district court, the parties began another intensive mediated settlement negotiation. This time, in November 2001, the United States and seven states³⁴⁵ agreed to a proposed final judgment. Judge Kollar-Kotelly determined that the Tunney Act was applicable to this proposed consent decree, even though the case had been tried on the merits.³⁴⁶ A somewhat larger group of dissident states³⁴⁷ were permitted

to pursue broader relief in spite of Microsoft's objections that they lacked standing to do so.³⁴⁸ In the Tunney Act proceeding, the judge reviewed objections to the proposed final judgment to determine if the proposed decree was in the public interest; in the dissenting states' proceeding, which included a thirty-two-day evidentiary hearing, she considered whether to grant the nonsettling plaintiffs the additional relief they sought. In November 2002, she upheld the consent decree, with only one modification,³⁴⁹ and granted the nonsettling states essentially the same relief,³⁵⁰ making new findings of fact and methodically rejecting the nonsettling states' proposals for much broader remedies.

In considering the consent decree and the proposals for broader relief, Judge Kollar-Kotelly was guided by the general law of antitrust remedies and the court of appeals' holdings on liability and instructions on remedies. Antitrust remedies typically should stop illegal conduct and restore the competitive conditions that would have existed but for the conduct, goals that may require more than injunctions against the conduct specifically found illegal. The court of appeals in *Microsoft*, however, also required that the remedy be proportional to the strength of the evidence of a "causal connection" between Microsoft's actions and its dominance of the operating systems market.³⁵¹ Both Microsoft and the states submitted experts' statements on causation in the remedies phase, but neither had much effect: the states' expert, Carl Shapiro, offered no new evidence, and Microsoft's expert, Kevin Murphy, seemed to contradict the court of appeals by denying causation entirely.³⁵² That left Judge Kollar-Kotelly with the same dearth of evidence of causation that the court of appeals had found in the trial record. Consequently, the conduct remedies were directed mainly to the conduct held unlawful, although they did go beyond the relief sought in the government's original complaint.

The judgments, which were to remain in effect for five years, included a lengthy section enumerating prohibited conduct, another section establishing enforcement and compliance mechanisms, and a list of definitions. In keeping with the admonitions of the court of appeals concerning remedies, the prohibitions and requirements of the decree are closely tied to the specific actions that the court of appeals had agreed were unlawful and include qualifications reflecting the court of appeals' limitations on liability. In June 2004, the court of appeals affirmed Judge Kollar-Kotelly's approval of the decree³⁵³ and her entry of similar relief for the states.³⁵⁴ We focus on the U.S. consent decree in most of the following discussion, but refer to the states' final judgment where it differs.

Definitions (VI). The heart of the theory of liability was middleware, which the guiding narrative suggested could become a platform to which software developers could write programs that would run on many operating systems, thereby reducing the applications barrier to entry that protects the Windows monopoly. Consequently, the heart of the remedial decree is its definition of middleware in part VI of the decree.³⁵⁵ Although the trial on the merits was concerned only with two forms of middleware, browsers and Java, the decree goes beyond these products to address Non-Microsoft Middleware, a category defined to include all products that currently serve as platforms that allow applications to run on more than one operating system, or could be ported to do so.³⁵⁶ The decree accords special treatment to a subcategory of Non-Microsoft Middleware *Products*, which have received widespread distribution and thus pose a greater chance to evolve into a platform rival of Windows.³⁵⁷

The theory of liability focused on Microsoft's actions advancing its software in rivalry with Netscape and Java. Consequently, the decree also defines Microsoft Middleware Products, but does so more specifically to include IE, Microsoft's JVM, Media Player, Messenger, and Outlook Express, and future technologies that provide comparable functionality.³⁵⁸ In addition, it encompasses functionalities that are both included in Windows and distributed and trademarked separately. The decree also addresses Microsoft Middleware, a term that refers to the code, as opposed to the functionality, of the products that are separately distributed and trademarked.³⁵⁹

Beyond middleware, the remedy also addresses server/network computing, which the court found to have a similar potential to reduce the applications barrier to entry.³⁶⁰ The court, however, rejected proposals to extend the decree to include other technologies, such as handheld devices and Web services, on the ground that there was insufficient evidence that they would affect Microsoft's operating system monopoly.

Flexibility for OEMs and End Users (III.C & III.H). The court of appeals condemned Microsoft's license restrictions that barred OEMs from removing IE icons, menu items, and other means of launching IE; altering the initial boot sequence to promote other products; and otherwise altering the Windows desktop, except by substituting a new interface. The corresponding consent decree provisions require Microsoft to allow OEMs to use various devices to promote Non-Microsoft Middleware. Under the consent decree, OEMs may install icons or menu entries for Non-Microsoft Middleware or for products that distribute it;³⁶¹ install shortcuts for Non-Microsoft Middleware, except where the shortcut

would impair the functionality of the Windows interface;³⁶² and launch Non-Microsoft Middleware automatically at specified times where a Microsoft middleware product would be launched.³⁶³ Microsoft also must allow OEMs to provide users the option of launching, before Windows, a competing operating system,³⁶⁴ and to offer their own IAPs in the initial boot sequence.³⁶⁵ Microsoft must also provide notice of grounds for any proposed termination of an OEM's license to allow the OEM to cure any violation of its terms.

The court of appeals held that Microsoft monopolized by not including IE in the Add/Remove Programs utility and by commingling IE-only code in the same files as code for the Windows shell, but it upheld the design of Windows to override user's choice of default browser in cases in which Microsoft had a legitimate technical reason. The decree's prohibitions and requirements attempt to strike the same balance. Microsoft must provide a means, like an Add/Remove Programs utility, for enabling or deleting access to each Microsoft Middleware Product (including IE) and Non-Microsoft Middleware Product by (a) displaying or deleting icons, shortcuts, or menu entries; and (b) enabling or disabling automatic invocations.³⁶⁶ Microsoft must also allow OEMs to designate a Non-Microsoft Middleware Product to launch where Windows would otherwise launch a Microsoft Middleware product.³⁶⁷ Microsoft may, however, design Windows to invoke its own middleware to connect to a Microsoft server or where the non-Microsoft middleware product cannot technically perform the function.³⁶⁸ Microsoft must ensure that Windows does not automatically alter an OEM's configuration of desktop icons without providing an unbiased option to the user, at least fourteen days after the initial boot-up, to confirm the change.³⁶⁹

On appeal from approval of the consent decree, Massachusetts objected to the district court's failure to insist that, in addition to Microsoft's allowing users and OEMs to delete *access* to the middleware, Microsoft also allow deletion of middleware *code*. The court of appeals, however, found the district court's approach to be within its discretion. The decree addressed the most critical anticompetitive effects of integration that Judge Jackson had identified. It did so by "reducing the costs an OEM might face in having to support multiple internet browsers," thus thwarting "Microsoft's efforts to reduce software developers' interest in writing to the Application Program Interfaces (APIs) exposed by any operating system other than Windows," all "without intruding itself into the design and engineering of the Windows operating system."³⁷⁰ While allowing code to remain might result in "accidental invocations" of IE, the court of appeals did not believe these would be

enough to materially affect support costs. Judge Kollar-Kotelly's concern that deletion of middleware code would fragment the Windows platform did not improperly credit Microsoft's interest in preserving its monopoly. Granted, the court of appeals in its 2001 decision had rejected Microsoft's argument that preserving the integrity of its API set was a legitimate business justification for its exclusive dealing contracts with IAPs. But in 2004, the court of appeals insisted that that statement did not imply that fragmentation was intrinsically procompetitive no matter how extensive.³⁷¹ Thus, network effects generate real benefits to consumers that the district court properly valued in shaping its remedy. This recognition was crucial to the shape of the remedy.

Exclusive Agreements (III.F & III.G). The court of appeals had affirmed Microsoft's liability under section 2 for entering agreements with IAPs to promote only IE and to limit the percentage of its shipments that included Navigator; with ISVs to limit distribution of Navigator and to make the Microsoft JVM the default; and with Apple to give IE preferential placement in the Mac OS. Under responsive provisions of the consent decree, Microsoft may not make payment of consideration to an ISV conditional on the ISV refraining from developing or distributing software that competes with Microsoft Platform Software, unless the condition is reasonably necessary for performance of an agreement to use or distribute Microsoft software.³⁷² Microsoft may not pay consideration to an Internet or a computer firm on the condition that the firm use Microsoft Platform Software exclusively or in a fixed proportion.³⁷³ And it may not give an IAP or ICP placement on the Windows desktop in return for not distributing or promoting software that competes with Microsoft Middleware.³⁷⁴ But Microsoft can enter into certain specified joint ventures.³⁷⁵

Retaliation, Threats, and Nondiscrimination (III.A & III.B). The court of appeals also held unlawful various threats that Microsoft had made to other software companies that were developing potentially competing technologies.³⁷⁶ In response to these holdings, the consent decree bars Microsoft from retaliating against an OEM for handling competing platform software or middleware, for selling PCs with non-Microsoft operating systems, or for invoking the terms of the decree; the non-settling states' remedial order goes beyond this by prohibiting *threats* of retaliation.³⁷⁷ But Microsoft can otherwise enforce its licenses and intellectual property rights, including by termination of an OEM's license, with proper notice. In an important proviso, the decree permits

Microsoft to pay an OEM a consideration (or Market Development Program) commensurate with the OEM's services in the distribution of Microsoft products.³⁷⁸

Microsoft is also required to provide Windows to OEMs under uniform licenses for a single published royalty. It may, however, charge different royalties for different language versions, and may offer reasonable volume discounts and "market development discounts" based on legitimate criteria.³⁷⁹ (Massachusetts objected to allowing Microsoft to offer the market development discounts on the ground that they could be used "to ensure that OEMs will not exercise whatever flexibility the remedy provides" them. But the district court accepted testimony that the discounts could be procompetitive if used nondiscriminatorily, and the court of appeals affirmed.)³⁸⁰ Finally, Microsoft may not retaliate against ISVs or independent hardware vendors (IHVs) for developing or supporting software that competes with (or runs on software that competes with) Microsoft Platform Software.³⁸¹

Forward-Looking Relief (III.D & III.E). All of the foregoing remedies are aimed at the conduct held illegal in the decree or closely analogous conduct. One category of remedial provisions, however, was aimed more generally at increasing competition in operating systems markets. These provisions address the issue of interoperability, which was considered only indirectly at trial. The consent decree requires Microsoft to provide early access to "APIs used by Microsoft Middleware to interoperate with a Windows Operating System Product."³⁸² Judge Kollar-Kotelly rejected far broader and more detailed disclosures proposed by nonsettling states on the grounds that they offered only speculative procompetitive benefits and would likely be inefficient.³⁸³ The court of appeals affirmed, holding that "[i]n light of the forward-looking nature of the API disclosure provision, the court reasonably balanced its goal of enhanced interoperability with the need to avoid requiring overly broad disclosure, which it determined could have adverse economic and technological effects, including the cloning of Microsoft's software."³⁸⁴

Second, in its "most forward-looking provision," the district court required Microsoft to provide, on nondiscriminatory terms, access to communications protocols necessary for Windows client PCs to interoperate or communicate with a Microsoft *server* operating system.³⁸⁵ The goal of this provision was to enhance interoperability of Windows client PCs with non-Microsoft server operating systems. Again, the court of appeals affirmed the provision and rejected proposals for more extensive disclosures.³⁸⁶ The court of appeals also rejected a proposal

to extend the decree's disclosure provisions to Web services.³⁸⁷ The applications barrier to entry arose from both positive network effects and Microsoft's anticompetitive conduct; a remedial provision aimed at lowering the barrier is appropriate only if it is closely linked to the anticompetitive conduct.

Microsoft must also offer to license any IP rights necessary for firms to exercise their options under the decree.³⁸⁸ Microsoft is required to disclose only its source code to a joint Technical Committee charged with facilitating enforcement,³⁸⁹ rather than to other firms. But the mandatory licensing and disclosure requirements are subject to a variety of limitations to ensure security.³⁹⁰

The Java Deception. The court of appeals had held that Microsoft monopolized by including Windows-specific directives in its Java developer tools without identifying them as such, and that the resulting deception of developers reinforced the Windows monopoly in a way unrelated to its quality. Yet Judge Kollar-Kotelly refused to include a provision aimed specifically at Java deception in the remedy, citing the absence of any evidence that the deception was continuing. The court of appeals affirmed both this decision and her refusal to accept a much broader "truth-in-standards" provision that would have required Microsoft to continue to support industry standards that it had claimed to support.³⁹¹ The court noted that it had held that, apart from the deception, Microsoft's development of the incompatible Windows-specific version of Java was not anticompetitive.

Enforcement Provisions. The U.S. consent decree and the nonsettling states' judgment created two compliance mechanisms. Each judgment required the corresponding plaintiffs to form an enforcement committee that could examine Microsoft's books, question its employees, and ask it to provide written reports.³⁹² The consent decree also provided for the creation of a Technical Committee (TC) of disinterested experts to supervise compliance³⁹³ and required Microsoft to appoint its own compliance officer to ensure that Microsoft employees are aware of their obligations under the decree. The nonsettling states' final judgment did not rely on the TC, leaving it to the plaintiffs to secure compliance directly through their enforcement committee, with the advice of a technical consultant. The final judgment also required Microsoft to appoint from its board of directors an antitrust compliance committee, which in turn was to appoint an antitrust compliance officer to supervise Microsoft's compliance program.³⁹⁴ Despite the existence of two enforcement frameworks,

the parties have coordinated their efforts and have submitted a series of joint status reports to Judge Kollar-Kotelly.³⁹⁵ We evaluate the experience under the compliance provisions in chapter 6.

The Follow-on Private Litigation

In follow-on litigation,³⁹⁶ Microsoft's rivals and numerous classes of consumers sued Microsoft under the antitrust laws alleging that they suffered injuries from Microsoft's anticompetitive conduct, including the conduct at issue in the government case. Though these suits are not limited to the issues litigated in the government case, they do take advantage of Judge Jackson's findings of fact to the extent those findings were essential to holdings affirmed by the D.C. Circuit.³⁹⁷ Thus, any relief or settlements in these cases can be viewed as part of the remedy that the U.S. legal system provides for Microsoft's conduct.

Many of Microsoft's rivals, including AOL (which now owns Netscape), Sun Microsystems, IBM, RealNetworks, and Be, sued Microsoft. Virtually all of the lawsuits have now settled for amounts totaling more than \$3 billion.³⁹⁸ The Sun litigation resulted in decisions that shed light on the government case. In 2001, Microsoft had settled copyright litigation with Sun on terms that limited Microsoft's distribution of its version of the JVM. In 2002, Microsoft introduced its Visual Studio .NET software, which competed with the Java platform. Shortly thereafter, Sun sued Microsoft, alleging violations of both copyright and antitrust law. The Maryland district court granted a preliminary injunction barring Microsoft from distributing the Microsoft JVM in ways not authorized by the 2001 settlement, and, much more controversially, requiring Microsoft to include Sun's JVM in Windows, in order to prevent an emerging but so far undefined middleware platform market from tipping to .NET.³⁹⁹

The Fourth Circuit affirmed the injunction against the Microsoft JVM, but reversed the mandate to carry Sun's JVM on the ground that Sun had failed to prove a sufficient likelihood of irreparable harm from tipping.⁴⁰⁰ Sun's economic expert, Dennis Carlton, testified that he could not say that tipping was more likely than not, and the district court did not find that tipping was imminent. The court of appeals therefore concluded that the risk of irreparable harm was not sufficiently immediate to meet the applicable legal standards. The district court did find that, without the preliminary injunction, Sun would lose "its right to compete, and the opportunity to prevail, in a market undistorted by its competitor's antitrust violations,"⁴⁰¹ but the court of appeals held

that “market distortion” was too abstract a harm where the plaintiff was admittedly unable to define the relevant market.⁴⁰²

The picture for the purchasers’ litigation is more complicated because of the peculiar laws applicable to direct and indirect purchasers. Direct purchasers may sue for overcharges from antitrust violations, but the *Illinois Brick*⁴⁰³ rule bars indirect purchasers from suing under federal antitrust law for overcharges that direct purchasers passed on to them. Many states, however, have enacted laws authorizing indirect purchaser suits.⁴⁰⁴

Some of the largest direct purchasers, mainly OEMs, did not sue.⁴⁰⁵ Gateway and IBM, which Judge Jackson specifically found to have been disfavored by Microsoft’s conduct, did sue and have recovered substantial settlements.⁴⁰⁶ Other purchasers of Microsoft software have filed numerous cases, many of them class actions, in both state and federal courts, alleging a far wider range of conduct than was at issue in the government case and seeking both damages and injunctive relief under both state and federal law. On various jurisdictional grounds, Microsoft removed to federal court a number of the cases filed initially in state court. The Judicial Panel on Multidistrict Litigation then transferred to the District of Maryland more than one hundred of the actions pending in federal court, including some consumer actions based on state law.⁴⁰⁷ The district court in Maryland subsequently dismissed the federal indirect purchaser claims and some of the state claims on a variety of grounds⁴⁰⁸ and declined to certify some classes.⁴⁰⁹ Consumers who purchased software directly from Microsoft successfully formed a class⁴¹⁰ and later settled.⁴¹¹

Many class actions were filed on behalf of consumers who bought Microsoft products from intermediaries. In one case, consumers alleged that they were actually direct purchasers, and therefore not barred by *Illinois Brick*, because the OEMs from whom they purchased had acted in concert with Microsoft; the court, however, rejected this argument because the plaintiffs had failed to allege that OEMs violated the antitrust laws⁴¹² or were co-conspirators with *Microsoft*.⁴¹³ The courts also rejected claims that users who purchased Microsoft software from OEMs (1) were actually direct purchasers because they acquired end-user licenses from Microsoft, or (2) suffered antitrust injury from being “deprived of competitive technology” and from degradation of their computers’ performance.⁴¹⁴ Numerous state law indirect purchaser claims, however, remained pending in state courts. Some of these cases have been dismissed on the grounds that state law did not provide a right of recovery to indirect purchasers.⁴¹⁵ Other courts, however, have allowed

indirect purchaser cases to proceed under state law.⁴¹⁶ Of these, fourteen have issued written opinions on the question of class certification, and most have granted certification.⁴¹⁷ Most of the indirect purchaser cases have now been settled in amounts that, as of January 2005, totaled almost \$2 billion.⁴¹⁸ We examine the routine certification of these classes in some detail in chapter 6.

The European Commission Decision

The European Commission began its own antitrust investigation of Microsoft while the U.S. case was pending. Although the scope changed somewhat over time, the European agency came to focus on streaming media players and on the interoperability of “low-end,” or workgroup, server operating systems with Windows PCs. As in the U.S. case, intensive settlement negotiations failed, and in early 2004, the commission issued its decision that Microsoft had abused its dominant position in the operating system market in violation of article 82 of the European Community Treaty by limiting the ability of Windows PCs to interoperate with competitors’ workgroup servers and by tying the Windows Media Player (WMP) to Windows.⁴¹⁹ It imposed a fine of almost €500 million and required Microsoft, first, to disclose to competitors “complete and accurate specifications for the protocols used by Windows work group servers in order to provide file, print and group and user administration services to Windows work group networks,”⁴²⁰ and, second, to “offer a version of Windows for client PCs which does not include the Windows Media Player.”⁴²¹ Parts of the final judgment in the U.S. case cover some of the same ground as the European Commission decision—for example, the protocol-licensing program under the U.S. decree applies to communications with server operating systems, and the restrictions on bundling middleware products apply to media players. But the European Commission decision grants considerably broader relief in both areas.

The workgroup server issue focused on Microsoft’s refusal, in response to a request by Sun Microsystems, to provide specifications that would facilitate interoperability of Windows client PCs and Windows servers with Sun’s Solaris server operating system in workgroup networks.⁴²² Sun had asked for “complete information” necessary to provide “native support for the complete set of Active Directory technologies [an advanced Microsoft directory service in Windows 2000] on Solaris.”⁴²³ The commission interpreted Sun’s request to cover specifications for the protocols Windows work group servers used to provide file, print, and other services to Windows work groups. The commission

concluded that Microsoft's continuing refusal to provide these specifications was an abuse of a dominant position.

The agency defined the relevant markets of client PC operating systems and "work group server operating systems."⁴²⁴ Microsoft contended that the market should include all server operating systems, including more expensive ones used for "mission-critical" applications. The agency, however, chose the narrower definition, reasoning that servers are optimized for particular functions and low- and high-end servers are not reasonably substitutable in demand or supply. In this narrower market, Microsoft has a market share of more than 60 percent,⁴²⁵ a share protected by barriers to entry and reinforced by Microsoft's dominance of PC operating systems.⁴²⁶ The agency thus concluded that Microsoft has a dominant position,⁴²⁷ which it abused by refusing to provide the specifications. Full specification information, beyond the protocols Microsoft already discloses (either voluntarily or in the Communications Protocol Licensing Program created pursuant to the U.S. consent decree), was necessary for effective competition because interoperability is critical to the server market, and it cannot be achieved without information from Microsoft.⁴²⁸ Unlike the U.S. program, which applied only to PC-to-server communications protocols, the commission order covered server-to-server protocols, and in much greater detail.

The commission rejected Microsoft's argument that disclosure of its intellectual property would undermine innovation, reasoning that

on balance, the possible negative impact of an order to supply on Microsoft's incentives to innovate is outweighed by its positive impact on the level of innovation of the whole industry (including Microsoft). As such, the need to protect Microsoft's incentives to innovate cannot constitute an objective justification that would offset the exceptional circumstances identified.⁴²⁹

The Commission emphasized that Microsoft was not required to provide its own source code or its own implementation of the specifications.⁴³⁰ Nevertheless, it conceded that Microsoft may be required to disclose intellectual property, for which it would be entitled to reasonable compensation.⁴³¹ The enforcement of the disclosure provisions has been acrimonious. In July 2006, the European Commission issued an additional €280.5 million fine on Microsoft for noncompliance with its disclosure order.⁴³²

The media player issue focused on Microsoft's bundling of WMP with Windows. The agency found that streaming media players are

products separate from the operating system because they are supplied separately by a variety of firms, and consumers view them as distinct.⁴³³ Moreover, the market for media players displayed network effects. Because the competing layers use incompatible formats, content providers tend to use the more prevalent of the formats, and consumers tend to prefer the player that uses those formats.⁴³⁴ Consequently, Microsoft threatened to dominate the media player market. The agency concluded that Microsoft abused its dominant position in operating systems by not offering a version of Windows without WMP. While other operating system sellers bundled their products with media players, not all of them bundled their own player or prevented deletion of all of the code for the player. In any event, according to the commission, a dominant firm may be subjected to more stringent limitations than a competitive firm.

Microsoft pointed out that the U.S. judgment already classified media players as middleware, and as such it required Microsoft to allow OEMs to hide the presence of WMP by removing icons, menu items, and so on. But the agency found this remedy ineffective in the case of media players because allowing Microsoft to keep its WMP code in Windows reinforces the tendency of content providers to encode their products using Microsoft's codec, or program for compressing and decompressing code. Moreover, other suppliers of media players cannot duplicate Microsoft's advantage by other means, such as downloads. Not surprisingly, U.S. antitrust enforcers have disagreed.⁴³⁵

Although the agency required Microsoft to provide a version of Windows without the code constituting WMP, it did not require deletion of all media playing code from that version. Interestingly, it defined WMP code in antitrust terms, as including those "files containing the technologies which have been identified as bringing about the foreclosure effect by virtue of WMP being tied to Windows, namely the files that support the proprietary Microsoft codecs, and the WMP user interface."⁴³⁶ The agency declined to accept Microsoft's suggestion that it include several competing media players along with its own in Windows. And it rejected the argument that consumers benefit by a standard platform provided by Microsoft.⁴³⁷ If there is to be a single standard, the agency reasoned, it should not be decided by a leveraging of monopoly power in the operating system market. Nevertheless, the agency required only that Microsoft not make the version of Windows without WMP less attractive other than by deletion of WMP—for example, by making it more expensive⁴³⁸ or less functional.⁴³⁹ Microsoft need not offer the stripped version at a discount and may "enter[] into arrangements with OEMs to pre-install Windows and [WMP] on a client PC in order to

meet the corresponding consumer demand.”⁴⁴⁰ Microsoft shipped the “Windows XP N” editions in June 2005. Reports indicate that the products omitted about two hundred files that related to the WMP (which is not offered even as an update) and are not otherwise crippled.⁴⁴¹ No OEM has installed the product, lending credence to the view that few consumers would want a product with less functionality at the same price.

Microsoft has appealed the commission decision to the European Court of First Instance. In December 2004, the court denied interim relief, concluding that Microsoft had failed to show irreparable harm, because Microsoft had already licensed many of the communications protocols, and Windows XP N has unlikely to be widely adopted.⁴⁴² The oral argument in the appeal occurred in April 2006.

In a proceeding that resembled the European Commission’s, the Korea Fair Trade Commission held that Microsoft abused its dominant position in PC operating systems by tying Windows Media Server, Windows Media Player, and MSN Instant Messenger to the Windows operating system.⁴⁴³ It ordered these products to be separated from Windows and sold separately in Korea. American antitrust enforcers criticized the remedy on the grounds that it “goes beyond what is necessary or appropriate to protect consumers, as it requires the removal of products that consumers may prefer.”⁴⁴⁴ Microsoft has appealed the decision to the Seoul High Court.⁴⁴⁵

3

Markets

Antitrust analysis in a monopolization case begins with defining the relevant markets and determining whether the defendant holds monopoly power within it. Sometimes the geographic and product dimensions of the market are self-evident or even uncontested, but more often they pose conceptual and practical challenges.¹ In *Microsoft*, market definition was especially perplexing because the government contended that Microsoft monopolized a market for operating systems by actions aimed at products—Netscape’s browser and Sun Microsystems’s Java technologies—that lay outside of that market. Microsoft, by contrast, argued that operating systems and middleware competed in a market for software platforms in which Microsoft was only one of many players. The government prevailed, persuading the court that a market for Intel-compatible PC operating systems existed apart from other platforms, network effects protected that market, and Microsoft had monopoly power in it. But placing middleware outside of the relevant market presented a difficulty for the government’s theory of anticompetitive effect: how could actions against firms that were outside of the market, and indeed did not even threaten to enter the market, reduce competition? The court of appeals attempted to resolve this conundrum by characterizing Netscape’s browser and Java as *nascent* rivals of Windows.

This conclusory characterization, however, failed to provide a theoretical basis for the ontogeny of nascent rivals. As the markets are examined more closely, with the appropriate theoretical grounding, the characterization of Navigator and Java as nascent rivals appears increasingly speculative. The weakness of the characterization stems from the very theory of network effects that was the basis for Microsoft's monopoly power in the operating system market. Microsoft was alleged to have *attempted* to monopolize the separate market for browsers by its offer to divide the market in the June 1995 meeting with Netscape, an action we examine in chapter 5. Critically, however, the court of appeals found that the government failed to establish the existence of a browser market or the presence of network effects in it. This failure obviously doomed the government's allegation that Microsoft attempted to monopolize the browser market. Only slightly less obviously, it doomed the allegation that Microsoft had reduced competition in the browser market by tying the browser to the operating system. Most important, however, the failure contradicted a key requirement of the only coherent theory to explain how middleware could ever compete with operating systems. As we show in chapter 4, network effects in the browser market were necessary for most plausible theoretical scenarios for the browser to compete with Windows.

In the present chapter, we begin by describing the competing scenarios advanced by Microsoft and the government for the evolution of operating systems and middleware. We then examine the salient characteristics of all of the markets at issue, focusing especially on the role of network effects, which were central to the courts' analysis of market boundaries, entry barriers, and exclusionary effects. We also consider the characteristics of workgroup server operating systems and media players, a kind of operating system and a kind of middleware that were the subject of the European *Microsoft* case.

Two Systems of Belief about Operating Systems and Middleware

Before examining the legal and economic issues of market definition directly, we first consider the parties' opposing conceptions of the nature of operating systems and their relationship over time to emerging popular applications that run on them, particularly middleware such as browsers and Java. The case (and the court's potential remedies) turned on the effects of Microsoft's actions on innovation,² a process that in software markets often involves the integration of products, but also may involve the displacement of one product by another. The competing portrayals of

the relationship between operating systems and middleware were central to the conceptions of the competitive effect of Microsoft's actions.

As Judge Thomas Penfield Jackson explained the relationship, the operating system “controls the allocation and use of computer resources (such as central processing unit time, main memory space, disk space, and input/output channels)” and “supports the functions of software programs, called ‘applications,’ that perform specific user-oriented tasks.”³ In other words, it directs the operation of the computer's hardware and serves as a platform for applications software.⁴ Operating systems contain code that performs various tasks, or routines; routines themselves can be knitted together to perform more advanced functions.⁵ These routines can be made available as system services for use by applications software through applications programming interfaces (APIs), which allow an application to call on the technology of the operating system and thus save the developer the costs of including the code for the service in the application.⁶ The operating system is thus a platform for applications. Middleware also may function as a platform. Netscape's browser and Sun's Java class libraries were middleware because they relied on the APIs exposed by the operating system while simultaneously exposing their own APIs.⁷ Together, and perhaps separately, they constituted a platform that competed to some degree with operating systems for the attention of software developers.

This description, however, elides an array of complexities that divided Microsoft and the government about the nature of an operating system and its relationship to middleware, especially over time.⁸ The guiding narrative⁹ rested on a vision of platform competition, innovation, and evolution guided by the individual choices of consumers, original equipment manufacturers (OEMs), and developers. In the government's view, this process could be a mechanism for the emergence of platform rivals for Windows and the reordering of relationships among software producers. Netscape promoted a similar view during 1995, when its founder, Marc Andreessen, repeatedly asserted that his company's browser would supersede Windows 95. In Andreessen's vision, the browser would become a meta-operating system, and the computer's native operating system would become nothing more than a plug-in to the browser, an assortment of “slightly buggy device drivers.”¹⁰

Similarly, Sun's marketing slogan, “write once, run anywhere,” captured the idea that Java would be a middleware platform. Sun originally intended to place applications written in Java on server systems supplied by Sun, which users could access with stripped-down computers, or “thin clients,” containing a Java Virtual Machine (JVM).¹¹ But Java

achieved broader success because Web sites run on a range of computers and need to interact with client computers running a variety of operating systems. Thus, the middleware nature of Java was, in part, what made it attractive to developers. Java developers need to port their applications to specific operating systems only to the extent they rely on APIs exposed by other operating systems. The more APIs Java exposes, therefore, the fewer operating system APIs the developer will need to use, and the more applications will be written to operating systems other than Windows.

If middleware were, by a process of innovation, to add sufficient APIs to attract a critical mass of developers, the applications barrier to entry to the operating system market would be weakened. According to the government, Microsoft's decision to "bind" Internet Explorer (IE) to Windows thwarted this process of platform rivalry, innovation, and evolution by inhibiting the choices of the principal actors.

Microsoft, however, described a different process of evolution by innovation, one that involved integration of new functionality into the existing platform, not displacement of its interface by a new layer created by rivals. It contended that operating systems, including Windows, have naturally grown to incorporate more functionality, and the inclusion of the browser was simply one step in that development. The allocation of responsibilities between the operating system and applications is not fixed. MS-DOS, for example, was initially a fairly rudimentary program, one of whose primary functions was to load applications programs that included many of the drivers that controlled hardware systems and peripherals. Users in those days often set their computers to boot directly to their word processing or spreadsheet program, which they would use all day. So long as computers were used this way, relying on applications programs to control hardware was acceptable. But as users wanted to use an increasing variety of programs for multiple tasks and to switch between tasks, the functions of controlling hardware became system services provided by the operating system. Further, some functions, such as data compression, disk defragmenting, and backup, were initially performed by applications programs sold separately from the operating system but later were incorporated into Windows itself.¹² Similarly, a rudimentary word processor, a simple drawing program, and games were added to Windows. Indeed, Microsoft was criticized for failing to incorporate some functions into earlier versions of Windows.¹³

All of these changes reflected both evolving technology and consumer demand. Microsoft incorporated into the operating system functionality previously provided by separate applications to increase the value of Windows. There are distributional efficiencies in integrating functions

that most consumers want into a single operating system.¹⁴ Integration benefits consumers collectively and the supplier, even if it injures the suppliers of the applications that performed the functions independently.

Operating systems also provide interfaces by which users direct the computer's functions. MS-DOS was difficult for novices to use because its commands were text-based and confusing. DOS "shells" provided more intuitive (albeit less precise) interfaces by which users could instruct the computer to perform MS-DOS functions. As we discuss in chapter 1, Windows was itself originally a graphical shell that ran on top of MS-DOS.¹⁵ Later, however, Windows incorporated DOS more completely. Thus, the operating system came to include both internal controls and a rich graphical display by which users could manipulate the various systems of the computer. This now-accepted function of operating systems—providing a standardized look and means of operation—gives it a special influence on the user's perceptions of the computer's capabilities.

The development of the operating system thus responds to both technological changes and consumer preferences. Microsoft has reason to make using the operating system easier and to incorporate into it widely used, standardized functions, because the frontier of demand for PCs is among relative novices. Bundling a complementary product, even at no additional cost, can maximize profit by enhancing demand for the package.¹⁶ One might even define the operating system as a snapshot of many of the most common consumer uses for computers at any given moment. As Windows has absorbed new functions, firms that supplied software to perform those functions have had to innovate to provide new or better functions. As we discuss in chapter 5, Microsoft's representatives told Netscape's representatives in their fateful June 21, 1995, meeting, drawing the "line" between applications and the operating system is "an iterative process." The critical point is that the line between the operating system and applications is indistinct and permeable. And the line has been repeatedly redrawn and penetrated depending on prevailing consumer preferences and technological capabilities.¹⁷ Microsoft is not alone in these claims. Apple asserted that its most recent operating system for the Macintosh contains "200+ new features," including many related to the Safari browser.¹⁸

From Microsoft's perspective, the Internet presented just one more source of information for computers and their users, and the browser was one means of gaining access to that information. According to Microsoft, combining the browser and Windows simplified the process by providing a single, more efficient means of accessing data from all

sources. This solution involved not only bundling a browser with the operating system, as other operating system suppliers did, but also combining their interfaces and making browsing functionality more readily available to applications software developers. Microsoft contended that this goal of adapting Windows to the Internet began before Netscape was founded, based on the growing perception that one of the main reasons most people used computers was to access the Internet.¹⁹ Thus, according to Microsoft's story, incorporation of the browser into the operating system was a logical step in the evolution of the operating system. Such an account is powerfully legitimating because it entails an efficiency rationale for each decision, one that necessarily implies consumer benefits at every stage.

One might, of course, accept the importance of gradual incorporation of new functionality into the operating system without conceding that the operating system must be an indivisible, one-size-fits-all set of standard functionalities dictated by Microsoft. It would be possible to build an operating system using modules that provided different functionalities and shells that provided different interfaces. In such a design, the operating system manufacturer would provide all of the most desirable features of an operating system in modules, but leave it to OEMs, Internet service providers (ISPs), and users to customize the program to suit their needs. The government contended that modular design is both more efficient and allows the process of innovation and evolution to occur, perhaps allowing a new middleware platform to supplant Windows as the primary API set for developers. It alleged that Microsoft integrated functionality and prevented customization of Windows specifically to extend its operating system monopoly. As the Netscape white paper put it, "Microsoft has endeavored to make desktop software as close to a monolithic whole as it can, by bundling some applications and utilities into the OS, bundling the rest together into Office. . . . Netscape's strategy . . . is the opposite of 'integration,' it is modularity."²⁰

Microsoft, however, has insisted that it is more efficient to design an operating system as a single uniformly recognized program, with a standard set of APIs, whose content is entirely within Microsoft's control and is therefore reliable as a resource for developers. As we will see, operating system markets are two-sided, in that the operating system platform must be marketed, in mutually reinforcing ways, to both software developers and to consumers.²¹ Consumers are interested in operating systems that support more kinds of software. Thus an operating system provider has an interest in competing for the attention of developers by providing more APIs. It is also less costly for the operating

system provider and more convenient for developers to bundle these APIs with the operating system in a consistent way.

This dispute over downstream control of the content and appearance of the operating system was to become a primary fault line in evaluating Microsoft's alleged exclusionary practices. In the remainder of this chapter, we consider how these opposing views of the relationships among computer products affect the issues of market definition for both operating systems and various forms of middleware. One important question, for example, is whether all forms of middleware should have been included in the same market as operating systems. In the next chapter, we consider the implications of these opposing views for the competitive effects of Microsoft's efforts to integrate the browser and the operating system.

Network Effects and Related Economic Concepts

As we explain briefly in chapter 1, a positive network effect is an increase in the value derived by one user of a good brought about by an increase in the number of other users of the same good.²² *Direct* network effects arise in two-way communication networks, like a phone system, because, as the number of subscribers grows, the value of a phone to each user increases.²³ A two-way communication network with ten participants, for example, allows ninety different calls. Users will thus generally want to join the largest two-way communication network and, in doing so, will confer a new network benefit on existing users: the addition of an eleventh participant to a network allows twenty more calls. The phone system is a physical network, but direct network effects can also arise in metaphorical networks, like the network of English-language speakers. For both kinds of communication networks, however, as the system becomes larger, the marginal increase in value from adding a new user may diminish because existing users may already have all the interlocutors they want.

Indirect network effects can arise in one-way networks when an increase in the number of users of a durable good, that is, one that lasts more than one time period,²⁴ spurs the production of complementary products used over the useful life of the durable good.²⁵ Computer hardware and software are classic examples, but operating systems and applications software are equally good illustrations. The combination of the operating system and its applications is a system, whose users comprise a virtual network. As the number of users of the operating system grows, the variety of complementary software purchased over the useful

life of the hardware is likely to increase, as producers are attracted to the larger market. As the variety of complementary goods in a virtual network increases, more users will buy the primary good. This relationship between the size of a network and the supply of system components forms the positive feedback loop to which Judge Jackson referred.²⁶ The supplier of the primary good, therefore, has an incentive to lower its price to stimulate the supply of complementary goods and increase the demand for the primary good. Of course, just as in the case of direct network effects, indirect network effects can exhibit diminishing marginal returns, because, at some point, most users will have little need for additional complementary products.

It bears emphasis that positive network effects arise because of the benefits they provide to consumers: they are economies of scale on the demand side. In some circumstances, consumers may even benefit if a single product dominates, as in the case of natural languages. Many factors, however, influence the welfare effects of network markets. A two-way communications network, for example, may not reach optimal size because purchasers do not take into account the social benefits of their purchases.²⁷ Consumers compare the price of a system product to its private value, without considering the external value the purchase will confer on other members of the network. The size of such a network is also affected by consumer expectations.²⁸ At one extreme, if each consumer expects no one else to purchase, the network size will be zero, even if all consumers would benefit by joining the network; at the other extreme, if each expects many other consumers to purchase, each will purchase, and the network will be large.

The importance of consumer expectations gives producers an incentive to convince consumers through a variety of practices that their networks will attract many users. If a single firm owns or sponsors the network, it can internalize network effects by setting low prices that reflect the fact that additional users provide benefits to all other users. But network effects can also be achieved when different suppliers produce different products, so long as the products interoperate.²⁹ Indeed, one definition of a “standard” is any product specification that can generate network effects.³⁰ Standard electrical outlets, for example, permit a myriad of manufacturers to produce electric appliances. When separate network sponsors adhere to a common standard, the networks are compatible, and the returns to scale from consumption are available to any user of all of the network goods. For instance, if two telephone networks are compatible, someone purchasing service from one of the networks

benefits directly from the addition of a new subscriber to the other; if two operating/applications systems are fully compatible, an additional user of either kind of operating system will increase the demand for all software, and every operating system user will have the advantage of more diverse and less expensive software.

If networks are incompatible, however, they may compete for dominance. The competitive process among incompatible standards may lead to “tipping” of the market to a single producer or to a single standard or kind of product. The theory suggests that users may then be “locked in” to the standard, even if a better standard were to become available. The market’s perceived tendency to tip and lock in can make the early competition in network markets with incompatible standards particularly intense.³¹ It gives the early competitors an incentive to employ strategies such as “penetration pricing,” in effect “bidding for future monopoly profits,”³² to build market share and become the *de facto* standard. From a distance, these competitive strategies can resemble antitrust violations like predatory pricing.³³

The possibility of lock-in ties the theory of network effects to the strong theory of path dependence, which holds that even seemingly insignificant events can lead to a marketwide selection of goods that persists despite the availability of objectively better alternatives.³⁴ In this version of the theory, the inferior choice was avoidable by choosing a better alternative based on available information at some point in time. Path dependence, therefore, implies that a market can become locked in to an inferior outcome.³⁵ Because that outcome was avoidable, the result represents a market failure. In the guiding narrative, Microsoft achieved and maintains its dominance in this way.

In this story, an initial consumer chooses what appears to be the superior standard at the time. The next consumer chooses the same standard, both because of its intrinsic superiority and because it was selected by the first consumer. If products employing that standard exhibit scale economies in production, they will cost less than products employing an alternative, and if the standard exhibits network effects, it will return an additional value. Either way, the second consumer receives a larger payoff from selecting the standard chosen by the first consumer than from selecting the alternative. The process continues, with each new purchase decision reinforcing the advantage of the selected standard. At some level of output, however, the alternative standard may become preferable; the returns functions may cross, such that the first standard is superior at low levels of use but inferior at high levels. But at

that point, consumers will not switch to the alternative standard because of the advantages of incumbency—the scale economies in production or consumption associated uniquely with the original standard adopted. Problems of collective action would prevent all consumers from agreeing to switch to the alternative standard, even though they all would prefer it. The market is locked in to an inferior standard.

This strong theory of path dependence has practical and theoretical limitations. It assumes that early adopters do not have the foresight to recognize that the alternative standard will yield higher returns in the long run. It also assumes away the possibility that the standards can be owned and that the owner of the alternative standard, recognizing that the standard will eventually provide larger returns, will offer a lower price than that charged for the first standard, thereby making the alternative standard preferable immediately. A lower price would be profitable precisely because the alternative standard provides greater value in the long run. Both of these assumptions highlight the importance of information and expectations in explaining the phenomenon of inefficient path dependence.

While inefficient lock-in is theoretically possible, one cannot easily determine whether it actually occurs. Normally, a product is considered superior *because* it prevails in the market, and yet the theory implies that the market is an inaccurate indicator of value. Empirical studies of the most commonly cited examples of claimed path dependence suggest that the market outcomes were not inefficient.³⁶ Numerous markets are characterized by indirect network effects, yet monopoly outcomes in those markets are uncommon. First movers only rarely actually are able to preserve their advantage, as rivals learn from the originators' business plans and improve on them. The theory of path dependence is, at best, of limited value in explaining real-world markets and framing antitrust rules.³⁷

Phenomena explained by network effects or path dependence may in some instances be attributable to traditional economic concepts, particularly durability and economies of scale in production. We have noted that indirect network effects usually arise where one of the complementary products is durable, but durability itself may imply a kind of lock-in. When a durable good cannot be resold for its full value, the difference between the purchase price and the resale value represents a sunk cost that can affect the buyer's subsequent purchase decisions. Once a consumer buys a durable good, therefore, she may opt not to replace it, even if a better version of the product is introduced in a later time period. If, for example, she bought a new car last year, she may find it worthwhile to keep it, even though she likes this year's model better.

For the same reason, if one component of a durable product or product system has to be replaced in a later time period, the buyer may decide to replace only that part and thus preserve the value of her investment in the durable components, even if she considers another product better. For example, if the consumer's VCR broke, she might elect to replace it with another VCR rather than a DVD player to preserve the value of her tape collection. Learning costs can also play a role. A runner whose multifunction sports watch broke might elect to replace it with the same model to avoid having to master a different set of instructions, even though he might otherwise choose a different model. In this case, the nonpecuniary investment in learning how to use the watch is more durable than the watch itself.³⁸

Durability itself thus implies a kind of lock-in, in that a buyer's early investment decisions affect later ones by imposing switching costs. In this simple sense of the term, the owner of the VCR is locked in to VCRs and the owner of the sports watch to the same brand, regardless of what other consumers may choose about those products. Nevertheless, even if lock-in leads the owners to stick with inferior products, the market has not failed in any meaningful sense because the choice may well be the most efficient one in the circumstances. Moreover, this sort of lock-in is not insurmountable; it can be overcome when the marginal value of a different good or technology exceeds the cost of switching.

As we have noted, positive network effects are economies of scale in consumption that may produce a single dominant firm. But network markets may also involve economies of scale in production, which may also produce markets with a dominant firm. Economies of scale in production arise when the average cost of producing a product declines throughout the range of output demanded because of high fixed costs. If the ratio of fixed to variable costs is high enough, one firm may be able to supply the entire market at lower total cost than two or more firms. In such a case, the market is said to be a natural monopoly.³⁹ Intellectual property may exhibit increasing returns to scale in this sense because the fixed cost of development is typically high, while the variable cost of increasing output is close to zero.⁴⁰ But because intellectual property is so highly differentiated, increasing returns to scale in production do not necessarily imply natural monopoly because multiple producers may be able to satisfy the demand for product variety as cheaply as or more cheaply than a single producer.

Finally, the competition among standards within network markets will be influenced by whether the market is multisided.⁴¹ A firm selling a product that serves as a platform for other products must market the

platform to both the suppliers of other products and consumers. Apple, for example, must convince consumers to buy iPods and must convince copyright owners to place content on the iTunes Web site for download by consumers to their iPods. Thus, Apple's pricing and product design decisions will be influenced by the likely effects that would flow from the decisions given cost and demand conditions—including network effects—on all sides of the market.⁴² Thus, even if it is costly to provide the iPod platform to copyright owners, Apple might still find it profit-maximizing to charge them nothing for providing the platform, if a larger library stimulates consumers to buy more iPods and download more songs. Alternatively, distributing iPods and songs at below cost may be profit maximizing if it sufficiently stimulates demand for copyright owners to license the iPod format. In either case, pricing below marginal cost to one side of the market is not necessarily inefficient.⁴³ Similarly, a decision to bundle features will be influenced by the demand and cost conditions on both sides of the market.

Defining Software Markets

Judge Jackson and the court of appeals agreed that the relevant market for the government's monopolization claims was operating systems for Intel-compatible PCs and that Microsoft had monopoly power in that market, insulated by network effects, or the applications barrier to entry. The two courts divided, however, on the issue of market definition for the government's claim of attempted monopolization of the browser market: the court of appeals held that the government had failed to offer sufficient evidence either to define such a market or to show that entry barriers sheltered it. The concept of network effects was therefore critical to the issues of market definition and market power in both instances. Equally important, the government alleged that Microsoft's motivation for its actions against middleware was the desire to preserve network effects in the operating system market. But network effects also imposed constraints that undermined the government's theory. We argue in the next chapter that the government's failure to prove the existence of a browser market protected by network effects had unacknowledged consequences for the government's theory in the monopolization case as well.

Classifying Operating Systems. Network effects were crucial to the definition of the market for PC operating systems.⁴⁴ Microsoft itself recognized that network effects exist in the operating system market and

counted on them for its success. It understood that the ubiquity of Windows was a function of its popularity among independent software vendors (ISVs) as an applications platform, and that its popularity among consumers was to a large degree a function of its popularity among ISVs. Bill Gates was concerned that Netscape would “move the key API” into Navigator so that ISVs would write to Navigator, a development that would “commoditize the underlying operating system.”⁴⁵

Some network effects in operating systems are direct because applications are written to specific operating systems, which in turn must be compatible with the computer’s microprocessor.⁴⁶ To share files—a form of two-way communication—computer users need to write in the same or compatible applications, and thus they benefit as the network of compatible users grows.⁴⁷ The most important network effects in the operating system market, however, are indirect. The set of APIs exposed by an operating system constitutes a standard for applications software. For an application to run on multiple operating systems, the developer must port it from one to another,⁴⁸ a process that is often costly.⁴⁹ Consequently, *all else equal*, an application developer has an incentive to write its program first for the operating system used by the greatest number of expected users of the application. It will port the application only if the marginal cost of porting the application to another operating system is less than the expected marginal revenue derived from users of that system. Similarly, because a PC typically has only one operating system,⁵⁰ the consumer, *all else equal*, has an incentive to choose the operating system with the largest number of applications that interest him or her. This tendency gives rise to a feedback effect: ISVs write applications to the operating system used by the greatest number of consumers, and consumers choose the operating system with the greatest number of compatible applications. As the number of users of a given operating system grows, the variety of applications increases, and other users benefit. And because applications are primarily intellectual property subject to economies of scale in production, the price of applications may decline.

As this description implies, porting costs are critical in producing the indirect network effects associated with individual operating systems. If applications could be ported across different operating systems costlessly, no single operating system would exhibit network effects, though operating systems collectively would. In effect, all operating systems would represent a common standard, and network effects would not tip the market to any one operating system. An operating system would become dominant only by its intrinsic superiority. Moreover, the role of porting

costs in generating operating system-specific network effects implies that if porting costs decline, so, too, will the operating system-specific network effects.

Although operating systems undoubtedly exhibit network effects, the courts in *Microsoft* mischaracterized their significance in some respects. Judge Jackson referred to network effects in the market for operating systems as “an intractable ‘chicken-and-egg’ problem”⁵¹ and used the term synonymously with the “applications barrier to entry.”⁵² This characterization emphasized the court’s negative view of network effects. They are a “problem,” even an “intractable” one, and they create a “barrier to entry,” the predicate for competitive harm. Yet indirect network effects are largely *positive* for consumers because they add value, a point recognized by the court of appeals in its decision on remedies.⁵³

Moreover, network effects do not necessarily drive the market to a single dominant operating system because the number of APIs is by no means the only measure of the quality of an operating system. This point suggests that Judge Jackson’s assertion that Windows supported more than 70,000 applications,⁵⁴ while the Mac OS, OS/2 Warp, and BeOS supported only 12,000,⁵⁵ 2,500,⁵⁶ and 1,000,⁵⁷ respectively, was misleading. The numbers invite the erroneous inference that Windows is nearly six times more desirable than the Mac. First, the figure of 70,000 included all applications ever written for Windows, including obsolete or superseded applications. Second, APIs provide access only to services, which may differ widely among operating systems. Many developers do not write to Windows APIs because they prefer the services returned by the underlying code of other operating systems. Moreover, different applications may appeal to the users of different operating systems. Yet only a small fraction of the available applications are of any conceivable interest to a single user. A consumer may choose an operating system based on the number of applications “in which he might develop an interest later,”⁵⁸ but he must place some rational boundary on his future interest.

Judge Jackson speculated, without citation to the record, that a consumer would prefer an operating system that supported multiple applications in a product category to one that supported only a single application, because the consumer would have alternatives if later generations of the preferred application changed for the worse.⁵⁹ But a relatively little-used operating system may support just as many applications in a particular category as the dominant system. Even if it did not, a consumer might prefer a particular application exclusively, regardless of how many other applications are in its category. The court’s

emphasis on the number of applications supported by an operating system ignores the fact that consumers may be more interested in the quality of applications available for particular uses. The court also suggested that a consumer who preferred an application that ran on a less popular operating system might nevertheless purchase a less preferred but more widely adopted application because it was more likely to be upgraded in the future. Though such a scenario is plausible, it is not inevitable, because consumers interested in specific product categories might prefer an operating system used by a relatively small percentage of all consumers.

The court's emphasis on network effects obscures the influence of other economic conditions on the market. Economies of scale in production, for example, tend to limit the number of operating systems,⁶⁰ even though the demand side of the market is segmented and the product is differentiated. Operating systems are also durable goods. Although durability may limit monopoly power by creating competition from a secondary market, this effect was attenuated in *Microsoft*. While Microsoft undoubtedly competed with its own installed base, it has been able to reduce the impact of durability by a number of means, including prohibiting licensees from transferring the operating system from one PC to another.⁶¹ A user's investment in a stock of applications will also dissuade the user from switching to an incompatible operating system. Similarly, an investment in compatible hardware encourages a consumer to retain the operating system when presented with the opportunity to switch to a different one.

Learning costs also play a role. Relative ease of use may be a reason to prefer one operating system to another. Indeed, as we note in chapter 1, the first Windows operating system was designed to mimic the Mac OS, whose graphical user interface was easier to use than the command-line interface of MS-DOS. Once a user makes the investment in learning how to use a particular operating system, she has an incentive to keep using that system. The availability of a variety of desirable applications may induce a consumer to select a particular operating system in the first instance; the consumer will then have an incentive to maximize the return on her investment by learning to use them. Again, Microsoft itself has implicitly recognized that the learning curve is significant, emphasizing in its development and marketing strategies as well as in litigation that maintaining a consistent "look and feel" of Windows is important. An operating system that is dominant will be more difficult to dislodge because of users' sunk investments in knowledge.

All of these considerations affect market definition. Every PC operating system serves as an applications platform by exposing a unique set

of APIs. One could imagine defining a relevant antitrust market narrowly to include only Windows, on the ground that its substantial advantage in the number of applications supported renders every other operating system incapable of constraining Microsoft's power. Or one could imagine defining the market more broadly to include all platform software. Judge Jackson, in findings affirmed by the circuit court,⁶² chose neither approach, instead including in the market all Intel-compatible PC operating systems but excluding non-Intel compatible ones, particularly the Mac operating system. He also rejected Microsoft's contention that all platform software, particularly the very middleware products that were the subject of its allegedly anticompetitive conduct, should be included in the market.

Judge Jackson's rationale for including non-Windows, Intel-compatible operating systems in the market, but excluding other operating systems, is opaque. He observed that a firm could profitably sell a fringe Intel-compatible operating system, such as BeOS, to a segment of the consumer population with specialized interests, even though the system supports relatively few applications,⁶³ but he found that the applications barrier to entry prevents any such operating system from drawing a significant percentage of consumers away from Windows.⁶⁴ Apparently, fringe operating systems are poor substitutes for Windows, but they can attract enough consumers to survive, and they are good-enough substitutes to be included in the same product market. But then why was the Mac operating system excluded from the market? The Mac OS supports fewer applications than Windows, but far more than fringe Intel-compatible operating systems. The "relative dearth of applications written to run on the Mac OS,"⁶⁵ one of the reasons cited by the court for excluding it from the relevant market, does not, therefore, explain the court's decision. Further, the Mac and fringe Intel-compatible operating systems are equally capable of supporting the array of applications for which users typically purchase PCs, a fact that was important to the court in excluding other types of products. Judge Jackson also reasoned that consumers who already own an Intel-compatible PC system could switch to the Mac system only by incurring "the effort of learning to use the new system, the cost of acquiring a new set of compatible applications, and the work of replacing files and documents that were associated with the old applications."⁶⁶ But the whole basis of his analysis was that applications are written to specific operating systems. Consequently, users would incur the same costs in switching from Windows to another Intel-compatible operating system.

More plausibly, the court noted Windows users would have to incur the cost of new hardware to switch to an Apple system but not to switch to another Intel-compatible operating system.⁶⁷ But if the goal of the case is to protect consumers from harm they may suffer in the future, the fact that some consumers may be locked in to a particular computer for a relatively short period is of little moment. Indeed, the cost of switching hardware is indistinguishable from the cost of learning to use a new operating system or the cost of replacing applications: all imply that the user made sunk investments in durable components of a system. The court did not explain why, on the one hand, sunk investments in some components are not enough to keep fringe Intel-compatible operating systems out of the market, but, on the other hand, the additional sunk investments in hardware are enough to keep the Mac OS out of the market. In fact, because of technological advances, hardware may become obsolete more rapidly than knowledge or applications, and in this sense hardware may be less durable than the other components. The court was on surer ground in relying on hardware differences to exclude operating systems for non-PC devices, such as handheld computers and information appliances, because those devices cannot perform the range of functions that a Wintel computer can.⁶⁸ The same cannot be said of the Mac OS.

Finally, the court noted “the package of hardware and software comprising an Apple PC system is priced substantially higher than the average price of an Intel-compatible PC system.”⁶⁹ The relative cost of PC systems may be significant in defining the market. Certainly products performing similar functions but sold at widely disparate prices can be placed in separate markets because marginal price changes in one have little or no impact on the price of another. For example, a Saturn probably does not belong in the same market as a Lexus. But antitrust law has long struggled in defining markets of heterogeneous goods with a wide range of prices. Whether products are included in the same market depends on the size of price differentials and the sensitivity of consumers to price changes, as well as on certain normative judgments about the amount of consumer harm necessary to trigger the costly mechanisms of antitrust. The court did not quantify the price disparity between the Mac and the Intel-compatible systems, nor did it point to evidence of the price sensitivity of computer users.

Differently priced products performing similar functions may be placed in separate markets because consumers are segregated according to their demand for quality. For the consumer demanding the quality of a high-end car, the Saturn, even if offered at a bargain price, is unacceptable.

Judge Jackson, however, gauged the quality of operating systems solely by the number of applications they support. By that measure, an Intel PC running Windows is by far the best system, yet an Apple computer running the Mac OS costs “substantially” more. Something is missing from the court’s analysis. If dimensions of quality other than the number of applications supported are important to consumers, then perhaps the applications barrier to entry is not quite as significant as the court found. Moreover, placing the Mac OS in a separate market implies that Apple has monopoly power of its own. Yet the court of appeals referred to Apple as an example of a *competitive* supplier of operating systems, whose bundling behavior was a benchmark for the efficiency of software integration.⁷⁰ This characterization was inconsistent with its endorsement of placing the Mac OS in a separate market from Windows.

Ultimately, however, if Judge Jackson erred in excluding the Mac OS from the relevant market, his error made little difference. He observed that if the market is limited to PC operating systems, Microsoft’s share of a market from which the Mac OS is excluded is “at least ninety-five percent”; if the Mac OS is included, “Microsoft’s share would still stand well above eighty percent.”⁷¹ Assuming that the market expanded no further, this figure, along with evidence of network effects, would almost certainly be sufficient to allow the inference of monopoly power. It is reasonable to conclude that network effects and economies of scale in production caused the market for operating systems to converge on Windows as a standard. Although Microsoft does not charge ISVs for use of its APIs,⁷² it earns revenue by licensing copies of Windows. To displace Microsoft, the producer of another operating system would have to convince consumers and suppliers of complementary products that the new standard is better and that the gains from switching are worth the costs. The threat of such a new standard certainly spurs Microsoft to improve its product and to maintain backward-compatibility with older versions. Nevertheless, Microsoft undoubtedly had the power profitably to raise the price of Windows for a significant period of time without inducing consumers to switch to an alternative operating system.

Microsoft contended, however, that the focus on shares of operating system sales missed the key role of innovation in constraining any attempt to exercise monopoly power over operating systems. It argued that in a dynamic market like software, the government should have to prove the defendant actually behaves like a monopolist, and Microsoft does not—it invests in innovation and charges low prices. The court of appeals agreed that the tendency in network markets for a single

standard to become “more or less entrenched”⁷³ is offset by the fact that “competition in such industries is ‘for the field’ rather than ‘within the field.’”⁷⁴ Thus, because competition proceeds “sequentially” rather than “simultaneously,” entrenchment “may be temporary, because innovation may alter the field altogether.”⁷⁵ As Stan Liebowitz and Stephen Margolis put it, strong network effects are apt to result in “serial monopolies; one monopoly after another.”⁷⁶ Nevertheless, the court of appeals did not require *direct* proof of monopoly power, even for a market that was “uniquely dynamic in the long term,” because antitrust law’s focus, for pragmatic reasons, is on the short term.⁷⁷ In any event, the evidence Microsoft cited did not refute the inference of monopoly power. The court agreed with Judge Jackson that Microsoft’s innovations⁷⁸ and low prices⁷⁹ may have been profit-maximizing in the long run for a monopolist. Moreover, it agreed that Microsoft’s exclusionary tactics made sense only for a firm with monopoly power.⁸⁰

The court’s approach on this point is generally correct. The court acknowledged that network effects do not imply permanence, as some have suggested. The early literature of network externalities, as the phenomenon was originally called, pointed to instances like the QWERTY keyboard and the VHS video format as inferior standards that gained dominance and remained locked in.⁸¹ Thus, “[w]ith network effects, it can be very difficult to switch horses in midstream to a system that later proves superior.”⁸² The theory of path dependence that we describe in the last section has similar implications. The strongest form of these claims, however, was certainly incorrect. The most common instances of supposed lock-in on inferior standards have not held up under close examination, and there are many examples of displacement of inferior standards by better ones.⁸³ Liebowitz and Margolis point out that “the fact that current economic models of transition indicate that worthwhile transitions may not occur is not sufficient reason to abandon the presumption that they usually do occur.”⁸⁴ David Evans and Richard Schmalensee suggest that the computer software market in particular “exemplifies Schumpeter’s view of modern competition—one in which firms and industries are constantly created and destroyed through the process of innovation.”⁸⁵ Yet the court sensibly concluded that the prospect of leapfrog competition did not foreclose the existence of monopoly power within a relevant time period, or the possibility that the monopolist’s conduct might extend its period of dominance. The only qualification of this point involves middleware, because the government theory that Microsoft’s conduct had an effect on middleware actually rested on this idea of leapfrog competition.

Classifying Middleware: Browsers and Java. The circuit court noted that even if Windows gained its dominance “through superior foresight or quality,” it may have “maintain[ed] this position through means other than competition on the merits.”⁸⁶ Microsoft thus had the “power to stave off even superior new rivals.”⁸⁷ The rivals it allegedly staved off, however, were not operating systems but middleware. The district and appellate courts excluded middleware from the relevant market because it is not reasonably interchangeable with Intel-compatible PC operating systems and therefore did not presently constrain Microsoft’s pricing.⁸⁸ Nevertheless, Netscape and Java were “nascent” competitive threats worthy of protection by the antitrust laws.⁸⁹ The facially surprising exclusion from the relevant market of a product that competes on the very dimension that makes a monopolist’s product dominant requires investigation.

If applications must be written to each operating system’s APIs, then an application written to one operating system would have to be ported, at substantial cost, to run on another. If, on the other hand, applications could be written to middleware that has been ported to several operating systems, then applications developers would have to write only one version of their programs. If developers could make use of some of the APIs exposed by the cross-platform middleware and some of the APIs exposed by the underlying operating system, the cost of porting would decline in inverse proportion to the number of middleware APIs used. The effect of cross-platform middleware, therefore, is to reduce the indirect network effects associated with a particular operating system. At the theoretical limit, all applications would be equally available to consumers regardless of the underlying operating system. Though every computer would still need an operating system, competition among operating systems would be unaffected by network effects. Users would be indifferent among operating systems, apart from differences in their performance of nonplatform functions. For Microsoft, the significance of middleware was clear: to the extent that applications developers made use of middleware APIs instead of Windows APIs, the unique value of Windows attributable to network effects specific to the operating system declined.

Nevertheless, given the relatively narrow time horizon and exacting evidentiary requirements of antitrust market definition, it seems clear that middleware was not presently in the same market as Windows. Judge Jackson found, at the time of trial, that “no middleware product exposes enough APIs to allow [ISVs] profitably to write full-featured personal computer productivity applications that rely solely on those APIs.”⁹⁰ According to the court, “Windows 98 exposes nearly ten thousand APIs, whereas the combined APIs of Navigator and the Java class

libraries . . . total less than a thousand.”⁹¹ Consequently, “[i]t remains to be seen . . . whether there will ever be a sustained stream of full-featured applications written solely to middleware APIs.”⁹² Thus, although middleware was a platform, it was different not only in degree (like a fringe operating system for Intel-based computers) but also in kind: it would become a present rival only when, after some unspecified innovations and product improvements, it crossed an indistinct line and became capable of supporting a sufficiently broad range of full-featured applications.

Yet the courts characterized Netscape and Java as nascent competitors, worthy of the same antitrust protections as small firms actually in the market. This characterization was necessary because if middleware were in a completely separate market, Microsoft’s actions taken against it could not be anticompetitive, and thus would not violate the antitrust laws. Unlike the placement of middleware in a separate market from the operating system, the characterization of it as nascent competition is problematic. Middleware was probably never a viable platform threat. Technical constraints in middleware and the characteristics of the market for PC operating systems imposed strong incentives for software developers to write to operating system APIs. As one of Microsoft’s experts testified in the remedy phase, where one operating system is so dominant, there is little benefit in writing to slower, cross-platform middleware; it becomes attractive only if there are many incompatible operating systems, as in the server market.⁹³ In practice, despite the efforts of supportive developers, Java proved unable to support full-featured complex applications like spreadsheets and word processors.⁹⁴ Nevertheless, Microsoft officials *did* view them as dangerous potential competitors, and Microsoft conceded as much by arguing that middleware belonged in the market because it truly was a competitive constraint on Microsoft’s pricing behavior. Because of these concessions, the court felt justified in its characterization of middleware as a nascent competitor.

We question this facile conclusion in the next chapter on the ground that it evades important questions about the government’s theory and evidence of anticompetitive effect. But our present analysis of market definition also casts doubt on the conclusion. If Netscape and Java were not in the market for operating systems, but were nevertheless nascent competitors of Windows, in what market did (or would) the products compete? Applying the criteria of market definition to this question reveals some interesting twists in the middleware scenario. The notion that middleware is a nascent competitor assumes that middleware might

become a full platform rival by a process of innovation that involved adding APIs. In this longer-run dynamic view of competition, one would have to imagine a market in which platform producers compete for the attention of developers by adding APIs.⁹⁵ In such a market, middleware and operating systems would differ only in degree, with their relative attractiveness determined by the number and quality of their APIs. While middleware's present significance as a platform in such a market would be small, its longer-run significance might be great.

But, of course, the government made no effort to prove the existence of such a market. A moment's reflection suggests a possible reason: it would be difficult to formulate a practical measure of the scope of such a market and the shares of the firms in it. Because cross-platform middleware is ported to multiple operating systems,⁹⁶ its economic significance in such a market would depend, at least in part, on the number of middleware APIs used by applications developers in lieu of operating system APIs, and on the number of applications ported to operating systems other than Windows that would not have been ported absent the consequent reduction in porting costs. That measure would have to be adjusted for Web-based applications with multiple users. Java, for example, already "allow[ed] relatively simple, network-centric applications to be written cross-platform."⁹⁷ Moreover, any platform market would be two-sided and thus would have required the government to take account of both the share of consumers' demand and the share of developers' writing.

Interestingly, the court did recognize the shortcomings of the government's evidence in establishing the existence of another market in which Microsoft and middleware allegedly competed: the browser market. Yet in this case as well, the court failed to recognize the devastating implications of the failure of proof. The government alleged that Microsoft had proposed, in the famous June 1995 meeting, to divide the browser market with Netscape. As we explain in detail in chapter 5, this proposal was central to the government's case, first as "context" within which to understand Microsoft's goals in preserving its monopoly of operating systems, but also as the separate offense of attempted monopolization of the browser market. The court of appeals, however, held that the government had failed to prove any such market existed or exhibited network effects.⁹⁸ Defining a relevant market required "a detailed description of the purpose of a browser—what functions may be included and what are not—and an examination of the substitutes that are part of the market and those that are not."⁹⁹ Judge Jackson had

found only that a browser was different from an operating system, for purposes of finding a tying arrangement, in that it “provides the ability for the end user to select, retrieve, and perceive resources on the Web,” and had made vague references to a “browser market” in the conclusions of law. But these rulings “pale by comparison” to those supporting the existence of an operating system market.¹⁰⁰ The court of appeals did not even remand the question to Judge Jackson because the failure to define the market stemmed from the government’s failure to articulate what constitutes a browser and why other products are not substitutes for those functionalities.

The court went further. Even if one assumed that a browser could be defined as “a graphical interface plus internet protocols” and that browsers were a relevant market, the attempt claim would not have satisfied the court of appeals because the government failed to prove there were barriers to entry in such a market. Judge Jackson’s finding that “Navigator was the only browser product with a significant share of the market and thus the only one with the potential to weaken the applications barrier to entry”¹⁰¹ was “far too speculative” to prove that other browsers could not enter and prevent Microsoft from exploiting monopoly power, and was ambiguous because it focused on the applications barrier to entry in the operating system market.¹⁰² Nor was it shown that network effects created a barrier to entry in the browser market as they do in the market for operating systems.¹⁰³

Microsoft apparently believed that browsers could exhibit indirect network effects. Netscape introduced Navigator, the first popular browser distributed for profit, in December 1994. Microsoft introduced IE in July 1995. At the time, Microsoft officials believed that Web-based applications would become more complex and would increasingly be written to make use of proprietary, browser-specific technologies.¹⁰⁴ If enough Web page developers made use of Netscape technologies, then consumers would insist on having Navigator on their computers; the market would tip to Netscape, and developers would have little reason to incur any cost to write to Microsoft technologies. Even so, Bill Gates recognized that the potential for significant browser-specific network effects was far from certain because IE and Navigator both supported all of the standard protocols. Netscape and Microsoft would both make extensions based on their respective technologies, but “[Netscape’s] extensions can be cloned by someone else. Likewise, all the extensions we make will be clonable by other people,”¹⁰⁵ and thus would return “about zero value.”

These observations turned out to be prescient. Browsers exhibit the same economies of scale in production and durability as operating systems, but standardization limits the importance of network effects. Even though browsers and network servers exchange information, they do so based primarily on common, open communication standards. No browser adhered strictly to Web standards in the browser wars, a state of affairs that had required Web developers to devote substantial resources to writing their programs for specific browsers, particularly IE. More recently, there has been progress toward compliance with Web standards, in part because of the efforts of the Web Standards Project.¹⁰⁶ Despite these continuing concerns, however, no single browser ever has been able to benefit substantially from direct or indirect network effects. At a given time, different kinds of browsers may contain unique features available only if Web pages are written specifically to their APIs, or they may make use of common features differently. To the extent that writing Web pages to individual browsers to take advantage of special features or to use features distinctively is costly, Internet content providers (ICPs) will prefer to write to the kind of browser that is used most often. These indirect network effects are analogous to the indirect network effects exhibited by operating systems and applications. But Web pages are all written to the common HTML standard, and the unique implementations of the standard embodied in a browser can be cloned.¹⁰⁷ The result is that anyone can write a browser to read the vast majority of Web pages and display them acceptably; new APIs developed for one browser can be quickly duplicated by others; browser-specific features tend not to be of great value to developers or users; and the cost of writing a Web page to take advantage of browser-specific features is not prohibitively high.

Thus, most sites can be viewed equally well using any browser. Indeed, because billions of Web pages have been written in HTML, the open standard of the Web, the possibility that any firm could tip the Web to a private standard is next to impossible; any browser that supported only a private standard would be nearly useless unless these pages were rewritten, an inconceivable action absent exponential benefits in performance.¹⁰⁸ In effect, the Web page entry barrier protects the HTML standard, not any proprietary implementation of it contained in a browser. Netscape has reinforced this characteristic of the Web by adopting for recent versions of its browser the same open-source, standards-compliant engine used by Firefox, as well as IE functionality. Further, there is no investment in learning to use a particular kind of browser comparable to the investment in mastering an operating system, and backward

compatibility is unimportant. In all, one would expect some market tendency toward a single browser when competing browsers are of equal quality, but that tendency would be much weaker than it is for operating systems, and the quality across browsers is not likely to vary greatly.

Individual browsers have gained and lost dominance since Netscape's introduction, but the changes in all likelihood have not resulted from network effects. Early versions of IE were commonly perceived to be intrinsically inferior to Navigator.¹⁰⁹ Microsoft invested heavily in improving IE, and by the release of IE 3.0 in August 1996, the quality gap had largely closed. IE 4.0, released in late 1997, was generally considered as good as or better than Navigator. As the quality of IE improved, its market share based on usage increased, and Navigator's declined, while the total market for browsers grew dramatically.¹¹⁰ From nearly 100 percent of the market in early 1995, Navigator's market share dropped to around 80 percent in January 1996, 55 percent in late 1997, and between 55 and 45 percent in the spring of 1998; during the same period, IE's market share grew from zero to nearly 50 percent.¹¹¹ Judge Jackson equivocated in predicting the future of browsers, first finding that non-Microsoft browsers were not likely to be driven from the marketplace altogether,¹¹² but then observing ominously that Microsoft had "perhaps altogether extinguished" competing browsers.¹¹³ The combined shares of versions of IE did pass 85 percent in 2003, but when Microsoft failed to maintain the pace of innovation, it marginally lost share to Mozilla and the two other browsers based on its technologies, Netscape and Firefox.¹¹⁴

The failure of the government to establish a browser market exhibiting network effects had implications beyond the claim of attempted monopolization. It undermined the allegation of tying because that claim required the government to prove an anticompetitive effect in the market for browsers, a logically impossible task if no such market exists. More important, it undermined the allegation of monopoly maintenance. The theory by which Microsoft was alleged to have prevented the browser from evolving into a rival platform depended critically on the existence of network effects in the browser market. As we show in the next chapter, the court of appeals failed to address these issues.

Extending the Classifications: Server Operating Systems and Media Players. So far in this chapter we have considered the characteristics of the markets for products that were the focus of the issues of market definition and exclusion in the U.S. courts. But other products in adjacent markets, particularly media players and server operating systems, were also

important in the remedial phase of the U.S. cases and were central to the European Microsoft case. (Actually, the focus on servers began much earlier—the Netscape white paper in 1996 argued that Microsoft’s ultimate goal was to extend its control over the client PC operating system to enterprise software, first server operating systems, then server applications like databases.¹¹⁵ It was also a focal point of the failed negotiations mediated by Judge Posner in 2000.¹¹⁶) The provisions of the U.S. consent decree aimed at assuring that end users and OEMs would have the ability to modify Windows applied to middleware, specifically including media players. For example, because Microsoft Media Player is defined to be a Microsoft Middleware Product,¹¹⁷ Microsoft must allow OEMs and end users to delete the visible means of access to it under certain conditions.¹¹⁸ In addition, the decree attempts to assure interoperability between middleware and Windows, and between non-Microsoft computers and servers using Microsoft server operating systems. Microsoft must disclose the APIs that allow its own middleware to interoperate with Windows,¹¹⁹ and the communications protocols that Microsoft’s client PCs use to interoperate with Windows server operating systems.¹²⁰ In the European Microsoft proceeding, the Commission specifically found the remedies in the U.S. case inadequate, and it imposed more onerous relief. Microsoft has been required to design a new version of Windows in which much of the code of Media Player, as well as all references to it, have been deleted, and it must disclose highly detailed information about its communications protocols of its workgroup server operating systems, including those for server-to-server communications.

Because of the importance of media players and the workgroup server operating systems in the remedial and follow-on proceedings, we pause briefly to examine those markets. A server is a computer that supplies services to client computers linked to it in a network. It is generally more powerful and more expensive than client personal computers. Computer networks arose as an alternative to systems in which processing power resided in a mainframe unit and that users accessed from dumb terminals. In network computing, processing functionality is distributed through applications residing on the clients and the more powerful servers. As used by the European Commission, the term “workgroup” denotes a small to medium-sized network of computers.¹²¹ A workgroup server operating system allows file and print sharing among client PCs in the network and provides group and user administration services, thus maintaining the security of the network.¹²² The two sets of functions are

actually a single service viewed from two perspectives: from the perspective of the client PC user, the workgroup server operating system allows file and print sharing; and from the perspective of the network administrator, it permits the individual to maintain control over the clients' access to and use of the network resources. According to the Commission, workgroup, or "infrastructure," servers, therefore, are distinguishable from high-end, or "enterprise," servers that support "mission critical" tasks, such as banking transactions. Further, a workgroup server operating system can also support applications that perform tasks, such as e-mail management, outside of the task sets that define the product—file and print sharing, on the one hand, and group and user administration services on the other.

A group of computers cannot form a network unless the constituent members, which can include not only multiple client PCs but also multiple servers, can exchange information and use the information exchanged. Therefore, the workgroup server operating systems and client PC operating systems in a network must interoperate on both a client-to-server and server-to-server basis.¹²³ With respect to the client-to-server interaction, the prevailing version of Microsoft's workgroup operating system relies on specific pieces of software code contained in the Windows PC operating system running on the client computers.¹²⁴

Despite the language of "networks," a workgroup computer network does not display direct economic network effects, except in a trivial sense. The value of a computer in the network increases as another computer joins the network, but only up to the definitional limit of a workgroup; once the network exceeds a modest number of members, it is no longer a workgroup. Though compatibility is implicit in products exhibiting positive network effects, the compatibility among computers in a workgroup implies something else. It is akin to the compatibility necessary for any two products to function as components in a system, such as a DVD and a DVD player. The client PC operating systems and the workgroup server operating system in a workgroup form a product system.

Workgroup server operating systems may exhibit indirect network effects, though they are probably weak. Because a few applications are written to the server operating system, the same economic dynamic that drives the PC operating system market can characterize the workgroup server operating system market: software vendors write applications first and perhaps only for the most popular operating system, and users adopt the operating system that supports the most applications.¹²⁵ But PC operating systems are worthless without applications, while workgroup

server operating systems perform their essential functions without applications.

The European Commission also pointed to another kind of indirect network effect, having to do with independent support services.¹²⁶ Expertise to some extent is product-specific, and technicians will tend to invest in developing the expertise necessary to provide server operating system support for the most popular operating system; users will tend to select the server operating system for which technical support services are cheapest and most widely available. The logic of the argument is sound, but again, the magnitude of the effect is unclear. For a technician to learn the intricacies of a second workgroup operating system is akin to a programmer porting an application to another operating system, but it is not clear that the costs for both are comparable or that the marginal cost of mastering the second operating system is a significant deterrent. It is also not clear that the availability, quality, and cost of external support services are an important consideration for many workgroup server operating system users or that the available support differs appreciably across brands for many users who are concerned. The Commission's conclusion that these network effects are significant appears to be based on anecdotal evidence.¹²⁷

Some firms, such as Sun Microsystems and most UNIX vendors, market servers and server operating systems in tandem, just as Apple markets client computers and operating systems. By contrast, Microsoft and Novell produce only software, and their server operating systems target primarily Intel-compatible hardware.¹²⁸ Novell developed NetWare as a server operating system in the 1980s, and it was for a time the leading vendor of workgroup server operating systems. Microsoft entered the server operating system market in 1996 with the release of a server version of Windows NT. Based on the latest versions of workgroup server operating systems, assuming workgroup server operating systems are a relevant market, the Commission determined that in 2002, Microsoft had a market share around 65 percent, with the remainder of the market divided among Novell's NetWare, Linux systems, and UNIX systems, including Sun's Solaris.¹²⁹

The other software that caught the attention of the European Commission (and the Korean Fair Trade Commission) was media players. A media player running on a computer is software code used to read digital audio and visual content and play it back on the computer by translating it into instructions that are sent to the hardware through the operating system.¹³⁰ A variety of appliances can play back audio and video files stored on physical devices, such as CDs and DVDs, but an

increasingly important kind of media transmission takes place across the Internet, from servers to PCs or other digital devices capable of playback. The content is stored first on the server, and at most is transferred to the memory of the playback device. Audio or digital content can be downloaded to a computer in its entirety and then played back, or it can be “streamed,” or played as it is received, on a streaming media player.¹³¹ Whether streaming is important to the user depends on the content and the value of time. The delay in downloading an entire file of recorded music, for example, may be irrelevant, while the ability to watch a news conference in real time may be essential.¹³²

A media player must compress and decompress enormous amounts of data using the formats and algorithms used to encode the content. The media player thus must contain code that allows it to implement the corresponding codec in the content. Moreover, through digital rights management (DRM) technology, content can be encoded in such a way as to reduce the likelihood of unlawful duplication or distribution.¹³³ A user cannot play back DRM-encoded content unless the media player supports the DRM technology embedded in the content and he or she has a license to obtain access to the material. The content is created by the author and then licensed to a firm that becomes the content owner. The owner itself may distribute the content, or it may license so-called content providers, which aggregate content and distribute it to users.¹³⁴

The leading producers of streaming media software technology are Microsoft, RealNetworks, and Apple. Each offers content providers proprietary technologies embodied in their own media players; other firms produce media players using open standards or technology licensed from the three major producers.¹³⁵ Versions of all three of the principal media players are available for multiple PC operating system platforms, including Windows, the Mac, and Linux. Most large OEMs install more than one player on new PCs intended for households or small businesses. Media player producers pay to be included on the desktop. The European Commission viewed these arrangements as evidence that Microsoft’s inclusion of its media player raised rivals’ costs,¹³⁶ but more likely they simply represent a payment for the service of distributing the player.¹³⁷ Moreover, they can be downloaded from the Internet or obtained in other ways. And because Microsoft Media Player is classified as a Middleware Product by the U.S. consent decree, Microsoft is required to permit OEMs and end users to disable or remove the visible means of end-user access to it. Nevertheless, the Commission found that this remedy was inadequate: it leaves underlying code available for content providers and applications producers and therefore preserves their

incentive to write to Microsoft's media player rather than competing players, because of network effects.¹³⁸

Various industry standards relating to the provision and transmission of digital audio and video content are open, and all three of the leading media players support them.¹³⁹ To the extent that media players are compatible with open standards, no particular implementation is subject to network effects. Content that is encoded according to a proprietary standard, however, is inaccessible to a computer user unless the computer has a media player that supports the standard. The players incorporating proprietary technologies generally do not support competing proprietary technologies. Network effects could tip a market to a single proprietary technology, therefore, if content providers were reluctant to offer content in a proprietary format that can be played only on a media player that few consumers use. But these network effects will be significant only if the costs to the provider of encoding content in multiple technologies are substantial. Remember that the network effects associated with PC operating systems are significant not only because applications are operating system-specific, but also because the costs of porting to additional operating systems are high. The costs of encoding audio and video content consistent with additional technologies do not appear to be high. The European Commission suggested otherwise by finding that encoding in a second format costs 50 percent of the cost of the original encoding.¹⁴⁰ But these costs are small relative to the overall costs of providing content.

In addition, software developers produce applications that are specific to and run on top of media players. Because these applications would have to be ported across media players, the software developer has an incentive to write the application first for the most popular player and then port to other players, only to the extent that the marginal revenue exceeds the marginal porting costs.¹⁴¹ This dynamic is another source of indirect network effects, but its impact is doubtful. First, the availability of add-on applications would have to be significant in a user's choice of media player. Second, the cost of porting across media players would have to deter substantial numbers of software developers from porting. RealNetworks media player was the most popular in the late 1990s, and Microsoft's player has been growing in popularity since then,¹⁴² but neither has established itself as the standard.

4

Practices I: Integration

We can now turn to the legality of Microsoft's integration of the browser and the operating system, the most important issue both for the case itself and for the future of antitrust in high technology markets. The issue arose first in the government's 1997 claim that by bundling Internet Explorer (IE) and Windows, Microsoft was violating an earlier consent decree's prohibition on tying products to the sale of Windows. In that proceeding, Microsoft successfully argued that its actions came within the consent decree's proviso, which permitted Microsoft to develop "integrated products." The court of appeals, interpreting that proviso in its 1998 opinion reversing Judge Thomas Penfield Jackson's preliminary injunction, gave extraordinary deference to Microsoft's claims that this sort of integration provided benefits to consumers. Despite its defeat in the consent decree case, the government alleged in its 1998 Sherman Act case that the combination of IE and Windows was monopolization in violation of section 2 and a tying arrangement in violation of section 1; Judge Jackson agreed on both counts. In this phase of the case, "integration" was no longer simply a defense; the term came to describe more neutrally the various ways Microsoft combined IE and Windows. When presented with the issue in this context, the court of appeals acknowledged the need for some deference to firms' design choices, but no longer viewed

integration as an unalloyed good; instead the court treated it as a design choice that might be anticompetitive or procompetitive depending on its effects.

Over the course of the litigation the precise aspects of the combination that were the focus of contention changed, as did the proposed remedies. Judge Jackson, however, ultimately located the antitrust violations in his findings that Microsoft had

1. licensed Windows and IE as a bundle at a single price;
2. contractually prohibited original equipment manufacturers (OEMs) from removing the visible evidence of IE from the Windows desktop and from modifying the desktop in ways that would increase the use of Navigator;
3. designed Windows 98 to exclude IE from the Add/Remove Programs utility;
4. designed Windows 98 to override the user's choice of default Web browser in specific cases; and
5. designed Windows in a way that commingled operating system-only and browser-only routines in the same library files.

The legal standards applicable to these offenses overlapped. Judge Jackson held that the first four actions constituted an illegal tying arrangement under section 1 of the Sherman Act and that the last four constituted illegal monopolization under section 2. At the district court level, then, commingling code was an act of monopolization, but not tying, while simple bundling of IE and Windows was an act of tying, but not monopolization.¹ The remainder of the acts of integration violated both provisions.

The court of appeals reversed the tying decision on the ground that Judge Jackson should have applied a rule of reason to a case involving platform software integration; the government did not pursue the tying claim on remand, for reasons that will become apparent. But the court affirmed the monopolization holding, with the exception of ground 4, which Microsoft justified by proving that it provided concrete benefits the government failed to rebut. Thus, the actions that remained condemned after judicial review were 2, 3, and 5. But action 5, commingling code, did not survive the remedial phase of the litigation. The consent decree approved by the courts did not address this sort of integration, focusing instead on the measures aimed at preventing OEMs from removing access to middleware products. As we explain below, this shift was crucial to the theory of anticompetitive effect.

Table 2. Levels of Integration

Form of Integration	Action by Microsoft	District Court	Court of Appeals	Final Judgment
Level I	1. Licensing IE and Windows as a bundle at a single price	Tying		
Level II	2. Imposing license restrictions barring OEMs from removing IE icons, menu items, etc.	Tying and Monopolization	Monopolization	Prohibited
	3. Excluding IE from the Add/Remove Programs utility	Tying and Monopolization	Monopolization	Prohibited
	4. Overriding the user's choice of a default browser in some cases	Tying and Monopolization		Limited
Level III	5. Commingling IE-only and shell code in the same files	Monopolization	Monopolization	

A closer examination of the five actions Judge Jackson found unlawful reveals that they involved three levels of integration of elements of IE (variously defined) and Windows. The first action is what we will call Level I integration, the simple licensing of IE and Windows software as a bundle at a single price, regardless of the technical linkages between the products.² The second, third, and fourth actions are what we will call Level II integration, measures that prevent licensees and users from deleting or disabling the means of access to IE functionality, but leaving the underlying IE code intact. The fifth action, commingling code, or Level III integration, made it more difficult to remove the code that actually provides IE functionality. The only forms of integration that were both found unlawful and barred by the consent decree were those in Level II, as table 2 indicates.

In this chapter we examine the courts' analyses of each of these levels of integration. As we show in chapter 1, antitrust has come to recognize that harm to competition should be measured by harm to consumers rather than by harm to rivals. Usually, when a practice harms rivals, it *benefits* consumers by expanding output or improving products and service; far from penalizing this sort of harm, antitrust law now actively seeks to promote it. As we have seen, the court of appeals recognized this principle by absolving Microsoft of liability for introducing some new products and services and charging low prices for them. These sorts of

actions harm rivals but benefit consumers, except in rare circumstances. But in some instances, exclusionary practices can harm consumers by harming rivals, so harm to rivals can be relevant to a finding of monopolization. Distinguishing attacks on rivals that harm consumers from those that benefit consumers is the greatest challenge in antitrust. Mistakenly classifying procompetitive practices as anticompetitive is costly because a judicial declaration, by nature invulnerable to market correction, forces the firm to use a less efficient means of achieving a procompetitive result. Yet mistakes are easy to make because the practices are often superficially similar. The combination of IE and Windows was particularly difficult to evaluate in these terms because it involved at least the three levels of integration we have identified. All three levels of integration harmed Netscape by diverting usage share to IE, but also benefited consumers to varying degrees, and it was not clear which effect predominated.

The courts' approaches to the issue of integration evolved during the course of the litigation. The legal issue of integration arose initially in the consent decree case. Although Microsoft won that round, the majority and dissenting opinions in the court of appeals provided contrasting accounts of the levels of integration that shaped later consideration of the issue. In the Sherman Act litigation, a unanimous court of appeals distinguished the effects of the different levels of integration. Simple bundling dropped from the case because it offered the most obvious benefits to consumers. Level II integration, however, was held unlawful because Microsoft was unable to point to benefits of the practice except in the instance of the default override. Denying means of removing or disabling access, in the court's view, was an effort to limit the ability of licensees to select and configure browsing functionality as they saw fit. We suggest, however, that this view mistakenly ceded to OEMs the power to determine whether to block access to IE. Finally, the courts held, we believe properly, that Level III integration, even if characterized as a form of monopolization, did not warrant a remedy because it assured the continued presence of IE's programming interfaces for reliance by software developers. This aspect of the case, which is the most important difference between the U.S. and European cases, may well have the most continuing practical importance for the future of software integration.

In the final part of this chapter, we turn to the long-term effects of Microsoft's conduct on competition. Having determined that Microsoft's conduct harmed rivals without obvious benefit to consumers, and without an acceptable efficiency justification, the court refused to require the

government to offer any further proof that the conduct would actually reduce competition. The government was not required to offer evidence that Netscape and Java could actually have evolved into a platform that would have reduced the applications barrier to entry into the operating system market. The court held it was sufficient that Microsoft had conceded Netscape was a nascent threat; consequently, the court treated Netscape as if it were a present rival. We argue here that this approach ignored key issues and greatly increased the risks of error in monopolization cases.

A Preliminary Skirmish

The issue of integration first arose in government's 1997 action charging Microsoft with violating the anti-tying provision of the consent decree, which contained a proviso that permitted Microsoft to develop "integrated products."³ The government had claimed Microsoft violated the anti-tying provision of the 1994 consent decree by "condition[ing] its OEM licenses to Windows 95 on OEMs' licensing Internet Explorer."⁴ This allegation appeared to locate the violation in simple bundling of IE and Windows, which the government contended were separate products. Rejecting Microsoft's contention that IE and Windows were integrated, Judge Jackson issued a preliminary injunction barring Microsoft from "forcing OEMs to accept and preinstall the software code" of IE 3.0.⁵

Microsoft initially purported to comply with the injunction by offering OEMs, as alternatives to the package of Windows 95 and IE 3.0, a crippled version of Windows 95 with files shared by both IE and the Windows shell deleted, and an outdated version of Windows 95 that contained no shared files. An irritated Judge Jackson later told a reporter that this response was

a thumb in the eye. It was an obsolete version of their equipment. Or one that didn't work. And when the matter came on for a hearing, Microsoft brought in an executive and his testimony was that they assumed my order was for them to market a product that didn't work! That seemed to me to be a very sophomoric, arrogant reaction.⁶

After an exchange of recriminations, the government and Microsoft stipulated that Microsoft could comply with the injunction by "giving OEMs the options of (1) running the Add/Remove Programs utility with respect to IE 3.x and (2) removing the IE icon from the desktop

and from the Programs list in the Start menu and marking the file IEXPLORE.EXE ‘hidden.’”⁷ At this stage, IE was still included in the Add/Remove Programs utility in Windows 95.

This dispute starkly posed the issue of integration for the court of appeals in reviewing the injunction in the consent decree case. The government contended that the combination of IE and Windows was a strategic choice by Microsoft aimed at thwarting a platform rival and could be reversed by simple actions. Microsoft contended that the combination of IE and Windows, like many of the previous steps in the evolution of the operating system that we discuss in the last chapter, upgraded Windows by deeply integrating browser functions, and that any effort to separate the code would destroy these improvements. The actions Microsoft agreed to take in compliance with Judge Jackson’s order, in Microsoft’s view, allowed OEMs pointlessly to hide some of the means of access to browsing functionality, while leaving the code constituting IE unaffected. Implicit in this argument is the crucial assumption that “IE” constituted the code used to provide browsing functionality, not the functionality itself.⁸

In an opinion by Judge Stephen F. Williams, the court of appeals reversed the preliminary injunction, holding that, on the record at that stage, IE and Windows were integrated as that term was used in the consent decree. For Judge Williams, products were integrated if Microsoft offered a “facially plausible”⁹ claim that the bundling “combines functionalities . . . in a way that offers advantages unavailable if the functionalities are bought separately and combined by the purchaser.”¹⁰ Judge Williams intentionally framed a deferential standard of integration, expressing reluctance to interfere with product design choices¹¹ and endorsing an earlier court’s view that “[w]here there is a difference of opinion as to the advantages of two alternatives which can both be defended from an engineering standpoint, the court will not allow itself to be enmeshed in ‘a technical inquiry into the justifiability of product innovations.’”¹² He recognized, however, that

there should be some technological value to integration. Manufacturers can stick products together in ways that purchasers cannot without the link serving any purpose but an anticompetitive one. The concept of integration should exclude a case where the manufacturer has done nothing more than to metaphorically “bolt” two products together, as would be true if Windows 95 were artificially rigged to crash if IEXPLORE.EXE were deleted.¹³

The combination of IE and Windows met this lenient standard because Microsoft was able to offer plausible benefits from integration. In identifying the benefits, the court credited Microsoft with any advantages offered by including in Windows the code that provided functionality for Web browsing. For example, combining IE and Windows “allows applications to avail themselves of [browsing] functionality without starting up a separate browser application”; moreover, elements of IE like the HTML reader “provide system services not directly related to Web browsing . . . , let users customize their ‘Start’ menus, [and] make possible ‘thumbnail’ previews of files on the computer’s hard drive.”¹⁴ Nor did it matter that IE came on a separate disk that could be installed by the end user or the OEM because the combination of the products occurred in Microsoft’s design, which upgraded the operating system with new functionality.¹⁵ The court refused to engage in a more intrusive inquiry or to examine other possible definitions of integration, because to do so would enmesh the court in issues of product design that were beyond its institutional competence.

Judge Williams found support for his approach in the squabble over compliance with Judge Jackson’s injunction. He noted that the government had originally alleged tying by simple bundling of IE and Windows, but it had agreed to allow Microsoft to comply with the injunction by permitting a minimal unbundling. The government’s

alternate modes of compliance do not remove the IE software code, which indeed continues to play a role in providing non-browser functionality for Windows. In fact, browser functionality itself persists, and can be summoned up either by entering four lines of code or by running any application (such as Quicken) that contains the code necessary to invoke the functionality. . . . The agreed-upon means of compliance simply enable the OEMs to make user access to IE more difficult.¹⁶

The government’s acceptance of this mode of compliance, by “allowing OEMs to conceal IE, rather than to refuse it . . . fits poorly with the Department’s tying theory. A tie-in is not affected by the purchaser’s ability to discard the tied good.”¹⁷ Judge Williams also seemed to agree with Microsoft that no more thorough removal of IE code—an “unbolting” of IE and Windows—would be practicable because, apart from the code IE shared with Windows, “there is nothing more to IE than the four lines of programming required to summon browsing functionality from code that also supplies operating system functionality.”¹⁸

Thus, Judge Williams considered the combination of IE and Windows on the three levels we have already identified: bundling the operating system and the browser at a single price, preventing OEMs from deleting the means of access to browsing functionality, and combining code without a technological justification. In his view, although the government had alleged that Microsoft violated the consent decree by simple bundling, Microsoft had shown the products to be integrated and thus within the consent decree's proviso. The products were not simply bolted together, and thus a full unbundling would be impossible; the minimal unbundling required by the injunction was not responsive to the theory of the case.

In her concurrence, Judge Patricia Wald recognized a similar range of possible relationships between the products, but argued that the majority's deferential standard of integration prevented the court from examining whether those relationships might be competitively problematic. She noted, for example, that no one had managed to identify what IE consisted of. The government had apparently characterized the product as "browsing functionality," independent of the underlying code. Alternatively, Judge Wald suggested that IE might be defined as browsing-specific code, that is, the code that the browser did not share with the operating system; the shared code might then be considered part of the operating system.¹⁹ Nor was she willing, as Judge Williams was, to accept the assertion that virtually all of IE's code was shared with Windows:

An operating-system designer who wished to turn two products into one could easily commingle the code of two formerly separate products, arranging it so that . . . Internet Explorer instructs the Add/Remove function to leave so much of that program in place that "four lines of programming" will suffice to activate it. . . . This is not to say that commingling of code is *per se* pernicious or even suspicious. Rather, the point is that commingling alone is not sufficient evidence of true integration; the courts must consider whether the resulting product confers benefits on the consumer that justify a product's bridging of two formerly separate markets.²⁰

Judge Wald's mention of "commingling code" foreshadowed the use of that term to describe one of the key acts of monopolization in the later Sherman Act case. In a footnote, Judge Williams acknowledged Judge Wald's concept, equating it with the majority's concept of metaphorical "bolting."²¹ Both terms referred to product design for a reason other

than efficiency, including exclusion of rivals. The disagreement between Judge Williams and Judge Wald lay in the degree of scrutiny each believed necessary to determine whether the practice had occurred. Judge Williams appeared convinced on the record before him that essentially all of IE code was shared with Windows—sufficiently convinced to reject any balancing inquiry that might involve burden-shifting or consideration of whether less restrictive alternatives to the combination might exist. Judge Wald, however, insisted that the issue required a greater degree of scrutiny commensurate with the strength of evidence that the two products were in separate markets, a proxy for the efficiency of providing the products separately.

Thus, the consent decree case framed the issue of integration for the Sherman Act case by identifying the three levels of linkage between IE and Windows and suggesting the possibilities of benefit and harm. Microsoft won on the issue of integration at this stage by pointing to benefits, not only of adding a browser to Windows, but of redesigning the Windows interface to share code with IE. It was able to win largely because Judge Williams's standard of analysis was so deferential that the benefits excused the combination at every level of integration. The same three dimensions of the relationship between IE and Windows remained the core of the government's allegations of monopolization and tying, as well as a focus of Microsoft's defense. In this phase of the litigation, however, the role of the concept of integration changed.

Integration on Trial

In the Sherman Act case, where integration was alleged as both tying and monopolization, Microsoft once again offered evidence of the advantages of its integrated design, in effect posing the issue of legality as a comparison between the merits of separate browsers and its integrated design. The government responded not by challenging the benefits of integration generally, but by identifying *aspects* of Microsoft's design that were not necessary to achieving those benefits and that limited Netscape's usage share. In essence, the government contended that, whatever the benefits of integration, there were less restrictive means of achieving them than the ones Microsoft chose. This approach posed the issue of legality as a comparison, not between the benefits of an integrated design and a nonintegrated design, but between Microsoft's integrated design and a range of hypothetical designs that would have preserved many of the benefits of integration without restricting competition.

Microsoft's Claim of Integration. Microsoft asserted that it planned to incorporate Internet technologies into Windows since 1993,²² but that IE became integrated only with Windows 95 and the release of IE 3.0.²³ Earlier versions of IE had been simple programs contained in a single file. Beginning with IE 3.0, however, IE's code was "componentized," that is, divided into dynamic linked libraries (DLLs) that provided different categories of Internet technologies along with other functionality.²⁴ Each of the four primary DLLs included applications programming interfaces (APIs) that third-party software developers could invoke to enhance their products. Beginning with IE 4.0, Microsoft began to rely on IE technologies in the DLLs for the operation of the Windows user interface. According to Microsoft, the componentized construction of IE 4.0 allowed developers to rely on the presence of these Internet systems services in Windows in designing their products to be more "Internet-aware."²⁵ Thus, once the DLLs were loaded in the computer's memory, applications software like Intuit's Quicken could share the DLLs' services to access information on the Internet without starting separate browsers.²⁶ Microsoft argued that to achieve these benefits, developers had to be certain that the system services would be available in Windows.²⁷

A componentized design has costs because it requires a high volume of calls among the DLLs.²⁸ For example, the HTML rendering function was placed in a separate DLL (MSHTML.DLL) in IE, while the code providing the same function in Navigator was dispersed among files providing other browser functionality, a choice that potentially made the rendering function faster for Netscape's browser. On the other hand, componentization offers greater flexibility to applications developers: it allows the HTML rendering function, for example, to be more readily shared among existing programs and reused in new programs to display HTML files retrieved from the Internet or from the client computer's hard drive.²⁹ These advantages, according to Microsoft, were likely to predominate in a software platform, which provides functionality to multiple applications.³⁰

Microsoft also claimed that the integration of the browser with the user interface provided its own array of benefits to users. First, it gave users browsing functionality, which they would otherwise have had to acquire separately.³¹ Windows 98 also included an Internet Connection Wizard that allowed users to open an account with a nearby Internet service provider (ISP).³² Additionally, the integration of the browsing function into the Windows shell allegedly provided a more convenient user interface.³³ To illustrate these benefits, Microsoft offered a videotape

demonstration comparing Windows 98 with a retail or “gold” version of Windows 95, which did not include any version of IE, on which the latest version of Navigator had been installed.³⁴ The demonstration showed, for example, that a Windows 98 user could view Web pages in any window in which a file could be viewed. The interface allowed the user to move “back” and “forward” between Web pages and files on the hard drive within the same window, and to create a list of Favorites that could include both Web sites and files. In addition, any of the names of sites or files could be dragged to the desktop to create Shortcuts. This merging of file viewing into the same window with a common user interface, according to Microsoft, created a less confusing and more intuitive user experience. Microsoft also pointed to the Active Desktop function as an illustration of the integration of the browsing function with the user interface.³⁵ Windows 98 allowed the user to place Web pages on the desktop, which could be constantly updated. Microsoft also contended that the integration of IE technologies allowed the system to function more efficiently by allowing non-Web-browsing functions to rely on the DLLs. For example, the HTML rendering could be used by other components of Windows, such as the Help function.³⁶ Thus, the common systems services of the DLLs were available to all functions of Windows.

Microsoft portrayed this integration as the natural evolution not only of Windows, but of all technology.³⁷ Like computer chips, software products innovate in large part by integrating new functions and capabilities. Word processing software, for example, has gradually added various capabilities, including thesauruses and spell-checkers, that had initially been sold as separate products; and word processing was combined with other office productivity software in “suites” of programs that share code. The same process has occurred with operating systems.³⁸ Windows displaced MS-DOS with a more accessible graphical interface and has successively added various functions that had been sold previously as separate products. IE, according to Microsoft, was only the latest incorporation of new functions.³⁹

The Government’s Challenges and Microsoft’s Responses. The government attacked Microsoft’s claim of integration on three grounds: the method by which Microsoft distributed IE, principles of software design, and a demonstration that IE and Windows could be separated. On the first ground, the government suggested that, because Microsoft provided IE 4.0 separately on a compact disc or by a download, the browser was simply an application. In addition to providing IE 4.0 as a component

of Windows 98, Microsoft provided IE 4.0 for Windows 95 and IE 4.0 for non-Windows operating systems, each on a separate CD or by downloads from the Microsoft Web site. Thus, it appeared that IE 4.0 could be installed as an application on top of Windows and other operating systems.⁴⁰ The government's lawyer, David Boies, sought to make this point repeatedly during his cross examination of Microsoft's vice president, James Allchin. For each of nineteen benefits of integration in Windows 98 described in Microsoft's video demonstration, Boies replayed the relevant portion of the video and then asked Allchin if the same benefit could be achieved by installing IE 4.0 on Windows 95. In each case, Allchin conceded that it could.⁴¹ Boies's apparent intent in this lengthy exercise was to imply that no significant integration occurred in Windows 98 that could not occur by installing a separate application.

Microsoft, of course, denied the implication, insisting that installing IE 4.0 on Windows 95 upgraded the operating system by removing files, rewriting files, and changing the interface⁴² to such an extent that Windows 95 became "almost Windows 98."⁴³ Once installed, the DLLs that comprise IE technologies provided essential services for both Web-browsing and non-Web-browsing functionality, and thus could not be removed. The versions of IE for other operating systems, in contrast, remained separate applications after they were installed.⁴⁴ IE 4.0 for the Mac OS, for example,⁴⁵ could be uninstalled without affecting the remaining parts of the operating system because it duplicated instead of replaced certain key components, such as the HTML rendering function.

The government's second challenge to the claim of integration was to assert through the testimony of David J. Farber that the actual design of IE 4.0 and Windows 98 was neither efficient nor dictated by functional concerns. Farber did not examine the design of Windows 98 in detail, instead asserting that under "commonly understood and accepted principles and practices in the field of computer science which are applicable to all software,"⁴⁶ an operating system "is software that controls the execution of programs . . . and may provide low-level services such as resource allocation, scheduling, and input-output control in a form which is sufficiently simple and general that these services are broadly useful to software developers."⁴⁷ A browser, in contrast, is an application that allows users to navigate and display information available on the Web.⁴⁸

All software development, according to Farber, relies on reuseable and malleable modules of code that provide different functionalities.⁴⁹ Consequently, there were "no technical barriers that prevent[ed] Microsoft from developing and selling its Windows operating system as

a stand-alone product separate from its browser software” by providing the browser software in the form of removable modules.⁵⁰ Indeed, Microsoft’s inclusion of the browser in the “operating environment” was inefficient because it forced developers to rely on specific, possibly unwanted code to accomplish a function, or else to duplicate the function using other code, thus burdening system resources.⁵¹ Farber analogized the DLL’s to sealed “grocery bags” that contain both Internet and non-Internet-related code, but that must be loaded entirely into memory.⁵² This assessment laid the foundation for the finding that Microsoft had monopolized by “commingling code.” Farber warned that to permit the assertion that the browser becomes part of the operating system because “some efficiency can be articulated as a result of the ‘integration’” would allow Microsoft to put anything it wanted into Windows, including, for example, its entire Office suite.⁵³ Edward W. Felten of Princeton endorsed Farber’s contention that the design of Windows and IE 4.0 violated basic principles of software design, particularly by combining functions unnecessarily into a take-it-or-leave-it package.⁵⁴ He suggested, for example, that a number of IE 4.0’s enhancements of the user interface, such as the ability to drag a menu item to the desktop, have no necessary connection to Web browsing, but could be obtained only by installing IE 4.0.⁵⁵

Microsoft, through the testimony of Allchin, rejected the assertion that the operating system was necessarily limited to “low level kernel functionality.”⁵⁶ Allchin claimed that there is no generally accepted definition of an operating system,⁵⁷ or even a clear distinction between operating systems and applications.⁵⁸ The content of the operating system must change in response to technology and user needs.⁵⁹ He insisted that the integration of IE into Windows provided significant efficiencies for software developers who want to create “Internet aware” products,⁶⁰ by providing systems services that they need not duplicate. Moreover, integration significantly enhanced the user’s experience by allowing the user to move seamlessly between information sources within the same viewing Window.⁶¹ Other producers included browsers with their operating systems, suggesting that the choice to incorporate a browser was driven by the needs of consumers and not by any desire to hinder competitors.

The government’s third ground for denying the efficiency of integration was Felten’s demonstration that browsing functionality could be removed from Windows 98 without impairing nonbrowsing functionality. For this purpose, Felten created a prototype removal program that deleted the IE icon, the IEXPLORE.EXE program file, and some other means by which the user could access the Web using IE.⁶² In addition,

the program altered the Windows Registry to block Windows from trying to use IE to view files, and modified some code within the shared DLLs to force Windows to use the default browser instead of IE in certain instances in which Windows 98 was hardcoded to use IE to access the Web.⁶³ Beyond these changes, however, the prototype removal program left “in place shared files that perform other functions”⁶⁴ and did not affect the ability of third-party developers to use those files.⁶⁵ The program also, by intention, left in place the Windows Update function, which used IE to download updates from a Microsoft Web site.

Felten conceded on cross-examination that his prototype removal program did not remove the DLLs that Microsoft identified as IE 4.0 technologies, such as the software that supports HTML, an essential component of any Web browser, but insisted that it did remove “Web browsing” functionality from the system, “*which is the same thing.*”⁶⁶ Those elements of the DLLs that did not relate solely to Web browsing were thus considered either part of the operating system or at least not part of the browser. According to the government, the prototype removal program demonstrated that Microsoft could have provided means for removal of “IE 4.0,” defined as browsing functionality, without harming operating system functionality and thus that IE 4.0 was not integrated into Windows 95 or Windows 98.

Microsoft attacked Felten’s prototype removal program primarily through the testimony of Allchin. First, Microsoft contended that, even if the prototype removal program accomplished what it set out to do, it would not remove IE 4.0 from Windows.⁶⁷ Allchin rejected Felten’s characterization of the browser “product” as simply the ability of the user to browse the Web. A product, according to Microsoft, is defined in terms of all of its related functionalities and the associated code. The prototype removal program, in contrast, simply removed a small “stub loader” file (IEXPLORE.EXE)⁶⁸ and made a few other alterations in Windows code⁶⁹ in an effort to block users’ access to the browser’s functionality, leaving virtually intact the principal DLL’s that contained IE 4.0 technologies.⁷⁰ Allchin stated that “any software program can be modified to hide or remove functionality,”⁷¹ but that fact did not demonstrate that the removed functionality constituted a separate product.⁷² Even Netscape’s Navigator browser could be altered to remove Web browsing functionality and would still be capable of some functions, such as viewing HTML images stored on a hard drive.⁷³ Because such an exercise left in place virtually all of the technologies designed for the purpose of Web browsing (among other things), it simply disabled the product, like removing a hand from the human body.

Thus, the very goal of simply removing Web browsing functionality, according to Microsoft, was pointless and harmful to consumers because it made Windows less useful than it otherwise would be. The removal of IE 4.0's Web browsing functionality and the reinstallation of Navigator left Windows 98 less functional because Navigator lacked some of the capabilities of IE 4.0, particularly the ability to view Web pages and other types of information in the same window.⁷⁴ Moreover, even if a user wanted to use only Navigator, the retention of IE 4.0 functionality did not harm the user because Navigator could be installed as the default browser and would run flawlessly. Because the amount of code the prototype removal program deleted was so small, the process did nothing to economize on system resources.⁷⁵

In addition, Microsoft asserted that the prototype removal program failed to accomplish its stated objectives. In what Microsoft referred to as the "Feltenized," or "government," version of Windows 98, it was still possible, by various avenues, to browse the Web using IE 4.0 technologies even after running the prototype removal program.⁷⁶ Moreover, according to Allchin, running the prototype removal program degraded the functionality of Windows both for users and for third-party developers.⁷⁷ Microsoft's initial videotape demonstration of the deficiencies of the Felten program was apparently discredited in an embarrassing cross-examination by Boies,⁷⁸ but Microsoft produced another videotape, in which Allchin apparently demonstrated that, on a Feltenized machine, Web browsing was still possible while other functionalities of Windows 98 were impaired.⁷⁹ Of course, that demonstration did not prove that Microsoft could not have designed a program to achieve more completely the objectives of the Felten program.

Rethinking and Redefining Integration under Sherman Act Standards

It was initially up to Judge Jackson to decide whether Microsoft's combination of IE and Windows violated the Sherman Act. Recall that in reversing Judge Jackson's preliminary injunction in the consent decree case, Judge Williams announced the standard that IE and Windows 95 were "integrated" if Microsoft could offer "facially plausible"⁸⁰ evidence that bundling "combines functionalities . . . in a way that offers advantages unavailable if the functionalities are bought separately and combined by the purchaser."⁸¹ In the Sherman Act case, however, Judge Jackson applied very different standards to hold that various aspects of Microsoft's combination of IE and Windows constituted both monopoly maintenance under section 2 and illegal tying under section 1. The

precise acts held to violate each provision differed: the sale of the products as a bundle for a single price constituted tying but not monopolization; commingling browser and operating system code in the same libraries constituted monopolization but not tying. The other means of combining the products—contractually preventing OEMs from removing icons and menu entries and from modifying the user interface to promote a rival browser, excluding IE from the Add/Remove Programs utility, and overriding the user’s choice of default browsers—violated both provisions.

The court of appeals, in its pivotal 2001 per curiam opinion, reversed the tying determination on the ground that cases involving integration of platform software should be evaluated under the rule of reason rather than the per se rule that Judge Jackson actually applied. But the court affirmed all but one of Judge Jackson’s holdings that both Levels II and III integration constituted monopoly maintenance. In this section, we examine the court of appeals’ analysis.

Characterization and Consumer Harm. As we show in chapter 2, reviewing the district court’s determinations that various actions, not just acts of integration, were exclusionary, the court of appeals articulated a burden-shifting framework. First, the plaintiff was required to prove that the practice had an anticompetitive effect, in the sense that it harmed the “competitive *process* and thereby harm[ed] consumers” rather than merely competitors.⁸² If the plaintiff established this prima facie case, the burden would shift to the defendant to offer 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.”⁸³ If it did so, the burden shifted back to the plaintiff either to rebut the justification or to show that the anticompetitive harm outweighed it.⁸⁴ This last balancing inquiry, according to the court, was analogous to a rule of reason analysis in section 1 cases.

This statement of a structured test, however, left unclear critical aspects of the court’s analysis, especially the nature and significance of the initial characterization of the practice as anticompetitive or not. The court of appeals reversed eight of Judge Jackson’s holdings of monopolization. In seven of these instances, the ground for reversal was that the act was not anticompetitive; in the other, the court agreed that the act was prima facie anticompetitive, but accepted Microsoft’s asserted efficiency justification. In no instance did the government either rebut a showing of procompetitive effect or prove that anticompetitive effects

outweighed it. Thus, the most important step in the analysis was the first—identifying *prima facie* anticompetitive effects. Once a practice was found not to be anticompetitive at all, the analysis ended; a determination that a practice was *prima facie* anticompetitive was only slightly less decisive in the other direction. To some degree, this emphasis on the early stages of the test reflects the artificiality of the burden-shifting approach, which is an appellate judicial strategy for evaluating evidence; it does not describe the sequence in which the parties actually present evidence and argument at trial. In *Microsoft*, the trial process involved sequences of witness who testified to a variety of issues. Only gradually did the critical allegations of anticompetitive effects and the asserted justifications emerge.

In its initial statement of the anticompetitiveness inquiry, the court said only that it should focus on harm to the process of competition and therefore to consumers rather than on harm to rivals. As we discuss in chapter 2, however, the court repeatedly upheld practices that conferred immediate and obvious benefits on consumers, regardless of the cost of the practice to Microsoft or the harm it inflicted on Netscape. It rejected Judge Jackson’s holdings that Microsoft had monopolized by providing services and goods at great expense with no hope of revenue, noting that the “rare case of price predation aside, the antitrust laws do not condemn even a monopolist for offering its product at an attractive price.”⁸⁵ Similarly, the court rejected Judge Jackson’s holding that Microsoft had monopolized by creating an incompatible, Windows-specific Java Virtual Machine (JVM), because it “allow[ed] Java applications to run faster on Windows than does Sun’s JVM.”⁸⁶

On the other hand, where the practice did not obviously and immediately benefit consumers, the court essentially equated the tendency of the practice to harm Netscape or Java with harm to competition sufficient to shift the burden to Microsoft to offer a procompetitive justification.⁸⁷ Interestingly, this standard of anticompetitive effect does not require proof of actual harm either to rivals or competition. The court required little proof that Microsoft’s practice had a tangible effect on either Netscape or Sun Microsystems; it was sufficient that the practice appeared to have a *tendency* to harm the rivals. For example, as we show in the next chapter, the court characterized as anticompetitive Microsoft’s purported tricking of software developers to write Windows-specific Java rather than Sun’s cross-platform Java, even though there was no evidence any developer was actually deceived. Similarly, the court did not require a specific showing that a practice actually had an effect on Netscape’s browser usage share to prove anticompetitive

effect; a tendency was sufficient. True, the court rejected Judge Jackson's holding that Microsoft's exclusive contracts with Internet content providers (ICPs) were anticompetitive because Judge Jackson had specifically found the evidence insufficient to conclude that the contracts had substantially affected Netscape's usage share. It upheld, however, the findings that Microsoft's exclusive contracts with independent software vendors (ISVs) were anticompetitive, because "one can tell from the record that by affecting the applications used by 'millions' of consumers, Microsoft's exclusive deals with the ISVs had a substantial effect in further foreclosing rival browsers from the market."⁸⁸ There was, however, no quantification of the effect—the effect was inferred from the prevalence of the agreements and their exclusive nature. Consequently, the burden shifted to Microsoft to offer a procompetitive justification for the exclusivity provision.

More important, the court did not require the government to prove that the effect of the practices on Netscape or Sun actually contributed to maintaining Microsoft's monopoly; it was enough that the practice tended to harm those firms and that the government had articulated a plausible scenario under which that harm would reinforce Microsoft's monopoly. This decision is all the more striking because neither firm at that time competed with Microsoft in the operation system market; they were, in the court's view, potential platform rivals that, if allowed to develop, might have eroded entry barriers in the operating system market. We examine the significance of this aspect of the case for market definition in the last chapter; we examine its significance for anticompetitive effect in the last part of this chapter. For now, we simply note that this approach to causation placed almost dispositive weight on the initial characterization of conduct as having an exclusionary tendency.

Microsoft did have the opportunity to offer a procompetitive justification for the practice. In one instance, the court accepted such a justification—Microsoft was able to show that causing Windows to override the consumer's choice of a browser other than IE provided advantages in functionality sufficient to justify the practice.⁸⁹ But in all other cases, the court found no justification. One of Microsoft's asserted justifications was of special importance for the future of the litigation. Microsoft argued that inducing ISVs to use the Windows APIs helped assure the availability of those APIs, which provided a benefit to both ISVs and consumers. But the court found this objective amounted simply to preserving the Windows monopoly, a competitively neutral goal.⁹⁰ This refusal to credit the widespread adoption of the Windows APIs as a justification later became a focus of contention in the review of the

consent decree, in which the court of appeals justified the failure to provide a remedy for commingling code on this very ground—the need to prevent fragmentation of the Windows APIs.

In the remainder of this chapter, we examine the court's application of its standard of anticompetitive exclusion to Microsoft's integration of IE and Windows. We examine the court's analysis in two stages. In the next section, we assume that the court properly treated Netscape as indistinguishable from a present rival and examine whether the court correctly characterized certain acts of integration as beneficial to consumers or harmful to rivals. We then examine the court's decision to treat Netscape as a nascent rival and to treat nascent rivals as if they were present rivals for purposes of framing a test for unlawful exclusion.

Immediate Effects of Integration on Consumers and Netscape. The issue of integration posed significant challenges in the application of the court's standard of monopolization. The most important of these was whether to treat integration as obviously beneficial to consumers and therefore not anticompetitive regardless of its effect on rivals. As we have noted, the court held that introducing a new product and setting low or zero prices were beneficial to consumers, and thus *per se* lawful. Judge Williams had applied a similar standard in evaluating integration in the appeal from the preliminary injunction in the consent decree case, upholding the linkage of IE and Windows on the strength of Microsoft's "plausible" account of benefits. In the Sherman Act case, however, the court of appeals took a different approach to integration. It expressed concerns about judicial competence to evaluate design choices, but was strangely inconsistent in its framing of legal standards that accommodated those concerns.

In the monopolization analysis, the court barely acknowledged the efficiency advantages of integration and gave them no special weight. It noted that "[a]s a general rule, courts are properly very skeptical about claims that competition has been harmed by a dominant firm's product design changes," because "firms routinely innovate in the hope of appealing to consumers, sometimes in the process making their products incompatible with those of rivals; the imposition of liability when a monopolist does the same thing will inevitably deter a certain amount of innovation."⁹¹ Nevertheless, it observed that "[j]udicial deference to product innovation . . . does not mean that a monopolist's product design decisions are *per se* lawful."⁹² Far from holding integration *per se* lawful, the court found all of the challenged acts of integration *prima facie* anticompetitive because of their effect on Netscape's usage share,

and because they did not reflect “competition on the merits.” Only one of these acts had an efficiency justification.

The terse, almost cryptic treatment of integration in the monopolization analysis contrasted sharply with the court’s solicitude for the possible efficiencies of integration in its discussion of the appropriate standard of tying. Judge Jackson had rejected the deferential standard of the consent decree case and instead applied the per se rule endorsed by the Supreme Court majority in *Jefferson Parish*.⁹³ That test required that tying involve two separate products. For the Supreme Court, products were separate if there was sufficient consumer demand for the tied product to suggest that it was efficient to provide that product separately; if some suppliers in fact provided the tied product without the tying product, the court could infer that joint provision resulted in no substantial efficiencies. Under this test, anesthesia and surgery were separate products, even though they were integrated at the point of delivery, because some patients chose specific anesthesiologists and anesthesia is billed separately. Applying the *Jefferson Parish* standard, Judge Jackson easily found that the operating system and the browser were separate products because some consumers wanted to choose the browser separately, and every other supplier offered to license its operating system without a browser.⁹⁴ (One might well question this conclusion, at least in retrospect, because it seems highly unlikely that any significant number of consumers would want Windows without IE, and a firm’s willingness to supply a browserless operating system says nothing about the efficiency of offering the product in that form. In the European case, there was no consumer interest in the Commission-ordered version of Windows XP without Windows Media Player.) Having decided there were separate products, he also found the requisite “forcing” in Microsoft’s bundling of IE with the dominant operating system.⁹⁵

The court of appeals, however, found the *Jefferson Parish* test inapplicable to bundling of platform software because it failed to account adequately for the efficiencies of integration. The court assumed that the inquiry into whether one or two products are involved is the only one in per se tying analysis that permits the court to assess the efficiency of the combination. *Jefferson Parish*’s separate products test, according to the court, is “a rough proxy for whether a tying arrangement may, on balance, be welfare-enhancing, and unsuited to per se condemnation,”⁹⁶ because there will usually be noticeable separate consumer demand when the benefits of consumer choice outweigh the efficiencies of combination. But the *Jefferson Parish* approach, according to the court, does not authorize a direct examination of the efficiencies associated with the tie,

and therefore is too crude to apply in a case involving platform software, for which integration is particularly likely to create new efficiencies.⁹⁷ Innovation by integration is common in the market, even by firms without market power, who “have no incentive to package different pieces of software together unless there are efficiency gains from doing so.”⁹⁸ And because platform software exposes APIs that are useful to developers, it may be especially beneficial to include those APIs rather than to distribute the code by other means.⁹⁹

The court of appeals mentioned neither of these factors in its monopolization analysis. Nevertheless, they both played a significant role in shaping the issues of monopolization. In the tying analysis, the court was speaking of integration generally to craft a rule for future cases; in the monopolization analysis, it was focusing on specific practices that played a role in integration. In the following discussion, we first analyze the broadest concept of integration, the simple bundling of IE and Windows, and then examine the specific practices that were the focus of the monopolization case.

Level I Integration: Simple Bundling. To a layman, the most basic form of integration was the simple bundling of the browser and the operating system. Yet simple bundling was never the focus of the Sherman Act case. Judge Jackson did hold that it was an illegal tying arrangement for Microsoft to “condition[] the provision of a license to distribute Windows on the OEMs’ purchase of Internet Explorer.”¹⁰⁰ But the court of appeals reversed that holding because the per se rule of *Jefferson Parish* was ill-suited to software platform integration,¹⁰¹ and the government did not pursue the tying claim on remand. Further, simple bundling was never alleged to be an act of monopolization. Thus the primary focus of the trial and later judicial discussion was on other levels of integration. Still, the effects of simple bundling are worth considering, first to see why simple bundling did not survive as a theory of liability, and second, to understand more clearly the effects of other contractual and technological restrictions.

The simple sale of two products together at a single price can be an illegal tying arrangement because, according to the Supreme Court’s *Jefferson Parish* rationale, it “forces” buyers to take the tied product when they might prefer to buy that product from a rival. Forcing consumers is thus inseparable from foreclosing rivals in a separate market.¹⁰² To take a historical example, if Kodak had a monopoly of film and sold it with the price of developing the film included, consumers would be “forced,” practically speaking, to use Kodak’s developing services. Each

roll of film is usually developed only once, and the choice of a provider for a unit of those services practically excludes all others from supplying that unit. As the court of appeals recognized, by paying the single price, the buyer “becomes entitled to the [seller’s] tied product” and thus would “be unwilling to buy a competitor’s version of the tied product even if, making his own price/quality assessment, that is what he would prefer.”¹⁰³ Thus, the effective price of the tied product is zero once the consumer decides to buy the tying product, and in general, consumers have little incentive to pay anything for a rival’s product. If a rival’s unit production costs are positive and consumers will not pay a positive price, rivals will be excluded.¹⁰⁴

The simple bundling of IE and Windows, however, differed from the typical bundling arrangement. While one roll of film is not typically combined with more than one unit of developing services, consumers routinely install both IE and a rival browser on a Windows computer. Neither the terms of the license nor the design of Windows prevented OEMs or users from installing a second browser.¹⁰⁵ Of course, any single act of Web browsing entails the use of the operating system and one browser rather than another. To this extent, use of a browser physically precludes simultaneous use of an alternative browser. But two or more browsers can reside on the same operating system and remain open at the same time; the first processing of a roll of film necessarily excludes others.

In this respect, browsers demonstrate the economic phenomena of membership and usage multi-homing.¹⁰⁶ Installing two browsers on a computer, like carrying two credit cards, is membership multi-homing; actually using both browsers is usage multi-homing. A consumer may actually use only one of the available browsers. This distinction was important in the litigation because it was not clear whether the competitively significant number was the percentage of computers on which Navigator was installed or the percentage of Web browsing conducted with Navigator. Because Microsoft and Netscape charged nothing for their browsers, the costs to a Windows user of viewing content on the Internet through Navigator were primarily the costs of installing and invoking Navigator; whether a Web content producer would want to incur a positive cost to write specifically to Navigator would depend on the willingness of consumers to incur the costs of using Navigator.

A fair reading of the record indicates that the price of IE and its rivals was zero¹⁰⁷ or even negative¹⁰⁸ in all channels of distribution—that was the basis, after all, for the Netscape white paper’s original charge of predatory pricing. If Microsoft had required the consumer to pay a positive price for IE to purchase Windows, then the consumer would

have had a reduced incentive to pay a second price to acquire another browser. But since IE and its rivals were free,¹⁰⁹ the consumer who received a copy of IE with Windows still had reason to install another browser, if doing so offered any advantages. And because simple bundling assumes that a consumer can easily undo the tie by removing the tied browser once the new browser is installed, the consumer need not incur any cost associated with having two browsers reside on his computer.¹¹⁰

Moreover, acquiring a rival browser would be no more difficult or costly than it would have been in the absence of the tie. The only disadvantage that simple bundling imposed on rivals was the burden of overcoming consumers' inertia: if consumers were satisfied with IE, they would not seek out and install another browser. More precisely, if consumers were sufficiently satisfied with IE that the marginal value of having a different browser was less than the cost of acquiring it, then consumers would stick with IE. In the absence of the bundle, some of these consumers may have acquired Netscape rather than IE. But this harm to rivals was strictly a byproduct of the fact that the bundle reduced the consumers' cost in acquiring IE in the first place: instead of having to acquire and install the first browser, consumers have one provided automatically. Thus, the bundle disadvantaged rivals, but only to the extent of the advantage it conferred on consumers. As we have seen, the court of appeals recognized that actions that harm rivals but benefit consumers are not monopolistic, unless the harm to rivals is avoidable or grossly disproportionate.

Judge Jackson did hold that "licensees, including consumers, are forced to take, and pay for, the entire package of software and that any value to be ascribed to Internet Explorer is built into this single price."¹¹¹ But, given his findings that IE was free in every channel of distribution,¹¹² this holding cannot sensibly be read as a finding that the price of Windows was higher because of the inclusion of IE; it states only the self-evident point that that the products were sold together at a single price. Judge Jackson conceded as much in the same paragraph by asserting that the "forcing" inquiry was not intended "simply to punish firms on the basis of an increment in price attributable to the tied product."¹¹³ Instead, he suggested that the real reason for the rule was "to expose those product bundles that raise the cost or difficulty of doing business for would-be competitors to prohibitively high levels, thereby depriving consumers of the opportunity to evaluate a competing product on its relative merits."¹¹⁴ Judge Jackson here recognized that the harm to rivals is the product of consumer inertia rather than demand

exhaustion from an increment in the price of Windows; nevertheless, he insisted that this sort of harm was anticompetitive.

This reasoning, however, attempts to convert an obvious benefit to consumers—the provision of a free browser—into a harm because it places a rival at a competitive disadvantage. Giving consumers a free browser does not “depriv[e] consumers of the opportunity to evaluate a competing product on its relative merits”; it lowers their cost of evaluating Microsoft’s browser. Such an action raises Netscape’s costs of distributing its browser only to the extent it reduces the consumers’ costs of acquiring Microsoft’s browser.¹¹⁵ The court of appeals made clear, in discussing other practices, that a monopolist is not required to provide a level playing field to its rivals, so long as its actions benefit consumers.¹¹⁶

Judge Jackson’s suggestion that bundling a free browser is exclusionary may have been a vestige of the predatory pricing theory that motivated the guiding narrative in the Netscape white paper. Microsoft’s decision to charge a zero price for IE, of course, harmed Netscape because Netscape had been charging a positive price for its browser in at least some channels of distribution, and so was forced to cut its price to zero as well. The government’s complaint, for example, pointed out that Microsoft spent millions to develop the browser, yet chose, in Gates’s words, to “cut off [Netscape’s] air supply. Everything they’re selling, we’re going to give away free.”¹¹⁷ But despite the urging of the white paper, the government never attempted to meet the exacting requirements of a predatory pricing theory. Failing such a showing, the court of appeals held that harms to rivals that are the result of actions that improve a product or reduce its price to consumers are lawful, even if they reduce rivals’ usage share, and regardless whether there is any other justification for the practice. The low price justified itself.

Even if the predatory pricing (or profit-sacrifice) theory were valid, the choice to bundle IE with Windows at zero price was likely rational and profit maximizing independently of any exclusionary effects. One reason has to do with the efficiencies of distribution. Once Microsoft has incurred the fixed costs of developing APIs, distributing them with Windows costs essentially nothing. Bundling is therefore efficient and would be adopted even if Microsoft lacked monopoly power.¹¹⁸

A related consideration is that when products are complementary, their demands are interdependent. Consequently, greater sales of IE would increase the demand for Windows. Thus, Microsoft would internalize the external benefits of additional sales of Windows by bundling an application, like IE, that consumers want, and it can do so without incurring additional costs of distributing the application as a separate

product.¹¹⁹ Bundling a rival's browser with Windows might not be as effective in increasing demand. Competing with suppliers of complementary products may also stimulate innovation.¹²⁰

Moreover, as we point out in chapter 3, because browsers present opportunities for additional revenue streams from sources other than consumers, they represent a multisided market. Though the economic literature of multisided markets has matured only since the case was decided, some executives at Microsoft apparently understood its implications. In these markets, pricing a product at zero in distribution to one side of the market while charging a positive price in other sides can be profitable.¹²¹ Consumers also benefit because, as we have noted, the bundling saves them the costs of acquiring a separate browser, and the price of the browser is lower. The zero price makes particular sense when the marginal cost, as opposed to the fixed cost of development, is close to zero.¹²² Consumers were unequivocally better off than they were when Windows and browsers were available only from separate firms. All of these benefits are in addition to any benefits of technological innovation, which would also enhance welfare.

The foregoing analysis may explain the appellate court's otherwise puzzling discussion of "price bundling" in its instructions to the district court on remand of the tying claim. The court suggested that the simple combination of IE and Windows (as opposed to the prevention of unbundling) could be illegal tying only if Microsoft "price-bundled" by charging more for IE and Windows together "than its charge would have been for Windows alone."¹²³ The court may have imposed this limitation on tying liability because, as we have shown, if no increment in price is attributable to a tie, the tie does not have the indirect exclusionary effect of fully satisfying consumer demand. But even if there were an increment in price, no real exclusionary effect would result, so long as rival browsers were free.

Judge Jackson suggested consumers were injured by receiving a free browser with Windows if they wanted the browser provided separately from the operating system, either because they only wanted a browser other than IE¹²⁴ or because they did not use a browser and did not want one taking up space on the hard drive.¹²⁵ But any such harm would be dwarfed by the much more important benefit to most consumers of receiving a free browser along with the operating system. Moreover, even if some consumers were harmed in this way, these harms would not be the result of simple bundling, but the failure to allow easy unbundling. Finally, and most important, the harm would not have reduced competition. If a consumer did not want a browser at all, then giving him one

would not affect Netscape's usage share, because the consumer would not have used a browser in any event.

Other evidence suggests that including a browser with the operating system is procompetitive: all other commercially significant PC operating system manufacturers include a browser. As the court of appeals recognized in its tying discussion, the fact that firms without market power engage in a practice clearly implies the practice is procompetitive.¹²⁶ Judge Jackson recognized this point, but noted that the rivals did not prevent unbundling of their browsers,¹²⁷ a point that, once again, shifts the focus away from simple bundling. In any event, common sense suggests that few consumers wanted to unbundle the browser from the operating system.

In addition to the benefits of simple bundling, of course, Microsoft emphasized a number of benefits of its integration of the browser and the operating system. As we discuss below, some aspects of integration were challenged as hindering unbundling, and thus unnecessarily harming rivals. But the courts recognized that other aspects of integration were benign. First, it is undoubtedly efficient for the operating system shell to share code with the browser rather than to duplicate it. Second, Microsoft claimed that a common interface was simpler and allowed users to navigate among information sources on the client computer and on the Internet. Finally, componentization allowed both Microsoft itself and applications developers to rely on the presence of technologies necessary to allow their products to access the Internet without starting a separate browser. In the tying discussion, the court endorsed this point, noting that distributing the browser's APIs along with Windows allowed developers to "count on the presence of the browser's APIs, if any, on consumers' machines and thus to omit them from its own package."¹²⁸ The court concluded, "[O]ur qualms about redefining the boundaries of a defendant's product and the possibility of consumer gains from simplifying the work of applications developers makes us question any hard and fast approach to tying in OS software markets."¹²⁹

In sum, if Microsoft had limited its actions simply to inclusion of the browser with Windows at no charge and freely permitted OEMs and users to uninstall access to the browser, its action likely would have been lawful. In retrospect, at least, and with the benefit of distance from the heat of the competitive battle, we can see that this strategy would probably have been sufficient to achieve all of Microsoft's goals vis-à-vis Netscape. Few OEMs and even fewer consumers would have gone to the trouble of uninstalling any part of IE, and the numbers would likely have dwindled as the quality of IE improved.

Preventing Unbundling. Presumably recognizing the weakness of the simple bundling claim, the government identified Microsoft's illegal act as the failure to allow OEMs or users to delete "IE," variously defined. This reframing of the issue sought to neutralize many of the benefits to consumers from the inclusion of the browser that we outlined in the last section by showing that there were less restrictive ways of achieving them. While Microsoft posed the issue as a comparison between integrating IE with Windows and providing it separately, the government posed it as a comparison of irreversible and reversible integration of the browser. Judge Jackson, for example, conceded that Microsoft had a legitimate interest in fulfilling the exploding demand for a browser, and that many consumers benefited "as an abstract proposition" from inclusion of IE in Windows.¹³⁰ Nevertheless, he found they did not benefit by being denied the means to remove the program.¹³¹ Similarly, while he conceded that other operating system producers included browsers with their products, he noted that they did not prevent deletion of the browsers.¹³²

The court of appeals, after canvassing possible efficiencies of software bundling, suggested that they might better justify "price bundling" than "contractual or technological bars to subsequent *removal* of functionality."¹³³ Thus, the issue became whether Microsoft's linkage of IE and Windows in such a way as to prevent OEMs or consumers from removing various parts of IE was anticompetitive. Another way of posing the same issue is to suggest that Microsoft should have offered a version of Windows without IE.¹³⁴ This line of argument is familiar in antitrust. If a practice has both benign and malign characteristics, a court may ask whether the benign effects could be achieved by a less restrictive alternative. The less restrictive alternative approach became critical in shaping the approach to the deeper levels of integration as well.

As we outline in the chapter introduction, Microsoft inhibited unbundling in two ways. The first, which we are calling Level II integration, prevented OEMs and users from deleting various means of access to browsing functionality. The second, which we are calling Level III integration, consisted of commingling code, which made it more difficult for OEMs and users to delete the actual IE code that provided browsing functionality, so long as that code was not essential to operating system functions. Each of these actions had different practical effects and was analyzed differently.

Level II Integration: Preventing Deletion of Access. Judge Jackson found that "bind[ing]" IE to Windows by inhibiting OEMs from removing the means of access to IE was anticompetitive because it preserved the applications

entry barrier.¹³⁵ Although the binding of IE did not prevent OEMs from installing another browser—indeed at least ten OEMs apparently did so¹³⁶—it deterred them from doing so because adding a second browser would use scarce disk and desktop space and increase support and testing costs.¹³⁷ This source of anticompetitive effect stemmed primarily from preventing removal of the means of *access* to IE, rather than preventing removal of IE code. The purported confusion and support costs would occur if icons and menu items were visible on the desktop and IE was otherwise accessible. Moreover, the Felten prototype removal program was intended to show that Web browsing functionality could be removed from Windows without harming other performance.¹³⁸ Felten conceded that his program removed only access to functionality and left the underlying code intact.

The court of appeals analyzed the issue of denial of the means to block access in two contexts. First, Microsoft contractually prohibited OEMs from deleting desktop icons and menu items that could be used to launch IE. Second, Microsoft designed Windows to make it more difficult for OEMs or end users to block access to IE functionality, first, by excluding IE from the Add/Remove Programs utility, and second, by overriding the user's choice of default browsers in particular cases. The circuit court affirmed the findings that each of these actions was anticompetitive, and found only the latter act to be supported by a legitimate justification.

The court of appeals affirmed Judge Jackson's finding that Microsoft's failure to allow OEMs to delete "visible means of user access to IE"¹³⁹ was anticompetitive because it limited Netscape's usage share. It also rejected Microsoft's claim that it had the right under copyright law to control the integrity and appearance of the Windows desktop other than by preventing the wholesale replacement of the desktop.¹⁴⁰ Microsoft also could not invoke an interest in maintaining Windows as a "consistent platform" because "an OEM's altering the appearance of the desktop . . . does not affect the code already in the product"¹⁴¹—a clear indication that the court understood that the sort of "deletion" at issue here was simply of user access. More generally, the court rejected Microsoft's argument that ceding control of the Windows desktop to OEMs would reduce the value of Windows by creating user confusion. Judge Jackson had found that "[b]ecause competition among OEMs is intense, they pay particularly close attention to consumer demand" and are therefore "surrogates for consumers"¹⁴² that would delete IE only when doing so would benefit consumers, because OEMs would bear the support costs. Thus, the court concluded that Microsoft's purported

justifications for preventing deletion of the icons, among other alterations of the desktop, amounted simply to a desire to protect the Windows monopoly.

Judge Jackson's belief in the perfect congruence of OEM and consumer interests was so strong that he held unlawful Microsoft's efforts to prevent OEMs from substituting an entirely different user interface in place of the Windows desktop:

If an OEM develops a shell that users do not like as much as Windows, and if the OEM causes that shell to load as the default user interface the first time its PCs are turned on, consumer wrath will fall first upon the OEM, and demand for that OEM's PC systems will decline commensurately with the resulting user dissatisfaction. The market for Intel-compatible PCs is, by all accounts, a competitive one. Consequently, any OEM that tries to force an unwanted, low-quality shell on consumers will do so at its own peril. Had Microsoft's sole concern been consumer satisfaction, it would have relied more on the power of the market—and less on its own market power—to prevent OEMs from making modifications that lead to consumer disappointment.¹⁴³

Evidently, the court of appeals' faith in OEMs' incentives was not this strong. During oral argument, for example, one judge stated that OEMs do not necessarily have consumers' interests at heart, and specifically noted the consumers' interest in preserving the Windows API from fragmentation, something OEMs would not necessarily care much about. Moreover, though the court agreed that preventing substitution of a new interface was anticompetitive, it held that Microsoft was justified in preventing such a drastic modification of the Windows interface.¹⁴⁴ If the court of appeals believed that OEMs would modify the Windows interface only when consumers wanted it modified, then the justification would have failed. Nevertheless, the court of appeals rejected Microsoft's claim that allowing OEMs to make less drastic alterations would create consumer confusion, echoing Judge Jackson's reasoning that OEMs would never do such a thing; it thus reasoned that Microsoft's sole reason for these restrictions was to preserve its monopoly.

If OEMs wanted to install Netscape because they believed it was better than IE, or to satisfy consumer demand for Netscape's browser, they could have installed it in addition to IE. Despite the court's finding to the contrary, the idea that the sight of two browser icons would confuse consumers is hard to take seriously. Some OEMs installed both browsers

during the browser wars, and Hewlett-Packard agreed to begin in 2006 adding Netscape's browser, which incorporates both the Firefox and IE browsing engines, to every new H-P and Compaq computer; a Netscape spokesman predicted that other browser makers would strike similar deals with OEMs.¹⁴⁵ All major OEMs now include on new computer systems for consumers at least one rival media player, and none of the OEMs has deleted access to Windows Media Player, despite being permitted to do so under the terms of the final judgment.¹⁴⁶ OEMs also include icons for both the AOL online service and Microsoft Network. Evidently, OEMs do not believe that consumers are confused as easily as the court found.

More important, deleting access to functional software inhibits consumer choice much more than it enhances it. The best way to promote consumer sovereignty is to assure that consumers have options, not to make the choice for them. As a member of the court of appeals said during oral argument, "Your preference would normally be to have both available, and you make the choice."¹⁴⁷ To allow OEMs to substitute Netscape's browser for IE rather than to provide both makes OEMs not only surrogates for consumers, but their guardians.

Why, then, might OEMs want to provide only Netscape's browser? The simple answer is that browser suppliers derived a value from exclusivity. Because a browser's exclusive placement on the desktop would have meant greater revenue from Web sites and Internet advertisers, a browser supplier would have been willing to pay OEMs for it, either as a fee or as a discount. Microsoft did not contract with OEMs to be the exclusive browser; it insisted only that its browser not be deleted. But Netscape may well have wanted exclusivity. If market mechanisms determined which browser received exclusive placement, then exclusivity would be efficient when the marginal value to an OEM was greater than the marginal cost to consumers of restricted choice. But the court precluded Microsoft from bidding for exclusivity: Netscape had the right to pay OEMs for exclusivity, but if Microsoft attempted to pay more by reducing the royalties for Windows to ensure consumer access to its browser, even if Netscape's were also installed, it would have violated antitrust law. In these circumstances, an OEM's designation of Netscape as the exclusive browser should not be assumed to be efficient from the consumer's point of view. Even if more consumers wanted IE either alone or together with Navigator, OEMs might well have found it profit maximizing to sell exclusive placement to Netscape.

In addition to the contractual restrictions on removing the means of access, the court of appeals found that two of Microsoft's actions

in designing its software to prevent users and OEMs from removing access were anticompetitive, but the latter action was lawful because it had an efficiency justification. First, the court affirmed the finding that exclusion of IE from the Add/Remove Programs utility was anticompetitive because it reduced rivals' usage share "not by making Microsoft's own browser more attractive to consumers but, rather, by discouraging OEMs from distributing rival products."¹⁴⁸ Again, the harm to competition was located in harm to rivals that provided no obvious benefit to consumers.

The court also held that Microsoft did not even offer justifications for failing to include IE in the Add/Remove Programs utility. Microsoft, as we explain earlier in this chapter, did offer extensive evidence of benefits of integration, but the court did not think it relevant apparently for two reasons. First, consumers (and their purported proxies, the OEMs) should be allowed to opt out of the asserted benefits. Second, most of the benefits would remain after running the removal utility, which removed only means of access and left shared code untouched. The design of Windows 98 to exclude IE from the Add/Remove Programs utility was understood throughout the proceedings as preventing OEMs and users from easily deleting the means of ready access to browsing functionality rather than denial of a means of removal of a significant amount of underlying code.¹⁴⁹ Microsoft itself had initially included IE in the Add/Remove Programs utility in Windows 95. In fact, one of the agreed means of compliance with Judge Jackson's preliminary injunction in the consent decree case was to allow OEMs to run the Add/Remove Programs utility to delete IE. Moreover, the Felten removal program was designed to show that IE could be "removed." In both cases, what these programs removed was only the visible means of access to IE and a small executable file that loaded the browser.

Microsoft also prevented removal of some means of access by designing Windows and IE to override users' choice of a default browser when the user accessed the Internet through My Computer or Windows Explorer utility. Judge Jackson characterized the default override as "unpleasant" for the user because it confusingly invoked IE when the user had chosen another as its default browser. The government argued that this choice was anticompetitive because it "prevents some people from using other browsers,"¹⁵⁰ and the court agreed, holding that "the override reduces rivals' usage share and protects Microsoft's monopoly."¹⁵¹ In this case, however, the court accepted Microsoft's justification that Netscape's browser did not support the Active X controls necessary for the Windows Help function and could not allow access to the Internet

in the same window as the My Computer or Windows Explorer utility. Because the government had failed to rebut the justification, the design choice stood.¹⁵² This concession to Microsoft's design choice was critical because it necessarily implied that the eventual remedy would not require Microsoft to provide means for removal of any of the code necessary for using the browser: to use the browser in any context required all of the essential underlying code.

Level III Integration: Preventing Deletion of Code. Superficially, the most important issue in the antitrust analysis of the design of Windows was whether Microsoft had commingled browser and nonbrowser code in the same files and, if so, whether that action was anticompetitive. Judge Jackson found that these measures prevented OEMs or users from deleting "browsing-specific routines" that could have otherwise been removed without crippling Windows.¹⁵³ Commingling was thus anticompetitive for the same reason that denying OEMs and users the means of deleting access to IE was anticompetitive—it deterred OEMs from choosing "to pre-install Navigator alone."¹⁵⁴ In this instance, however, what was meant by deletion of IE was deletion of the code supporting the browsing routines, not simply access to IE. "Commingling" of browser code in the same files with operating system code made deleting IE code harder, and thus "deter[red] OEMs from pre-installing rival browsers, thereby reducing the rivals' usage share and, hence, developers' interest in rivals' APIs as an alternative to the API set exposed by Microsoft's operating system."¹⁵⁵ Judge Jackson had held this action to constitute monopolization, but not tying; for the latter offense, the browser was defined only in terms of access to browsing functionality rather than in terms of the underlying code.

As we explain earlier in this chapter, Microsoft spent a great deal of effort at trial attempting to show that the same code that provided browsing functionality also provided operating system functionality. For example, the same dynamic linked libraries, or DLLs, that supported the browser also supported parts of the Windows user interface. Microsoft contended that the very same code was responsible for both functions—in effect, that the DLLs contained no code that supported only shell functionality and no code that supported only browsing functionality. But the court of appeals found evidence in the record that the DLLs, particularly SHDOCVW.DLL, did contain "shell-only" and "IE-only" code, along with code "providing both 'IE' and 'shell' functions."¹⁵⁶ This design choice impeded the deletion of the IE-only code because

deleting the DLL would cripple the Windows shell. Consequently, the district court's conclusion that Microsoft commingled code was not clearly erroneous and thus had to be accepted. Having found that Microsoft did something it contended it did not do, the court unsurprisingly found that Microsoft had offered no justification for having done it.

Evans, Nichols, and Schmalensee have argued that the court of appeals failed to understand that "some code was used for both" IE and the "basic architecture of the operating system."¹⁵⁷ But this interpretation fails to account for the court's acknowledgment that some code in SHDOCVW.DLL provided both IE and shell functionality; its concern was that the DLL also included IE-only and shell-only code. Bear in mind that in the 1998 panel opinion, Judge Williams had specifically found that combining IE and Windows "allows applications to avail themselves of [browsing] functionality without starting up a separate browser application"; moreover, elements of IE like the HTML reader "provide system services not directly related to Web browsing . . . , let users customize their 'Start' menus, [and] make possible 'thumbnail' previews of files on the computer's hard drive."¹⁵⁸ As Evans, Nichols, and Schmalensee themselves note, in its tying analysis, the court of appeals pointed to shared functionality as a benefit of software integration.¹⁵⁹ The court apparently understood full well that there were shared functions that provided benefits. Whatever the government's contention, the court of appeals evidently limited "commingling" to combining code that provided either shell-only or shared functions with code that provided *only* IE functions. A remedy that would have required removal of shared code was never in the cards.

Nevertheless, the commingling holding could have been important if it had led to a remedial order requiring a redesign of the files constituting IE to allow deletion not only of the means of access to IE, but of a substantial share of the code that provided IE functionality itself. As we will see, the European Commission imposed just such an order in its *Microsoft* case. Although Microsoft accomplished the redesign to delete the media player, the process was undoubtedly costly, with little apparent gain to consumers. The U.S. court, however, had largely allayed these concerns by holding, as we showed in the last section, that Microsoft was justified in overriding users' choice of a browser in specific cases. That decision, as a practical matter, assured that no remedial order could require Microsoft to allow deletion of the code that provided basic browsing functionality necessary for those default overrides. The eventual decree did not require deletion of code or impose any other

remedy for commingling. As we discuss in chapter 6, the courts justified that choice by the benefit to consumers of preserving the Windows APIs—a consideration the court had rejected as a justification for other practices. It might also have mentioned that computers often have more than one user, who may have different preferences among middleware products; code deletion by one user would prevent users who preferred Microsoft middleware from using it. Ironically, as we discuss in chapter 6, in the enforcement of the final judgments, the plaintiffs have pressed Microsoft to modify its upcoming Windows Vista operating system to allow each user of a computer to set a unique configuration of defaults and access to middleware.

In the end, then, the courts concluded that Microsoft's efforts to prevent removal of access to the browser or the browser code itself were anticompetitive because they harmed Netscape by limiting its usage share without providing obvious benefits to consumers; only one of the actions had a design justification. These conclusions rest on the findings that preventing OEMs from granting exclusivity to Netscape actually benefited consumers, a point we question. It is at least equally plausible that *denying* OEMs flexibility to remove IE assured that consumers had a more meaningful choice between browsers. Denying consumers flexibility to remove IE is likewise not seriously harmful to them because it did not prevent them from installing both browsers. Thus, while prevention of deletion of IE is less obviously beneficial to consumers than simple sale of IE and Windows for a single price, the action caused little harm either.

Long-Run Effects of Integration on Competition. So far, we have considered whether integration was anticompetitive in the limited sense of its short-run effects on consumers and rivals. In doing so, we adopted the court of appeals' test for anticompetitive effect, which focused on whether a practice harmed Netscape or Sun without any obvious benefit to consumers. But this test leaves open the ultimate question of the long-run effect of Microsoft's conduct on consumer welfare. This question is especially important and difficult because neither firm was a rival in the relevant market in which Microsoft had monopoly power. In Netscape's case, the court measured the anticompetitive effect of the practice by its tendency to limit Navigator's usage share. If Microsoft's actions had affected a rival's market share in the market Microsoft allegedly monopolized, the approach would have had more to commend it.

When a dominant firm takes action that harms a present rival without benefiting consumers, then it makes sense to infer that the practice

reinforces the dominant firm's position and thus reduces competition. But the courts found that Netscape's browser, like all other middleware, was not in the same market as operating systems. Its usage share was relevant only because the guiding narrative predicted that, had Navigator and Java acquired a critical mass of adoptions, they would have become, together or separately, a rival platform for software developers and thus eroded the applications barrier to entry. This theory of anti-competitive effect is more speculative than virtually any theory courts have encountered in section 2 litigation, because it rests on a prediction of a future harm to consumers after a complex sequence of events.

The court of appeals refused to require any proof of a longer-term effect on competition. It asked too much, the court suggested, at the liability stage of the case to require the government to prove Netscape, with or without Java, would probably have evolved into a rival platform that reduced the applications barrier to entry. The court characterized Netscape as a "nascent" rival and therefore indistinguishable from a present rival in terms of the evidence of harm necessary to establish a section 2 violation. It was sufficient that the defendant's conduct "reasonably appear[ed] capable of making a significant contribution" to protecting its monopoly. One could "infer causation when exclusionary conduct is *aimed at* producers of nascent competitive technologies," despite the inherent uncertainty in doing so, because "neither plaintiffs nor the court can confidently reconstruct a product's hypothetical technological development in a world absent the defendant's exclusionary conduct."¹⁶⁰ As a policy matter, Microsoft should not be given "free reign to squash nascent, albeit unproven, competitors at will—particularly in industries marked by rapid technological advance and frequent paradigm shifts."¹⁶¹ Because Microsoft admitted that Navigator and Java were nascent threats, it should be "made to suffer the uncertain consequences of its own undesirable conduct,"¹⁶² at least for purposes an injunction against the specific acts found to be undesirable; the court declared that more evidence of an effect on competition would be necessary to justify structural relief.¹⁶³

Alan Meese has called this reasoning circular, noting that it begs the question of whether Microsoft's restrictive contracts "*should* be deemed 'undesirable' simply because they 'foreclosed' Netscape from portions of particular market channels."¹⁶⁴ Thus, even if Netscape were a present rival, the foreclosure proven should not have been sufficient for liability. But it was especially problematic for the court to treat Netscape as legally indistinguishable from a present rival. The court required essentially no evidence that the technological characteristics of the products and the

nature of the markets made the evolution of the specific types of middleware at issue into a rival platform a plausible possibility. In a detailed brief in the remedy phase of the case, an expert for Microsoft pointed to numerous reasons neither Netscape's browser nor Java could have supported full-featured applications.¹⁶⁵ Judge Colleen Kollar-Kotelly largely disregarded this testimony on the ground that it contradicted the court of appeals' inference of causation,¹⁶⁶ but the more accurate conclusion is that the court of appeals erred in its inference, or that its inference was not based on the evidence.

The court reasoned that because Microsoft conceded Netscape and Java were nascent rivals and treated them as such in the marketplace, no further evidence of anticompetitive effect was required. But "nascent" rivalry is an ambiguous term that might cover a range of increasingly remote relationships. A small rival in the monopolized market, like a producer of a new or fringe operating system, is certainly a nascent rival. Despite network effects, the scalability of software enables the rival to gain market share quickly. Less obviously, one might characterize a potential entrant into the relevant market as a nascent rival. If Microsoft had engaged in "undesirable conduct" against firms of this sort, an inference of anticompetitive effect in the operating system market might be appropriate without further proof. But treating more speculatively nascent rivals in all respects as if they were present rivals is harder to justify. Whether such a firm should be treated as a rival depends on the strength of the theory and evidence supporting the predicted sequence of events by which the firm might become a rival. In the case of Netscape, the predicted sequence of events was provided by the guiding narrative and its theoretical underpinnings. In accepting the guiding narrative, then turning its attention to the specific conduct and its immediate effects on consumers and rivals, the court gave inadequate attention to the theory underlying the guiding narrative and its factual requirements.

In this section, we explain that the court of appeals applied an unduly lenient standard of proof that Microsoft's conduct had a real effect on competition.¹⁶⁷ The difficulty was not, as some have suggested, that the government's theory implied that anticompetitive conduct was irrelevant because one firm, Microsoft or some other firm, would inevitably have a monopoly. We show in the next section that antitrust is properly concerned with competition to become the dominant firm in the market. The real problem with the government's case was that no such competition for the market was possible. The government should have been required to articulate a theory of anticompetitive effect connected to the

integration of Windows and middleware and to show that the evidence was consistent with that theory. We argue in the remainder of this chapter, first, that the government's case failed the theoretical and evidentiary test, and second, that this failure should have been fatal as a matter of law.

Dennis Carlton formulated the theory of anticompetitive effect underlying the government case, first in arguments on behalf of Sun Microsystems urging the government to sue Microsoft, and later in the economics literature. That theory requires the existence of network effects in a browser market. Although the court of appeals appeared not to recognize it, the failure of the government to prove that such effects existed contradicted the inference that Netscape could have actually become a platform rival. In the remainder of the chapter, we argue that the absence of a substantial risk of harm to competition should have precluded liability for integration. It was not sufficient that Microsoft thought Netscape was a platform threat. Nor was it sufficient that Microsoft intended to thwart Netscape or that it engaged in "undesirable" conduct. The risks of error require that the plaintiff articulate a theory of anticompetitive effect and support it with evidence beyond the perceptions and desires of the defendant.

The Alternate Monopoly Paradox. The guiding narrative's story of standards competition assumed that, in whatever capacity Microsoft faced a middleware threat, competition took the form of a battle between standards for the hearts and minds of developers, a battle that turned on which standard could offer the more attractive base of users. The dependence of the government's case on network effects in the domain of competition implied that a likely outcome of standards competition under network effects would be natural monopoly. This implication, one might argue, raises a theoretical contradiction that precluded any finding of anticompetitive effect, regardless of Microsoft's conduct. If the browser itself had become the applications platform of choice, Navigator would have displaced Windows. Preclusion of tying in period one would not have produced competition in the primary product in period two, but a different monopolist. If the government's but-for competitive scenario had played out, Netscape and Java would have become what one member of the court of appeals called the "new monster."

The court of appeals did not discuss this paradox in its 2001 opinion, but it figured prominently in oral argument. In one exchange, a member of the court asked the government's appellate counsel, Jeffrey Minear,

“Doesn’t it follow from your case about consumer confusion that either Netscape or IE is going to end up as the sole occupant of the desktop?”

MR. MINEAR: Again, that may happen, but I don’t think we can predict the market.

THE COURT: Well, tell us how you think it might not. . . .

[W]e’re all wondering about this curiosity in this case. It really looks like one monopoly replacing another. We all ask you the same question in different ways. We can’t imagine how you are imagining otherwise. Indeed, your brief seems to accept that possibility.

Is that what we are really talking about, one monopolist replacing another? Are we fighting for monopoly—fighting for the newest, latest monopoly status?

MR. MINEAR: Your Honor, my answer again is we don’t know. And I’d like to give you two responses to this.

THE COURT: You have to have a theory as to . . . Microsoft’s motivation [and] as to what this nascent or embryonic competition was. . . . [T]he whole fight for getting programmers to program in the language, turns, it seems to me, on the notion that you want universality.

MR. MINEAR: Your Honor, our theory of the case is this: that the middleware was viewed by Microsoft as a threat. Perhaps they realized it even before Netscape did. But in any event, they realized it was a threat to their monopoly on operating systems. That operating system monopoly is protected by the applications barrier to entry. And they recognized the way middleware would threaten that monopoly is by eroding that barrier to entry, that it would become popular enough that people would write to that.

THE COURT: Right. If you write to Java Netscape, your Java Netscape, there would be an applications barrier in the new middleware market. There would have to be. You can’t compete reasonably if you want a cross-platform uniformity. That’s what we are asking. You can’t keep avoiding the question. If that’s the answer, say yes. If you are hopelessly confused about it, say that too. But I mean, this really leaps out, Counsel.

Are we talking about monopoly to monopoly? Because you surely don’t mean to envision Microsoft competing fairly with Netscape Java and having competing middleware applications that consumers are going to try and sort out.

MR. MINEAR: *Well, your Honor, if we assume that this is competition for monopoly, the fact still remains that that's a form of competition that is subject to Section 2.*

THE COURT: I didn't say it was a bad thing, but you seem to be running from it as if it is. It's curious because we don't normally see it. And it may be the nature of this kind of a market, but it seems to be that that's what you're talking about.

MR. MINEAR: I apologize, your Honor. I was simply trying to clarify that I simply can't predict what the market will look like. I think we have to leave that to the market. . . .

THE COURT: There was a time, I suppose, when before, when Java first arrived as a concept, in which it was tenable to hope that Java would be able to run on any underlying [operating system]. Right?

MR. MINEAR: Yes.

THE COURT: So that you could have coexistent, stable equilibrium with Java and Windows coexisting.

MR. MINEAR: Yes, and I think. . . .

THE COURT: But the events seem to have overshadowed that. Java hasn't realized the potential that was initially perceived, and it starts to look more like a potential alternative to Windows rather than a co-occupant of the desktop. . . . I understand part of your theory is that Microsoft assured that it wouldn't come to fruition.

MR. MINEAR: Yes. . . .

THE COURT: If Java and Windows were installed on the same PC desktop, according to the record we have here, one would expect consumer confusion, calls to the OEMs, no profit in it for the OEMs to carry both of them, and only one would ultimately be installed.

MR. MINEAR: No, I don't think that's the case again, your Honor, because Java . . . we have to remember the role that the browsers played in invoking Java, that the browsers would be installed on the operating system. And the browser would most likely go to a web-based application. It would find a Java applet there most likely, the full-fledged Java application. . . .

THE COURT: But take Judge Ginsburg's question.

MR. MINEAR: Yes.

THE COURT: It's the same question. You wouldn't use IE and Netscape Java. You'd have to pick one or the other.

MR. MINEAR: Yes, I think that's probably true.

THE COURT: And so would an OEM.

MR. MINEAR: An OEM would as well.

THE COURT: So if that's probably true, then your answer to your own prior question which you didn't want to answer, but you said now . . . I think the implication of what you just said now is there would probably emerge a single, ubiquitous winner in this competition.

MR. MINEAR: I would by no means wish to exclude that possibility.

THE COURT: That's a possibility, but it's not fatal to your argument by any means, right.

MR. MINEAR: Yes.

THE COURT: There needs to be what Sedgwick calls competition for the field as opposed to competition within the field.¹⁶⁸

The court was evidently concerned that antitrust enforcement might be inappropriate if it could not restore competition. But the government's response was persuasive: the displacement of one monopoly by another is a form of competition protected by the Sherman Act. If the government's scenario of leapfrog competition were plausible, this concern would not excuse monopolistic conduct aimed at the incipient new monster. Indeed, the existence of network effects suggests that competition will often take the form of successive monopolies, one replacing another, and the very prospect of a temporary monopoly may be an important spur to innovation.¹⁶⁹

Displacement of an incumbent firm may, of course, be either good or bad and adds a measure of uncertainty to the outcome of the competitive process. But monopolistic conduct should not skew the process of competition for the market. Evaluating firms' conduct in these circumstances may be especially difficult because many of the same strategies that theory shows are rational in the most intense period of competition between incompatible can closely resemble antitrust violations, as we show in chapter 3. Nevertheless, courts cannot abandon the enterprise in principle, if it is possible to identify practices as anticompetitive.

Proof of Anticompetitive Effect. The real difficulty with the government's story of anticompetitive effect was not the alternative monopoly paradox, but the story's factual and theoretical support. In this section, we show, first, that the evidence in the case was inconsistent with the best

available theory of how tying the operating system and the browser could have reduced competition. Because the browser could not have evolved into a platform that reduced network effects in the operating system market, Microsoft's actions to integrate the browser and the operating system did not cause a reduction in competition. We then argue that the failure of the government to prove causation should have precluded a finding of liability, even though Microsoft undoubtedly *perceived* the browser to be a platform threat.

The Theory and Evidence of Causation. Neither the district court nor the appellate court relied on a specific economic model in upholding the government's case. But the government made its initial decision to sue based in part on presentations by Dennis Carlton. More recently, Carlton and Michael Waldman have proposed a model to support the government's contention that Microsoft's tying behavior reduced social welfare.¹⁷⁰ Because this model is the most sophisticated offered in support of the government case, it deserves special examination. To place the model in context, recall the traditional Chicago School argument that tying cannot be used to leverage monopoly power from one market into another.¹⁷¹ To be sure, a monopolist can force consumers to buy a second product as a condition of obtaining the first. If Kodak were the only manufacturer of film in the world, it could demand that consumers who want its film also purchase its developing services. But Kodak could gain the same profit selling the products separately simply by setting the price for film at the profit-maximizing monopoly price and the price for developing services at marginal cost.

It is true that a better or lower-cost producer of developing services could reduce Kodak's share of that market, but Kodak could still garner its monopoly profit through the sale of its film. In fact, in that case, Kodak would earn higher profits by *not* tying because the value of the film to consumers and therefore monopoly profit to Kodak would be greater if consumers were able to purchase better or lower-priced developing services from others. Though Kodak would have the capacity to foreclose rivals from the developing-services market, and thereby injure consumers, it would have no anticompetitive incentive to do so. If tying occurs, in this model, it must be to achieve something other than short-run monopoly profits.

Scholars later showed, however, that the early Chicago School logic assumed that the tied products were used in fixed proportions and that the primary product was essential for all uses of the complementary product. Michael Whinston demonstrated that if the tied product can

be used without the tying product and is subject to economies of scale in production, the monopolist might tie to deny the competitor in the tied product market enough business to reach the minimum efficient scale of production.¹⁷² The monopolist might then earn monopoly profits from sales to consumers who want only the tied product, and those profits may exceed any profits lost by the price concessions necessary to persuade consumers who want both products to accept a less desirable tied product. Under the model, the monopolist is leveraging monopoly power from the tying market into the tied market to gain greater monopoly profits.

The Whinston model, however, does not fit *Microsoft* because it assumes that the goal of the tie is to extract monopoly profits from the market for the tied product sold separately. The tie of Windows and IE did not allow Microsoft to gain monopoly profits in sales of IE to consumers who purchased operating systems other than Windows.¹⁷³ Nothing in the record suggests that Microsoft intended to extract monopoly profits from that quarter.¹⁷⁴ Microsoft did not charge for its sales of non-Windows versions of IE, and even if it could have gained revenue from other sides of the market, the share of fringe operating systems was too small to justify the technological and transactional costs of creating the tie. For Microsoft to have incurred the costs of tying to gain monopoly profits on the sale of browsers for fringe operating systems, that market would have to have been much larger than it was.¹⁷⁵

Carlton and Waldman's model better fits the government's case in *Microsoft*. Unlike the static Chicago School model of tying,¹⁷⁶ Carlton and Waldman's model is dynamic, in that the monopolist ties in period one to preserve monopoly profits in period two. Moreover, unlike Whinston's model, the Carlton and Waldman model shows that the monopolist gains by extracting additional monopoly profits in the *tying* product market. In their general model, a monopolist of a primary product uses a tying arrangement in period one to prevent sales by an alternative producer of a complementary product that is superior to the monopolist's complementary product.¹⁷⁷ Because it is excluded from the complementary market in period one, the alternative producer cannot profitably enter the tying product market in period two. The monopolist's profits from maintaining its primary product monopoly in period two are greater than the profits it forgoes in period one by denying consumers the ability to use the alternative producer's superior complementary product.¹⁷⁸

Carlton and Waldman offer two versions of their model. In one, the alternative producer faces fixed costs of entry into the complementary

good market. If the tie deters the alternative producer from entering the complementary good market in period one, its expected profits from operating in the primary and complementary markets in period two would be reduced, and it may not enter. This version of the model sweeps broadly, because fixed entry costs will characterize virtually every real complementary good market. Whenever a firm can claim that it would have entered the complementary and primary markets successively, it could claim that tying potentially reduced social welfare. Critically, however, this version of the model requires that the tie physically or contractually *preclude* the user from combining the tying product with alternative producers' tied products. Carlton and Waldman concede that this condition dooms the application of this version of the model to *Microsoft*. Microsoft has neither used this sort of conventional physical tie, because Windows was never incompatible with alternative browsers, nor contractually prevented consumers from using alternative browsers.¹⁷⁹

Consequently, Carlton and Waldman argue that the second version of their model explains *Microsoft*.¹⁸⁰ In this version, there are no entry costs into the complementary good market, but that market is subject to network effects, or network externalities in the authors' terms. The alternative producer's profitability in selling the complementary good in period two and its overall profitability depend on its sales of the complementary good in period one. The greater the alternative producer's sales of complementary goods in period one, the greater its profitability would be in period two. By reducing the alternative producer's period-one profits from the sale of the complementary good, the monopolist can make the alternative producer's entry into the primary market in period two less likely. Most important, this version of the model works even if the tie does not physically or contractually exclude the alternative producer. It is enough for the incumbent producer to impose a "virtual tie" in which the price of the tied good is set at zero. In a virtual tie, the purchaser has to pay the prices charged for both components to acquire the tying product, but can then buy an alternative tied product to use in the system. If tying is used for strategic purposes in the presence of network effects, a virtual tie can be a nearly perfect substitute for a physical or contractual tie.¹⁸¹ Because Microsoft sold Windows and IE at a single price, Carlton and Waldman argue, it engaged in just such a virtual tie.¹⁸²

Even this version of the model, however, does not fit *Microsoft* well. First, it assumes the alternative product's producer, or that producer's "ally," wants to enter the primary product market in period two by developing an operating system.¹⁸³ In *Microsoft*, of course, there was

no suggestion that Netscape or any ally would develop a new operating system. Indeed, in the remedies phase, Judge Kollar-Kotelly rejected relief aimed at benefiting rival operating systems rather than middleware. The idea instead was that the browser, which was a complementary product in period one, would itself become a competing primary product in period two in some undefined market for software platforms that included operating systems. As we suggest in chapter 3, this competition in this notional market would presumably take the form of additions of new APIs to enhance the product as a platform. Microsoft would then have an incentive to prevent platform competition in period two if that competition took the form of middleware. The model does not address this form of rivalry, and it does not show how Netscape would profit from second-period entry into the operating system market by an “ally.”

Nevertheless, we will assume that the Carlton and Waldman model could be extended to platform competition. Putting aside the possibility of earning revenue from other sides of the market, in a virtual tie, the alternative producer will be excluded if its marginal cost of producing an equivalent complementary product is higher than the price set by the monopolist for the tied product, here assumed to be zero. Even if the alternative producer’s complementary product is better than the monopolist’s, it will be excluded unless the marginal value of the system with the alternative complementary product is greater than the difference between the price of the monopolist’s complementary product and the marginal cost of producing the alternative complementary product. Because the marginal cost of producing another unit of a browser is close to zero, one might conclude that even a zero price for IE would not exclude Navigator.

But the relevant marginal cost is that of placing a browser on a computer, a cost that includes more than production costs. Some of Microsoft’s activities could be understood as increasing this cost. For example, if Netscape were forced to deliver browsers to consumers through the mail because low-cost distributors, such as ISPs and OEMs, were contractually or practically precluded from delivering browsers, its marginal cost of distribution would increase. Carlton and Waldman recognize that the alternative producer of a browser incurs costs in addition to manufacturing costs, and they take these costs into account by assuming a fixed cost that represents investments in software support, advertising, and the like.¹⁸⁴ But some of the additional costs faced by the producer could be marginal. In theory, then, the marginal cost of

supplying an alternative browser may have been significantly greater than zero, and the higher the cost, the more likely that a zero price for the monopolist's complementary good would be an effective virtual tie.

The Carlton and Waldman model, however, also depends critically on the presence of network effects in the tied product market. Under the model, the larger the network effects relative to the higher consumer benefits associated with the alternative browser, the more likely the monopolist is to tie.¹⁸⁵ Carlton and Waldman assert that there were strong network effects in the browser market during the second half of the 1990s. Internal Microsoft documents suggest that some Microsoft officials also believed that there were browser-specific network effects,¹⁸⁶ and that the market could tip either to Netscape technologies or IE technologies. There is good reason to believe, however, that substantial browser-specific network effects never existed.¹⁸⁷ It is, therefore, not surprising that the court of appeals, in reversing Judge Jackson's finding of attempted monopolization, held that the government failed to prove either that there was a browser market or that any such market was protected by network effects.

The supposed source of network effects in the browser market was that Internet content providers would write only to proprietary technologies in the most popular browser. But, as we show in chapter 3, the most important technologies affecting browsers became open standards, available for use by any browser producer. If any browser producer managed to develop and keep proprietary a technology useful for a small subset of content developers, the impact on the browser market would be minor because the vast majority of Web sites relied on open standards. Unfortunately, the court of appeals did not recognize the full implications of the government's failure to define a browser market characterized by network effects. It did recognize, of course, that the holding doomed the government's claim that Microsoft attempted to monopolize the browser market itself: one cannot monopolize a market that does not exist. But the court failed to recognize that the holding also doomed both the tying claim and the integration allegations of the monopolization claim.

First, consider the tying claim. The court of appeals reversed Judge Jackson's holding that Microsoft illegally tied the browser to the operating system on the ground that he had applied the wrong legal standard. It remanded the issue, requiring the new district judge to apply a rule of reason to determine whether the tie caused an anticompetitive effect in

the tied product market—the “putative” market for browsers. But the court precluded the government on remand from proving that a browser market exists:

To the extent that certain aspects of tying injury may depend on a careful definition of the tied good market and a showing of barriers to entry other than the tying arrangement itself, plaintiffs would have to establish these points. . . . But plaintiffs were required—and had every incentive—to provide both a definition of the browser market and barriers to entry to that market as part of their § 2 attempted monopolization claim; yet they failed to do so. . . . Accordingly, on remand of the § 1 tying claim, plaintiffs will be precluded from arguing any theory of harm that depends on a precise definition of browsers or barriers to entry (for example, network effects from Internet protocols and extensions embedded in a browser) other than what may be implicit in Microsoft’s tying arrangement.¹⁸⁸

This instruction confronted the government with an almost comical catch-22. The court emphasized that any evaluation of competitive effects of software integration must be conducted under the rule of reason rather than the per se rule. Consequently, both law¹⁸⁹ and economics¹⁹⁰ required the government to define the market for the tied product, not just for “certain aspects” of tying injury. Just as “[i]t is impossible to monopolize a market that does not exist,”¹⁹¹ it is impossible to reduce competition in a market that does not exist. So the government on remand was required to prove harm to competition in the market for browsers, but was precluded from proving that there was a market for browsers. No wonder the government chose not to pursue the tying claim on remand.¹⁹²

Less obviously, but no less certainly, the court’s ruling that the plaintiffs had not proven a market for browsers characterized by network effects also contradicted its rulings that Microsoft had monopolized the operating system market by acts of integration. The government’s case on these counts rested on the claim that Microsoft’s actions in the browser market protected its monopoly of operating systems. Carlton and Waldman’s theory, although not a perfect fit for the government’s case by any means, provided the most sophisticated theory in support of this allegation. But as we have shown, their theory requires that there be network effects in the market for browsers; otherwise, the monopolist has no incentive to tie the primary and secondary products to deny

profits to the producer of the alternative browser. Consequently, the principal intellectual support for the government's case fell. A fuller examination of the likelihood of anticompetitive effects from Microsoft's actions would have exposed this failure.

Recall that the government's entire theory of anticompetitive effects, and the courts' measure of those effects, rested on Netscape's loss of "usage share." Diminished share prevented Netscape from becoming a platform that might have attracted enough developers to erode the applications barrier to entry in the market for operating systems. The court of appeals confirmed this dependence again and again in its discussion of particular exclusionary practices, using terms like "market share"¹⁹³ and "usage share"¹⁹⁴ in connection with browsers in ways that necessarily presupposed the existence of a browser market. For example, it stated "Microsoft reduced rival browsers' usage share not by improving its own product but, rather, by preventing OEMs from taking actions that could increase rivals' share of usage"¹⁹⁵ and "a monopolist's use of exclusive contracts, in certain circumstances, may give rise to a § 2 violation even though the contracts foreclose less than the roughly 40% or 50% share usually required in order to establish a § 1 violation."¹⁹⁶ But if there is no browser market, then "usage share" of browsers is of no significance—the relevant universe might well include so many other products that Netscape's true share was trivial. The weakening of a single middleware producer would do nothing to reinforce Microsoft's operating system monopoly because there would be countless other platform threats that would remain.

Equally important, if there were no browser-specific network effects in the browser market, Netscape's browser could never become a standard platform. In standards competition, network effects are essential because they dictate the strategy to win by achieving sufficient share to tip the market. Once the tipping point is reached, the winning standard begins to garner the benefits of positive feedback, as more and more developers write to the standard, and more and more users elect to use it. This was the very dynamic that Judge Jackson emphasized in holding that Microsoft may have prevented Netscape from achieving the "critical mass" of users. And it was the very dynamic that posed the alternative monopoly paradox that troubled the court of appeals during oral argument. But without network effects, that dynamic cannot occur, and thus the underlying operating system could not be commoditized. Microsoft's strategy of acquiring greater share of the browsers would be a vain effort—new entrants would quickly take the place of any firm at whose expense Microsoft had increased its browser usage.

The court of appeals also made Netscape's status as a nascent rival more tenuous by limiting Microsoft's liability for its actions against Java. The government alleged that Netscape's browser was a threat to evolve into a platform mainly because it served as a vehicle for distribution of JVMs, which allowed software developers to write cross-platform programs in the Java programming language.¹⁹⁷ But this linkage between the two products soon unraveled. Equally important, the court of appeals held that many of Microsoft's actions aimed at Java were lawful, particularly its introduction of a Windows-specific version of Java.¹⁹⁸ (We discuss more fully the courts' rulings on Java in the next chapter.) Thus, the technological path that the government alleged would have led to the development of a rival platform never occurred, for many reasons independent of any illegal conduct of Microsoft. The suggestion that Netscape's browser would have evolved into a rival platform became all the more implausible.

The Legal Requirement of Proving Causation. We have been arguing that the court of appeals' own holdings undermined the factual and theoretical basis for the guiding narrative. But does the factual failure of the guiding narrative matter from a policy standpoint? The court of appeals evidently believed that it did not, because it disposed of the issue without discussion, pointing instead to other factors. One justification the court offered for disregarding the theoretical basis for the guiding narrative was that Microsoft had conceded that Netscape was a nascent rival. But this concession was part of its larger litigation position that all forms of middleware competed with operating systems in a platform market; Microsoft did not concede that harm to any middleware producer posed a real risk of harm to competition. One might argue that undesirable conduct aimed at a *perceived* rival should be condemned, even if the victim would demonstrably never have become a rival. During the oral argument, one member of the court raised this issue by asking the government's attorney whether it was necessary that Netscape and Java were an objectively reasonable threat, or if instead it was sufficient that Microsoft merely perceived them to be so. He posed the analogy of a hypothetical paranoid monopolist that shoots at everything that moves, even a grocery store that it fears might become a rival.¹⁹⁹ The court evidently concluded that the undesirable nature of the paranoid monopolist's conduct justified assigning Microsoft the burden of any uncertainty about the threat to competition.

The court scrupulously and properly limited Microsoft's liability to practices that harmed Netscape without obviously benefiting consumers,

so it may have thought there was no harm in imposing liability. But section 2 should not penalize conduct aimed at a mirage, even if the same conduct would be undesirable if aimed at a real rival. Antitrust enforcement is costly, both in terms of the enforcement resources consumed and the inevitable risk of error in assigning liability and imposing remedies. The law implicitly recognizes the significance of enforcement costs in its definitions of unlawfully exclusionary conduct, which rest on an assumption that the victims of the conduct are rivals. Where an action “tends to” disadvantage a rival without benefiting consumers, there is a reason to think that it will also tend to reinforce existing monopoly power of the offender. But the same inference is inappropriate if the victim is not a rival.

The law of attempted monopolization provides a helpful, if imperfect, analogy. At one time, commentators argued that conduct done with a specific intent to monopolize should constitute an attempt to monopolize. Donald Turner argued in an early article, for example, that the attempt offense was satisfied by specific intent and conduct in furtherance of that intent:²⁰⁰

The kind of conduct that typically establishes the requisite “specific intent” in attempt and conspiracy cases is clearly conduct which has no social or economic justification. No benefits can be expected, at least in the long run, from predatory price-cutting, coercive refusal to sell, and similar abuses of economic power. If defendants are attempting to drive someone out of the market by foul means rather than fair, there is ample warrant for not resorting to any refined analysis as to whether the intent is to drive everyone out or whether, having taken over all of the production of a particular commodity, the defendants would still face effective competition from substitutes.²⁰¹

The Supreme Court rejected this reasoning in *Spectrum Sports, Inc. v. McQuillan*,²⁰² refusing to find attempted monopolization without a showing that the defendant’s economic power in a relevant market raised a *dangerous probability* of success.²⁰³ Harm to competition could not be inferred solely from evidence that the would-be monopolist injured a rival or even intended to monopolize a market, no matter how unfair or malicious the conduct. The sort of “unfair or predatory”²⁰⁴ actions plaintiffs alleged—terminating the plaintiffs’ distributorship, cutting off their supply of a patented input, and launching a version of their product—would not have anticompetitive consequences unless the

necessary market prerequisites are present. The Court emphasized that inferences of competitive harm are especially inappropriate in section 2 cases. Concerted activity covered by section 1 “‘inherently is fraught with anticompetitive risk,’” but single-firm activity is “unlike” that.²⁰⁵ As the Court observed in *Brooke Group*, a case decided six months later, “[e]ven an act of pure malice by one business competitor against another does not, without more, state a claim under the federal antitrust laws.”²⁰⁶

Microsoft was charged with maintaining its operating system monopoly, not with attempted monopolization of that market. Nevertheless, the Court’s concerns in *Spectrum Sports* are equally relevant here because Microsoft directed its actions against a firm that was not in the operating system market, but in an undefined market for platforms, in which market shares were never determined. Actions taken by a monopolist against a firm outside its market—a firm that is not even a potential entrant into its market—do not pose the same threat to competition as actions taken against firms that are already rivals. They more closely resemble attempts to monopolize a potential market than monopolization of the present operating system market.

Whether a firm outside the defendant’s market should be treated as a nascent rival depends on the plausibility of the evidence and theory offered in support of the firm’s expected development—its ontogeny as rival. The plausibility of that theory and evidence determines the likelihood that actions taken against the firm will have anticompetitive effect. The law of predatory pricing provides another imperfect but helpful analogy. In predatory pricing cases, the plaintiff must prove more than that the defendant injured rivals by charging inefficiently low prices. The Supreme Court has required plaintiffs also to prove that the defendant has either recouped its investment in the predatory campaign by charging monopoly prices or has a reasonable prospect of doing so. To require proof of recoupment is to require the likelihood of real anticompetitive effect, regardless of predatory intent. The Supreme Court in *Brooke Group*,²⁰⁷ for example, rejected the plaintiff’s claim that the defendant would be able to recoup its losses from below-cost pricing by a restoration of tacit collusion in the market.

One might argue that this requirement is unique to predatory pricing. The Court has characterized predatory pricing as beneficial to consumers in the short run, and unlikely to be harmful to consumers even in the long run. Moreover, because of the close resemblance predatory pricing bears to aggressive competition, a requirement of recoupment is necessary to avoid costly false positives.²⁰⁸ But the *Microsoft* case has contained elements of a predatory pricing theory from its inception. The Netscape

white paper that first articulated the guiding narrative grounded its argument for a government case on predatory pricing. The government's principal expert, Franklin Fisher, defined a predatory act as one "that is not expected to be profitable in the long run without accounting for the supra-normal profits that can be earned because of the adverse effects on competition."²⁰⁹ Judge Jackson's reliance on the profit-sacrifice standard for identifying anticompetitive conduct bore all of the earmarks of a predatory pricing rationale. Although the court of appeals wisely stripped some of these elements from the case by rejecting liability for low prices and improved product quality, the theory of the case remained similar to predatory pricing in a fundamental respect: it predicted competitive harm only in some future time period, while consumers benefited in the short run. Special problems of false positives exist in all such cases, though they may be addressed in different ways.²¹⁰

In *Microsoft*, the primary source of potential false positives lay in the issue of integration. Microsoft asserted efficiency justifications for most of its challenged acts, many of which the courts rejected. But as we have pointed out, the decision to reject those claimed justifications involved extraordinarily difficult economic and technical issues, and necessarily entailed a risk of error. That risk is not adequately addressed by examining only the present effects of practices on rivals and consumers. Nor was consideration of efficiency justifications sufficient. As Carlton and Waldman recognize, their theory involves "a horrendously complex trade-off" and that "great weight should be given to any plausible efficiency from the tie."²¹¹ The court of appeals, in its 2001 opinion, gave no special weight to Microsoft's efficiency justifications in its evaluation of the monopolization claim. Even if it had, risks of error would have remained. To the extent the scenario of anticompetitive effect in *Microsoft* was also implausible, a heightened proof requirement was likewise appropriate to minimize error costs.

Perhaps recognizing the dangers of overinclusion that the concept of nascent rivals created, the court of appeals limited its use to the issues of liability and injunctive relief aimed at the specific conduct. It endorsed the view that "more extensive equitable relief, particularly remedies such as divestiture designed to eliminate the monopoly altogether, raise more serious questions and require a clearer indication of a significant causal connection between the conduct and creation or maintenance of the market power."²¹² This critical qualification prevented the ultimate remedy from imposing the most unwarranted costs on Microsoft and the economy. Nevertheless, as we show in chapter 6, costly remedies did follow from the findings of liability.

5

Practices II: The Market Division Proposal, Exclusive Contracts, and Java

Following the guiding narrative,¹ Judge Thomas Penfield Jackson saw Microsoft's actions as elements of a multi-part strategy to stifle Netscape and Java. As we show in chapter 2, the starting point of the story was the meeting on June 21, 1995, in which Microsoft allegedly attempted to induce Netscape to conspire with it to carve up the burgeoning market for Web browsers, with Microsoft taking the segment for Windows 95 browsers and Netscape the rest.² It was in this meeting that Microsoft, according to David Boies, revealed its soul. When Netscape rebuffed the overture, Microsoft embarked on its predatory campaign of exclusionary practices. Most important, it integrated Internet Explorer (IE) into Windows in the various ways we discuss in the last chapter. But it also prevented original equipment manufacturers (OEMs) from changing the start-up sequence of Windows in ways that could encourage consumers to use Navigator. It entered into deals with Internet access providers (IAPs) and Internet content providers (ICPs) that restricted their ability to distribute or feature Navigator. And it took steps aimed at thwarting the cross-platform potential of Java. Even though the market-division proposal, the exclusive contracts, and the campaign against Java dwindled in significance or dropped entirely from the case as it moved through the courts into the remedial phase, they raise intriguing issues worth examining.

The Market Division Proposal

Some of the facts surrounding the relationship between Microsoft and Netscape while the firms were discussing cooperative efforts were not in dispute, but many were. We piece together the story here, identifying where important the issues of fact that were contested. We then turn to a legal analysis of the proposal as an attempt to monopolize the market for browsers.

What the Parties Say Happened. In 1994, Microsoft was developing Internet-related technologies to be included in Windows 95, which was to be released in the summer of 1995.³ Microsoft asked a number of browser producers, including Netscape, if they were interested in licensing code to become a part of the new operating system, but only for a flat fee—as a matter of policy, Microsoft refused to pay per-copy royalties on code contained in Windows.⁴ Netscape was not interested in the transaction on Microsoft’s terms.⁵ By December 1994, Microsoft had agreed to license the Mosaic browser code from Spyglass.⁶ Though Netscape was aware of that decision, its representatives, including its chairman, cofounder, and then-CEO, Jim Clark, continued to press Microsoft to license its technology. The Microsoft representative taking the lead in these discussions, Dan Rosen, then senior director of strategic alliances,⁷ understood that Netscape was interested in other issues as well, including server technology, the security of Internet transactions, and standards governing Internet content and communications.⁸ At trial, Rosen testified that he believed that Microsoft and Netscape should work together in producing complementary software products to facilitate use of the Internet.⁹

The companies’ representatives met at Netscape’s offices on December 21, 1994, and discussed the possibility of Microsoft licensing Netscape’s browser code. No agreement was reached. Netscape representatives tried again a few days later to interest Microsoft in licensing Netscape’s browser code, but Microsoft reiterated it would consider only a flat-fee license. A few days after that meeting, Jim Clark sent an e-mail to Rosen and another Microsoft official asking Microsoft to “reconsider using our Netscape client [Navigator]”:

Microsoft is the de facto standard “client” software company and we have never planned to compete with you, so we have never considered a “client” as being our business. Our business

is adding value on the back-end in the form of vertical applications, currently using Oracle data bases. We intend to do this on [Windows] NT and [Microsoft] Back Office very soon.

We want to make this company a success, but not at Microsoft's expense. We'd like to work with you. Working together could be in your self interest as well as ours. Depending on the interest level, you might take an equity position in Netscape, with the ability to expand the position later.¹⁰

Microsoft again declined to license Netscape's browser, however, because it persisted in its refusal to pay a per-copy royalty and, according to Rosen, because its "engineers regarded the Spyglass code as of higher quality and better for Microsoft's needs."¹¹ In phone calls to Microsoft's Brad Silverberg, Clark supposedly repeated the offer to sell Microsoft a stake in Netscape and suggested Silverberg take a seat on Netscape's board of directors.¹² Silverberg deflected the idea, saying that he did not understand Netscape's business well enough to know whether an investment made sense.¹³ Clark thought Silverberg "ridiculed" him by saying Microsoft wasn't "the least bit interested" in taking a stake in Netscape.¹⁴

Meanwhile, Netscape released Navigator 1 on December 15, 1994,¹⁵ and created versions for Windows 3.1, Apple Macintosh, and several UNIX operating systems.¹⁶ Clark thought there was no money to be made in the browser market.¹⁷ Jim Barksdale, however, who had become a Netscape director in October 1994 and president and CEO in early January 1995, disagreed.¹⁸ He testified that Clark sent the December e-mail without the approval of Netscape's directors.¹⁹ Clark had told Barksdale he did it in "a moment of weakness,"²⁰ when Netscape "had run out of money,"²¹ but that he regretted it.²² Rosen scoffed at this characterization of Clark's e-mail, contending that Netscape had access to capital and had expressed the same strategic goals as outlined in the e-mail in numerous contacts with Microsoft during December and early January.²³

During the next several months, Microsoft readied Windows 95 for commercial release, while Netscape worked to develop a full browser for Windows 95 that could be released simultaneously with it.²⁴ Rosen testified, however, that during the first two months of 1995 he was not sure what kind of product Netscape was building. He claimed that Microsoft continued efforts begun in December 1994 to "evangelize" the Internet technologies in Windows 95 to convince Netscape to build a product

that would make use of those technologies to run on top of Windows.²⁵ Based on communications with Clark and others at Netscape, Rosen believed that Netscape's business focus was on providing Internet software for servers and software for personal computers that would run on top of and enhance the basic browsing functionality in Windows 95, such as "enhanced bookmarks, multimedia capabilities, [and] enhanced Internet email"²⁶—what one Microsoft developer called "cool looking and sounding apps."²⁷ Netscape would thus conserve its resources by avoiding the need to duplicate features and functions provided in Windows 95, and Microsoft would benefit because the additional value provided by Netscape's products would stimulate Internet use and hence increase the popularity of Windows.²⁸ According to Rosen, Microsoft had long intended to include the code for browsing functionality in Windows 95, and Netscape knew of this intention at least by December 21, 1994, when Microsoft's developers told Netscape that Microsoft would not pay per-copy royalties to license Netscape's code to become a part of Windows 95.²⁹ Indeed, Clark had heard Bill Gates state in October 1994 that a Web browser would become part of Windows.³⁰

The firms apparently cooperated in resolving some of their significant interoperability issues³¹ and in developing Internet security technology.³² Microsoft provided at least some of the technical information about Windows 95 that Netscape needed to build its browser. At a conference in March 1995, Barksdale and Rosen discussed their mutual desire for some kind of strategic relationship.³³ As an example of a possible model, Rosen told Barksdale about a joint venture between Microsoft and UUNET in which Microsoft resold UUNET's Internet access service, provided capital to it, and took a seat on its board.³⁴ Rosen said that afterward he began to formulate a more concrete vision for a closer relationship with Netscape.³⁵

Barksdale said he was not aware that Microsoft planned to include browser functionality in its new operating system.³⁶ He thought Windows 95 would contain only the "plumbing" for a browser application, or the protocol stack that enables the application sitting on top of the operating system to run,³⁷ though he did eventually come to believe that Microsoft intended to ship a browser with Windows 95 as a separate product.³⁸ Barksdale also claimed that throughout this period Netscape's intention was to provide a basic browser for Windows 95. There was evidence Microsoft knew it as well. At trial, David Boies embarrassed Rosen on cross-examination by producing a document showing Rosen was given a beta version of Netscape's browser before April 27, 1995.³⁹ Paul Maritz,

a Microsoft Group vice president, testified that in May and June 1995, Microsoft viewed Netscape as “a strong competitor of our platform” because of the browser it was developing,⁴⁰ and Rosen acknowledged that during this period others at Microsoft shared Maritz’s view.⁴¹ Indeed, Gates had said as much in his memorandum of May 26, 1995, when he called Netscape a “new competitor ‘born’ on the Internet.”⁴² And Rosen himself had written a memorandum on May 15, 1995, stating that Microsoft’s “goal should be to wrest leadership of the client evolution” from Netscape and that “[a]t all costs, we must insure that we do not allow another company to control the client evolution, even if it means a less aggressive position in other segments (e.g., servers).”⁴³ Nevertheless, Rosen insisted that, unlike others at Microsoft, he continued to believe during this period that Netscape’s intentions for the client side of the market were to focus on enhanced browser products, not basic browsing functionality, so that Netscape did not intend to compete directly with Windows 95 as an applications platform.⁴⁴

In May 1995, Rosen and Barksdale agreed that representatives of their companies should meet. Barksdale testified that Netscape was “having difficulty getting the necessary technical specifications and licenses from Microsoft” to build a Windows 95 version of Navigator.⁴⁵ He agreed to meet with Rosen to discuss these issues and to pursue the idea of “a working relationship.”⁴⁶ Rosen testified he saw the meeting as an opportunity to discuss the possibility of strategic linkages between the two companies,⁴⁷ but not to address any purported difficulties Netscape was having in acquiring technical information from Microsoft.⁴⁸

The meeting occurred on June 2, 1995. According to Rosen, during this period Gates knew that Rosen and others were talking to Netscape, but was not actively involved in planning the details of a specific proposal. Rosen understood he had the authority to begin “discussions about a possible strategic relationship with Netscape.”⁴⁹ Rosen said that he once passed Gates “in the hallway next to his office . . . and said, ‘Bill, if I can reach a win-win deal with Netscape, would that be okay with you,’ and he said ‘yes.’”⁵⁰ Later, and in anticipation of the June 2 meeting, Gates sent Rosen and Maritz an e-mail in which he stated, “I think there is a very powerful deal of some kind we can do with Netscape.”⁵¹ He wrote, “[T]he concept is that for 24 months Netscape agrees to do certain things in the client and we agree to help make their server business successful.”⁵² Maritz understood that Gates wanted Netscape to adopt a number of technologies that Microsoft wished to become standard in the client, but he was “not saying that Netscape should not do other things that would continue

to make their client into a platform.”⁵³ Maritz responded to Gates in an e-mail stating that it is “imperative to insure that we keep control of the standard Internet client APIs and protocols.”⁵⁴

At the meeting, Microsoft was represented by Rosen, Maritz, and another senior vice president, and Netscape by Barksdale.⁵⁵ The meeting by all accounts was cordial, and the discussion centered on “possible areas of collaboration between the two companies.”⁵⁶ Barksdale recalled that Microsoft was primarily interested in getting him to consider using certain technology in Navigator.⁵⁷ He testified that he told the Microsoft personnel that Netscape was “already quite happy with the revenue” it was generating from browser licensing and that he wanted to stress the importance of Navigator to Netscape’s business strategy.⁵⁸ He said that he “clearly communicated to Microsoft that Netscape was investing great resources in developing its browser, particularly for the Windows 95 platform.”⁵⁹

Rosen’s notes of the meeting indicated that Netscape “seem[ed] open to working with Microsoft,” but that Netscape was going to focus on enterprise, or server-side, applications “as the first big wave.”⁶⁰ Contrary to Barksdale’s account, Rosen did not understand Barksdale to be suggesting that Netscape placed a high priority on licensing its basic browser.⁶¹ Rosen heard Netscape to say it wanted Microsoft to bundle Netscape’s server products with the Windows NT server operating system, to help with an NT version of Netscape’s Internet server, and to inform Netscape about its plans for future versions of its operating systems.⁶² Rosen understood this last reference to imply that Netscape wanted to concentrate on providing the kind of enhanced browser software—“the cool looking and sounding apps”—that he believed was Netscape’s principal area of interest on the client side.⁶³ Rosen also testified that he and Barksdale discussed the idea, first raised in Jim Clark’s December e-mail, of “some sort of financial link” such as an investment in Netscape and a seat on its board, following the model of Microsoft’s UUNET alliance.⁶⁴

Barksdale and Rosen agreed after the June 2 meeting that representatives of the companies would meet again. That meeting took place on June 21, 1995. Because Rosen believed that it was to be “a technology ‘brainstorming’ session,”⁶⁵ not the kind of high-level planning session that had occurred on June 2, he asked Microsoft engineers and software developers to attend with him.⁶⁶ Barksdale testified that Netscape’s “top priority” for the meeting was to obtain the technical information from Microsoft it was having trouble acquiring and that it needed to release a browser compatible with Windows 95.⁶⁷ Netscape’s most urgent need

was for the remote network access (RNA) phonebook API, or the “dialer,” and Netscape had a less acute need for a scripting engine.⁶⁸ Rosen claimed that he did not become aware that Netscape wanted additional technical information until the night before the June 21 meeting, when he received an e-mail from Netscape’s Marc Andreessen adding items to a meeting agenda that Rosen had distributed.⁶⁹

According to Barksdale, at the meeting, Microsoft continued its attempts to persuade Netscape to adopt technologies that Microsoft wanted to become standard,⁷⁰ but also proposed “dividing the market.”⁷¹ A “line” would be drawn: Microsoft would build a browser for Windows 95, while Netscape would build products that would run on top of Windows 95 and the Microsoft browser and could continue to develop browsers for operating systems other than Windows 95.⁷² Rosen also suggested to Barksdale that Microsoft make an investment in Netscape and take a seat on its board.⁷³ And if Netscape agreed to the “special relationship” Microsoft proposed, Microsoft would make it a “preferred” independent software vendor (ISV) and would quickly supply the technical information it needed.⁷⁴ When Barksdale asked whether obtaining the technical information was tied to Netscape’s acceptance of the proposed relationship, Microsoft replied that obtaining the information “certainly isn’t independent” of accepting the proposal.⁷⁵ Barksdale contended that the June 21 proposal had nothing to do with Clark’s e-mail of December 1994.⁷⁶

Andreessen’s notes of the meeting generally supported Barksdale’s account. According to those notes, Microsoft said that if Netscape did not agree to the proposal, Netscape would not receive “the APIs and other technical information for three months.”⁷⁷ Barksdale observed that, sure enough, Netscape rejected the proposal and received the information about three months after the meeting.⁷⁸ According to Barksdale, “If we refused to agree, Microsoft made it very clear that they would attempt to crush us by attempting to own the client.”⁷⁹ His perception was that Microsoft wanted Netscape to stop producing browsers for Windows 95 “over the next year or two,” not immediately. “Surely, they didn’t ask us to stop that moment from building our product, since we already announced it and had it in beta.”⁸⁰

Rosen agreed that Microsoft urged Netscape to use technologies in Windows 95, but otherwise his account of the meeting was dramatically different.⁸¹ According to Rosen, Barksdale raised the topic of a “line”⁸² by asking “where the ‘line’ was between applications and the Windows 95 platform,” and another Netscape representative “asked repeatedly how Microsoft would draw the ‘line’ between what it considered

platform and the value-added that ISVs would bring.”⁸³ Microsoft responded that defining the line between an operating system and an application was an “iterative process, done in collaboration with” ISVs, so no stationary line could be defined.⁸⁴ Rosen portrayed Microsoft as a “a proud evangelist of its technology,” encouraging Netscape to build enhanced browser applications that took full advantage of the basic Internet technologies contained in Windows, which he thought was Netscape’s inclination anyway.⁸⁵ Rosen noted, for example, that Andreessen “commented that he would welcome it if he did not have to spend so much time ‘dicking [*sic*] around with the low level stuff’ because Microsoft could provide that ‘stuff’ in Windows.”⁸⁶ Rosen believed that, like any ISV, Netscape wanted to know what functions Microsoft would build below the “line” so that Netscape could build applications above it.⁸⁷ In fact, claimed Rosen, Netscape wanted Microsoft to add *more* features below the line.⁸⁸ It was “a done deal” that Microsoft would include browser functionality in Windows 95. Microsoft thus was not offering to divide the market;⁸⁹ it was simply telling Netscape what was going into its operating system, leaving Netscape to choose whether to compete with the Windows platform or to make complementary products.⁹⁰

Rosen said Microsoft also encouraged Netscape to develop server software products. Indeed, Gates’s e-mail of May 31 indicated that Gates believed that an arrangement with Netscape would involve Microsoft agreeing “to help make their server business successful.”⁹¹ Microsoft brought up the issue of browsers for platforms other than Windows 95, but the intent was to raise the possibility that Microsoft would license Netscape’s code for these browsers as part of a larger strategic relationship. Rosen testified that Microsoft suggested “merely a proposed variant to the software code licensing arrangement that Netscape had pushed in December 1994.”⁹² Just as Microsoft had licensed code from Spyglass for its Windows 95 browsing technology and had turned down Netscape’s entreaties the previous December, Microsoft might agree to license Netscape’s code for the other browsers.

According to Rosen, Netscape did ask for certain technical information—the dialer and scripting engine⁹³—but Microsoft’s providing it “was never conditioned on agreement on other issues.”⁹⁴ Because Microsoft had been unaware that Netscape needed any information until the night before the meeting, it needed time to develop it. For its own browser in Windows 95, Microsoft had solved the dialer problem, which Netscape viewed as the more serious one, by a “hack,” a “quick and dirty” solution to an engineering problem that was not generally supportable, and that it was inappropriate to give a hack to an ISV.⁹⁵

Further, Netscape wanted an API that would work on Windows NT as well as Windows 95, and the hack was specific to Windows 95.⁹⁶ According to Rosen, after the meeting “Microsoft engineers devoted extraordinary efforts” to supply Netscape with the RNA API and did indeed provide it, as quickly as possible.⁹⁷ Likewise, the scripting tool kit for ISVs was developed and shipped as soon as it was ready, which was simultaneous with the release of Windows 95.⁹⁸

Rosen said his suggestion of a Microsoft investment in Netscape and a board seat was a natural outgrowth of previous discussions. He denied saying that Microsoft would provide technical information only if Netscape sold an equity interest to Microsoft, and he claimed he told Barksdale that a board seat was not a condition of the companies working together.⁹⁹ Rosen asserted that some small companies that entered into alliances with Microsoft wanted Microsoft to take a seat on their boards because they then had better access to information about Microsoft’s plans. Barksdale, he said, indicated that the board seat was a bad idea, and later, after Gates reviewed notes of the meeting, Gates commented, “I agree with Barksdale that it would be random for [Microsoft] to be on their board. I think investing is not at all critical but agree we should try for it.”¹⁰⁰

Netscape did not accept what it understood to be Microsoft’s proposal. Microsoft proceeded with its plans to produce an operating system that included basic browsing functionality, and Netscape released a version of Navigator for Windows 95. According to the government, once Netscape rejected Microsoft’s offer, Microsoft began its campaign of predation.

What Really Happened? The parties evidently discussed a “line” that defined the functionality Microsoft intended to include in Windows 95 and (at least implicitly) the areas in which Microsoft did not intend to supply products, at least immediately. The parties discussed some of the technology in Windows 95 that Microsoft wanted Netscape to use. Microsoft also offered to assist Netscape in developing server applications and brought up the possibility of making an equity investment in Netscape and taking a seat on its board. The parties discussed Netscape’s provision of browsers for non-Windows 95 operating systems and Netscape’s request for technical information necessary for the completion of its browser for Windows 95.

Netscape claimed that the “line” was meant to identify the areas in which it and Microsoft would not compete. Thus, if Netscape had accepted Microsoft’s proposal, it would eventually have stopped producing a basic

browser for Windows 95. In return, Microsoft would stay out of the market for browsers that run on non-Windows 95 operating systems; it would provide some undefined assistance to Netscape in developing server and enhanced browser applications; and it would make an equity investment in the company, while perhaps taking a seat on Netscape's board. But Microsoft also threatened to harm Netscape if it rejected the deal: Microsoft would not provide in a timely fashion the technical information Netscape needed for its Windows 95 browser.

By contrast, Microsoft claimed that it responded to Netscape's inquiries about a "line" by describing the technologies in Windows 95, so Netscape could avoid duplicating them in developing its own products. Microsoft wanted Netscape to focus on enhanced applications on the client side rather than basic browsing functionality, a change that would have had at least the potential of reducing Netscape's threat as a competing platform but also one that might have increased the popularity of, and hence the sales revenue from, Windows. In exchange, Microsoft would assist Netscape in developing enhanced client-side applications and server-side products. In addition, Microsoft offered to invest in Netscape, and perhaps to take a seat on Netscape's board if Netscape so desired. The technical information that Netscape wanted was never made a condition of the proposed arrangement.

The most favorable legal characterization of the evidence for the government is that Microsoft knew that Netscape was building a browser to compete with IE in Windows 95, and it believed that the browser was a serious threat to Microsoft's monopoly power in operating systems. With Gates's blessing, but without his approval of specific details, Rosen offered Netscape a deal. A year or two hence, Netscape would stop selling basic browsers for Windows 95, or at least it would change the technology in Navigator so that the browser was a less immediate platform competitor. In exchange, Microsoft would allow Netscape to continue selling browsers for operating systems other than Windows 95 and would itself not sell those products, would help Netscape develop server applications and enhanced client-side applications, and would invest in the company. If Netscape rejected the offer, Microsoft would delay providing technical information needed for Navigator to compete effectively with IE in Windows 95.

The most favorable characterization of the evidence for Microsoft is that it offered to collaborate with Netscape in developing server-side and enhanced client-side applications and to make an equity investment if Netscape moved away from marketing a basic browser for Windows 95. It certainly proposed some kind of transaction. Rosen testified he had

Gates's approval to pursue "a win-win *deal* with Netscape," implying an exchange of value. Maritz testified that if Netscape had done what Microsoft wanted, it "may or may not have" made Netscape a less significant platform competitor.¹⁰¹ But Microsoft surely wanted a quid pro quo for the help it was offering Netscape, and it probably wanted something more than the increased demand for its operating system that might result if Netscape stuck to producing "cool looking and sounding apps." Microsoft suggested that the "special relationship" it had in mind was not fully formed, and only the broad outlines of an arrangement were proposed by someone with neither the apparent nor actual authority to close any deal. Further, Microsoft neither threatened to withhold nor in fact delayed the provision of technical information that Netscape needed, and indeed, the provision of technical information was wholly unrelated to the proposed alliance.

It may be that these accounts conflict because one side was misrepresenting the events. For instance, Rosen insinuated that the actions of Netscape officials during and after the meeting were inconsistent with a belief that Microsoft was proposing any illicit conspiracy.¹⁰² Oddly, though, Microsoft suggested during trial that the June 21 meeting was a setup, that Netscape plotted with the Department of Justice to entrap Microsoft into agreeing to an illegal arrangement in which Netscape had no intention of participating.¹⁰³ That theory seems to conflict with Rosen's assertion that he discussed no illegal arrangement. The most likely explanation for the conflict, however, is that the discussion in the meeting was so ambiguous that the participants heard different things. Maritz testified, "I think different people came out of that [June 21] meeting with different impressions as to what Netscape really wanted to do."¹⁰⁴ This indefiniteness is relevant to our antitrust analysis of the events of the meeting.

Was What Happened Attempted Monopolization? Judge Jackson held Microsoft's proposal illegal as an attempt to monopolize the market for browsers.¹⁰⁵ The court of appeals never examined the conduct as an attempt to monopolize or even as context for other conduct, because it held the government failed to establish the existence of a browser market protected by network effects. One cannot attempt to monopolize a nonexistent market. Nevertheless, the centrality of the sequence of events to the guiding narrative justifies a reconsideration of the conduct itself, particularly in light of the court of appeals' willingness to condemn other conduct by Microsoft as monopolization of the operating system market, even though Netscape never intended to enter that market,

and the government never proved the existence of any market in which Microsoft and Netscape did compete.

The government alleged that Microsoft proposed to enter into a contract in restraint of trade that would have violated section 1 of the Sherman Act,¹⁰⁶ and this action constituted an attempt to monopolize in violation of section 2. Section 1 proscribes only actual combinations in restraint of trade,¹⁰⁷ and Netscape rejected Microsoft's offer. Consequently, the government could not claim an actual conspiracy either to restrain trade in violation of section 1 or to monopolize in violation of section 2.

But the government's theory was that Microsoft wanted to monopolize the browser market not for the usual reason—to earn monopoly profits in the sale of the monopolized product—but to maintain its monopoly of operating systems. Thus, the government might more plausibly have alleged that Microsoft attempted to monopolize the operating system market by proposing to collude with Netscape in the browser market. Paradoxically, “[f]irms found guilty of attempting to monopolize are typically . . . monopolists”¹⁰⁸ that attempt to preserve that monopoly unlawfully. Still, the essence of the claim does not change whether the focus is on a putative browser market or the operating system market. For the reasons we explain in the last chapter, claims of attempts to monopolize are subject to heightened standards of proof, because of the dangers of penalizing even “acts of pure malice” that have no prospect of harming competition.

In the case of a proposal to enter into an anticompetitive agreement, there is a special danger that an overbroad rule would deter value-enhancing exchange, especially in a market in which collaboration is essential to compatibility and innovation. As Annabelle Gawer and Michael Cusumano have shown, the success of many high-technology markets depends on both the integrity of a platform and the innovativeness of products that are built on the platform.¹⁰⁹ The twin demands of platform integrity and innovation often mean that a single firm will be a platform leader that must constantly interact with producers of complementary products. Gawer and Cusumano conclude that, “to be effective” a platform leader must “try to maintain control over critical design decisions at other firms that affect how well the core product and complements continue to work together through new product generations.”¹¹⁰ In such an environment, proposals and responses will be routine, and conflict between the parties is inevitable. Antitrust constraints that inhibit interaction among parties that must cooperate on design decisions and development plans are apt to impede innovation. At a minimum, the

government should have had to prove that Microsoft proposed a *per se* illegal, concealable agreement with its competitor, or threatened unambiguously unlawful exclusionary conduct, with the specific intent to achieve or maintain monopoly power. Moreover, the government should have been held to a high standard of proof. The government did not prove either set of facts with the requisite degree of confidence.

The government's allegations about Microsoft's proposal can be divided between the carrot and the stick. As a carrot, Microsoft allegedly offered not to compete against Netscape in some market segment, to provide support for some of Netscape's noncompeting products, and to invest capital in the company on the condition that Netscape not compete against Microsoft in another market segment. It also offered aid to Netscape in developing server applications and enhanced client-side applications. As a stick, Microsoft allegedly threatened, among other things, to withhold technical information that Netscape needed to compete unless Netscape backed away from competing against it.

The carrot was not a naked market division proposal. Microsoft told Netscape that it was going to make a browser for Windows 95 regardless of what Netscape did. To that extent, Microsoft was implicitly inviting Netscape to make its own decisions about how it should best deploy its resources. But Microsoft went beyond a simple announcement of its plans and suggested the possibility of a complicated, if ill-defined, relationship. The only market segment Microsoft offered to cede to Netscape was the relatively minor market for non-Windows 95 browsers, and the only monopoly profits that Netscape could possibly earn would result from Microsoft staying out of that market. But Microsoft was also proposing to assist Netscape in developing its server applications business, even if Barksdale was not certain exactly what that would have entailed.¹¹¹ And it proposed to invest in Netscape, apparently to help finance Netscape's development of server-side and enhanced client-side applications.

Thus, Microsoft offered not to compete against Netscape in selling a product with a small market and to enter into a joint venture with it in making various complementary products on condition that it not compete against Microsoft in selling a product with a huge market. Had that arrangement become operative, it might or might not have amounted to a violation of section 1. The joint venture itself would have been subject to rule of reason analysis, as would any ancillary restrictions on competitive activities in the production of basic browsers.¹¹² The result of the legal analysis would have turned on the exact content of the arrangement, and we cannot know what that content would have been

because the proposal had not been fleshed out. Presumably, if Netscape had indicated an interest in the deal, that fact would have been conveyed to Gates and other senior Microsoft officials, and the ultimate arrangement would have been forged by negotiations between the parties.

Even if the plan was skeletal, however, the venture suggested by Microsoft involved productive collaboration of some kind between the parties, perhaps something akin to Microsoft's alliance with UUNET. The products at issue were dynamic, driven by constant technological research and development, and dependent on compatibility with other products. The close affiliation that Microsoft was proposing, even under the government's interpretation, would have allowed Netscape to make use of Microsoft's expertise in developing browsers for non-Windows 95 operating systems, and it would have allowed Microsoft to deploy its R&D resources elsewhere, while benefiting from any of Netscape's transferable technological advances. It would certainly have involved collaboration in the development of server software and enhanced browser applications for Windows 95. Moreover, Microsoft was not about to enter into the joint venture if Netscape was going to compete against it in the production of Windows 95 browsers, because the collaboration could well have assisted Netscape in that very competition.

Microsoft could not possibly have expected to entice Netscape by the prospect of monopoly profits in the sale of non-Windows 95 browsers, a vanishing market. Microsoft must have believed that it could tempt Netscape with profits on other software that Microsoft would help build. That is not naked competitive forbearance, but collaboration that might have increased economic welfare. The fact that Microsoft's proposal followed a number of discussions between Netscape and Microsoft about a possible alliance suggests that at least some elements of Microsoft's plan were socially productive. Jim Clark's December 1994 e-mail outlined the basic features of the plan that Microsoft proposed, whether or not other Netscape officials endorsed his idea and whether or not Clark later regretted advancing it. Clark did not have a naked market division proposal in mind; both he and later Barksdale seemed to believe that a productive alliance with Microsoft was possible. Unless the Netscape officials in prior discussions with Microsoft had in mind an anticompetitive combination, it is difficult to conclude that Microsoft's proposal, which seemed to flow from those discussions, did not involve some productive collaboration.

Furthermore, a typical agreement to divide markets presumably involves an immediate cessation of competition, because changing market conditions between the formation of the agreement and its execution

would complicate allocating the spoils of collusion. In the case of Microsoft's proposal, senior Microsoft executives had not approved any specific arrangement, so no immediate change in competitive conduct was possible. Gates had endorsed a broad "concept" of an arrangement with Netscape and had given Rosen approval to pursue some kind of strategic alliance, but Rosen lacked authority to enter a specific agreement with Netscape on June 21.

Moreover, Barksdale understood that Microsoft was not asking Netscape to exit the market for Windows 95 browsers immediately. Indeed, the government claimed that Microsoft offered to give Netscape the technical information it needed to finish its Windows 95 browser, a claim that would make no sense unless Netscape was going to be allowed under the agreement to market the browser for a time. Barksdale understood that Netscape would stop marketing the browser "over the next year or two."¹¹³ The fact that no elimination of competition was imminent is important. It implies that conditions might have changed before the contemplated action took place—the parties might have changed their minds, or other events might have intervened to scuttle the plan—and so the probability of consumer injury is far from certain. In addition, the parties to a naked market division would likely strive to conceal the arrangement, making the probability of detection low. But the arrangement Microsoft proposed would not have been secret. Indeed, Microsoft's investment in Netscape was to have been publicized so that Netscape could enjoy the "Bill effect."¹¹⁴

In all, punishing the proposal as attempted monopolization would have entailed significant social costs. Even if the arrangement Microsoft proposed would have on balance violated the antitrust laws, one can easily imagine similar arrangements in other circumstances that would benefit consumers. Joint ventures often entail the elimination of competition, but are subject to the rule of reason because they also typically increase efficiency.¹¹⁵ Merger analysis requires a similar trade-off. It would hinder productive arrangements if firms believed that proposals of mergers or joint ventures might later be construed as attempts to monopolize.¹¹⁶ Firms will predictably hesitate to propose alliances that would ultimately be structured in socially beneficial ways out of fear of potential antitrust liability. Penalizing Microsoft's proposal would have threatened to chill productive future partnerships without appreciably lowering the risk of anticompetitive ones.¹¹⁷

Contrast Microsoft's proposal with the defendant's proposal in *American Airlines*.¹¹⁸ American and Braniff together had monopoly power in air transportation between the Dallas–Fort Worth airport and

a number of other cities. After a period of fierce competition between the two carriers, the president of American telephoned the president of Braniff and said, "Raise your goddamn fares twenty percent. I'll raise mine the next morning."¹¹⁹ Braniff did not raise its fares, but the Braniff president tape-recorded the conversation and gave the recording to the government. The court held that the statement by the American president was enough to state a claim for attempted monopolization. The airlines had market power; there was no dispute about the terms of the proposal, which would have been a naked, clandestine restraint, with no productive purpose; and the proposal needed only the assent of the recipient for the agreement to be struck, with immediate consumer injury. In such circumstances, punishing the proposal could do some good at low cost. But the only element that *Microsoft* shares with *American Airlines* is market power—everything else about Microsoft's proposal was more ambiguous.

The second aspect of Microsoft's alleged proposal—the stick—involved coercion. The government claimed that Microsoft threatened to withhold needed technical information unless Netscape agreed to an arrangement involving its exit from the market for Windows 95 browsers. Exclusionary conduct that impairs a rival's ability to compete "on some basis other than efficiency"¹²⁰ can constitute monopolization or attempted monopolization. A *threat* to engage in exclusionary conduct might also conceivably be an independent offense if the threat induced the rival not to compete. As in the case of proposed collusion, however, the danger of overdeterrence is acute. Courts have had difficulty enough in identifying actual exclusionary conduct; the risk of error is far greater when allegedly exclusionary conduct is only proposed. Consequently, at a minimum, the threatened conduct should be specific and exclusionary in a meaningful sense, and capitulating to the threat should predictably harm consumers. Moreover, the threat should be credible in the sense that the defendant is capable of carrying it out immediately.

Microsoft's alleged threat satisfies the last condition, but not the others. First, the content of this threat was ambiguous. Microsoft allegedly warned that if Netscape did not agree to withdraw from the browser market, "it would attempt to crush [Netscape] by attempting to own the client."¹²¹ But as the court of appeals recognized, harming a rival by hard competition is not inefficient; nor is there any general duty to assist rivals.¹²² The more specific threat to withhold technical information, even under the government's view, was factually ambiguous. It is not clear that Barksdale testified that Microsoft had said Netscape's

obtaining the information “certainly isn’t independent” of accepting the proposal, language that falls short of an unequivocal threat. Moreover, it was never clear what information was involved. Barksdale testified that Netscape desperately needed the RNA API, or the dialer, but that Netscape had a less urgent need for a scripting engine and that “there may have been other things” that Netscape needed.¹²³ He also testified that Netscape needed the latest version of Windows 95, though Microsoft claimed that it had been supplying Netscape with an unusual amount of information since at least April 1995.

Moreover, the record does not refute Microsoft’s assertion that, by June 21, it had solved the dialer problem for its own browser with a hack that should not have been shared with ISVs. Thus, it may well have lacked at that time the information that Netscape most needed, and it had no duty to go out of its way to help its competitor anyway. Microsoft incurred costs in solving its own problem, but that does not mean it had a duty to share the fruits of its labor with Netscape. For similar reasons, Microsoft could not sensibly be held liable for failing to invest the resources necessary to develop supportable dialer APIs for rivals’ browsers simultaneously by the time of the June 21 meeting. Failing to incur costs to help a rival is not the same thing in law as incurring costs to harm a rival.¹²⁴

Further, the magnitude of the harm that Microsoft allegedly was threatening to inflict is not altogether clear. Andreessen’s meeting notes indicate Netscape believed that Microsoft was threatening to delay supplying the information for three months. Whether such a delay in these circumstances represented a serious loss for Netscape is doubtful. Barksdale claimed that, until October 1995, Netscape’s Windows 95 browser did not “work as well as we wanted” because Microsoft “withheld these APIs.”¹²⁵ But there is a big difference between “not working” and “not working as well as the producer wanted,” and three months is not forever. The fact that the information was not provided for three months and Netscape nevertheless thrived suggests that either the delay was not critical or the information was not essential.¹²⁶ Microsoft’s own browser was not competitive with Navigator until at least version 3.0 in 1996.

Finally, the fact that Microsoft’s proposal included collaboration in the development of server-side and enhanced client-side browser software is also relevant in evaluating the threat. If the threat had succeeded, any (unquantifiable) social cost from the lessening of competition in the market for Windows 95 browsers might have been outweighed by the social benefits of improved products in other markets. Of course, if a

monopolist were able to induce a rival to leave its market by threatening unambiguously exclusionary conduct, the fact that the rival would then enter some other market and increase competition there would not justify the monopolist's action. But when Microsoft's alleged threat is viewed as part of a larger proposal, both the nature of the threat and its effect if it had succeeded are called into question.

The guiding narrative and Judge Jackson relied on Microsoft's proposal not only as a separate monopolistic act, but also as context for Microsoft's entire campaign. But if the proposal was not unlawful independently, it neither became unlawful because of Microsoft's subsequent conduct nor changed the analysis of the subsequent conduct. The fact of the subsequent behavior does not add appreciably to an understanding of Microsoft's intent in making the proposal. Assuming that Microsoft set about to exclude Netscape at some time after the meeting, its decision would have been just about as likely had Netscape turned down a lawful joint venture or an illegal market division. Nor does the rejected proposal add much to the government's allegations of predatory conduct. The legality of the acts by which Microsoft allegedly excluded Netscape—the integration of the browser and operating system, the restrictive contracts with ISPs and ICPs, the screen restrictions on OEMs—depends on the acts' economic effects. Whether Microsoft proposed an illegal conspiracy has no bearing on the effects of later unilateral actions.

The Exclusive Contracts

As we discuss in chapter 2, the court of appeals set aside Judge Jackson's conclusion that Microsoft's exclusive arrangements with ICPs were unlawful because there was no evidence that they had a substantial effect on competition. But the court agreed that the arrangements with IAPs, ISVs, and Apple unlawfully maintained Microsoft's operating system monopoly by reducing Netscape's usage share. Although these arrangements probably had little effect on the outcome of the browser wars, and still less on competitive conditions in the market for operating systems, they also had no obvious efficiency justification. In this respect, the contracts resemble those in *Lorain Journal*,¹²⁷ which we argue in chapter 1 was among the most defensible of the public monopolization cases of the twentieth century.

In the most important set of agreements, ten of the fifteen largest IAPs in North America promised to promote IE exclusively and to limit shipments of Navigator to a specified percentage of their total shipments

of browser software, typically 25 percent.¹²⁸ Most of these were ISPs, though Microsoft had agreements with other ISPs that did not contain the restrictions. Some were online services (OLSs), including AOL, the dominant firm in the industry, which later acquired Netscape.¹²⁹ Unlike an ISP, an OLS provides subscribers with its own proprietary software to access its proprietary content; an ISP provides access to the Internet directly through third-party software, such as Navigator or IE, and provides little content of its own. AOL adopted IE as the basis of its proprietary access software, obtaining from Microsoft the right to modify IE for its own purposes.¹³⁰ An AOL subscriber using this software to surf the Web would not realize that she was using anything other than the AOL access software, but her “hits” on Web servers would register as IE hits.¹³¹ AOL also agreed to promote only IE as a third-party browser and to limit its shipment of non-Microsoft browsers configured for AOL subscribers to 15 percent of the total number of copies of proprietary access software it distributed.¹³² The choice of IE as the basis of AOL’s proprietary software was justified by IE’s technical superiority—because Navigator was not componentized, it could not be customized to suit AOL’s needs.¹³³ But the court of appeals found that the restrictions on promotion and shipments of Navigator were anticompetitive. In exchange for the promotion and shipment agreements, Microsoft granted the IAP a direct or indirect presence on the Windows desktop, which was expected to increase the IAP’s subscriptions.

In another set of agreements, the so-called First Wave agreements, ISVs promised to make IE the default browser for software specified in the agreements that they developed with a hypertext-based user interface and to use Microsoft’s HTML Help function, accessible only with IE, to implement their applications’ help systems.¹³⁴ In return, Microsoft granted the ISVs preferential support, primarily technical information in advance of the general release of Windows products, and the right to use certain Microsoft seals of approval.¹³⁵

Finally, Apple agreed to bundle IE with the Mac and to make IE the default browser, though Apple was free to bundle other browsers with its operating system.¹³⁶ Navigator, therefore, would be installed on the computer hard drive only during a customized installation.¹³⁷ Apple also agreed not to place icons for non-Microsoft browsers on the desktop of new Macintosh PC systems or Mac OS upgrades or to encourage users to substitute another browser for IE, and it agreed to encourage its employees to use IE.¹³⁸ The most significant commitment on Microsoft’s part was to continue releasing updated versions of its Office software suite for

the Mac for at least five years.¹³⁹ The availability of the popular Office for the Mac was considered critical to Apple's financial viability.¹⁴⁰

Each of these categories of agreements called for some form of exclusivity, and each had the potential of reducing Navigator usage. The IAP and Apple agreements were directed at the distribution of Navigator; the more constrained the distribution, the less often Navigator would be installed or used. The ISV agreements directly targeted the network effects that were assumed to characterize software markets; as more applications are written to take advantage of proprietary technology in IE, more consumers will insist on using IE, and fewer ISVs will write to Navigator. In the government's view, the agreements with exclusivity terms complemented the anticompetitive effects of bundling IE with Windows. All of the acts furthered the same goal of preventing Navigator from achieving sufficiently widespread installation and use to induce developers to write to it, thereby preserving Microsoft's operating system monopoly.

In analyzing the competitive significance of the exclusivity arrangements, the consideration Microsoft provided to the contracting firms can largely be ignored. The issue for competition has to do with the obligations assumed by the parties contracting with Microsoft, not the compensation Microsoft gave to obtain them. The form does not matter. Rather than favorable desktop placement, technical information, or a compatible applications program suite, Microsoft might have simply paid the parties for their commitments. Nor does the value by itself matter. If Microsoft were able to secure anticompetitive restrictions, whether Microsoft paid \$1 or \$100 million for them would not change their character.

In the most relevant economic models of anticompetitive restricted distribution, be it through vertical integration or exclusive dealing, the predator ties up so many of the available outlets for the product that the distribution costs of actual or potential rivals increase.¹⁴¹ The remaining, unencumbered distributors cannot handle the rivals' product efficiently, and entry into distribution is difficult, if not impossible. The apparent mystery is not that foreclosing competitors from distribution channels can have anticompetitive effects or that the predator has an incentive to reduce competition, but that exclusive dealing is a profitable strategy. If exclusive dealing prevents a distributor from doing what he would prefer to do, then the distributor will seek compensation for his commitment.¹⁴² The value of the arrangement to the predator equals the monopoly profits it can earn by increasing its rivals' distribution costs, but if the distributors insist on compensation equal to that amount in exchange for their exclusive dealing commitments, the predator gains

nothing. The predator, however, may be able to pay distributors less for their agreements than it will earn by reducing competition in the output market.¹⁴³ Each distributor might agree to the restriction for little value—at the limit, for zero value—reasoning that other distributors will accede anyway. The predator relies on competition among distributors to eliminate competition in distribution for its rivals.

For exclusive dealing to have anticompetitive effects under these models, it must appreciably increase competitors' distribution costs. This means that the exclusive dealing contracts must foreclose to competitors a sufficient percentage of low-cost distribution supply to force competitors to use increasingly less efficient distributors, a condition that itself implies entry and expansion barriers in distribution. Therefore, if a predator sews up only a small share of the relevant kind of distributors in the market, the agreements are unlikely to have an anticompetitive effect. Similarly, if distribution methods A and B are equally efficient, and a predator enters into exclusive dealing contracts with only distributors using method A, rivals might suffer no harm if the capacity of B distributors is sufficient to handle their products.

The standard theory of anticompetitive exclusive dealing applies to *Microsoft*, but with an important adaptation. The theory assumes the predator wants to raise the market price of the product whose distribution is restricted. A manufacturer of designer jeans might, for example, use exclusive dealing to raise the costs of distribution for competing jeans producers, thereby increasing the price of jeans. In *Microsoft*, the alleged anticompetitive purpose was to increase the cost of rival browser distribution to reduce the browser's usage share to prevent it from becoming a rival platform and thus allow Microsoft to earn greater profits in the operating system market. So long as the usage of Navigator did not reach the level necessary for it to become a viable applications platform in the presence of network effects, Microsoft could maintain its operating system monopoly. As we show in the last chapter, however, the government failed to prove the existence of a browser market protected by network effects. This shortcoming undermines any prediction of anticompetitive effect from Microsoft's actions toward rival browsers.

Setting that weakness to one side, three aspects of the theory of exclusive contracts bear emphasis. First, the entire capacity of the lowest cost distribution outlets need not be committed under exclusive dealing contracts in order for the agreements to have anticompetitive effects. Second, the fact that alternative methods of distribution are available, some of which are not subject to exclusive dealing restraints, does not preclude an anticompetitive effect. Even if a dairy could sell milk through

drug stores, it might be harmed if a rival entered into exclusive dealing contracts with all supermarkets. Analogously, as the court of appeals seemingly recognized,¹⁴⁴ the fact that Netscape could distribute Navigator through “carpet bombing,” or unsolicited mailing of computer disks,¹⁴⁵ does not mean that its distribution costs would be unaffected if that method of distribution is less efficient than other methods, such as OEM and IAP distribution, from which it is foreclosed.

Third, exclusive dealing can have anticompetitive effects even if it does not drive rivals entirely from the market. Ironically, in one of his few decisions that favored Microsoft, Judge Jackson held that the firm’s exclusive dealing agreements did not violate section 1 of the Sherman Act, even though they “preempted the most efficient channels for Navigator to achieve browser usage share,” because they “did not ultimately deprive Netscape of the ability to have access to every PC user worldwide.”¹⁴⁶ That reasoning was neither legally compelled nor economically sound. Netscape may have been able to place Navigator on every computer in the world, but the question is, at what cost? In the end, however, the decision did Microsoft no favors, for the court stressed that the exclusive dealing arrangements were nonetheless unlawful under section 2.¹⁴⁷ The appellate court was not asked to review the finding in favor of Microsoft on the issue of section 1 liability, but it agreed with Judge Jackson that exclusive dealing arrangements can avoid section 1 condemnation while running afoul of section 2.¹⁴⁸

Exclusive distribution agreements, therefore, can be rational and anticompetitive. But the question is whether they were in *Microsoft*, and this depends on whether they injured Netscape and whether they increased efficiency. The arrangements probably had little effect on Navigator’s usage. Some of the restrictions by nature were of questionable significance. For example, an IAP’s exclusive promotion of a particular browser is not a promising way of suppressing interest in a competing browser if information about the rival is abundant. Any browser connects the user to the Internet, an extraordinary pool of readily accessible information, and so use of the product itself undercuts the significance of exclusive browser promotion as a device that alerts users to the existence of other browsers. Promotion might serve a separate certification function, much as a celebrity’s endorsement may sway customers to buy a particular product, but there is no evidence that IAP promotion served such a function to any appreciable extent. Similarly, the idea that Apple’s employees would decide not to use Navigator because Apple encouraged them to use IE is hard to take seriously.

Other restrictions have limited significance because of their context. For example, the case against Microsoft was based on the premise that the Mac OS was not in the same market as Windows and that Apple sold a relatively small number of computers anyway. It follows that any restriction on Apple's distribution of Navigator was likely to have at best a marginal impact on the browser's usage in the short run. Judge Jackson speculated that if developers learned that they could successfully write to the APIs exposed by the Mac Navigator, they would begin writing to the identical APIs exposed by the Windows Navigator instead of to Windows itself.¹⁴⁹ Chances are, though, that if developers wanted to experiment with Navigator's APIs, assuming that Navigator eventually exposed enough APIs to be a viable platform, they would have been attracted by the base of Windows users that in fact installed and ran Navigator despite the impediments that reduced distribution to that group. A small pool of Navigator users on Windows machines was as good a laboratory as a small pool of Navigator users on Mac machines.

Further, a commitment to do what a party would have done voluntarily is not a binding constraint. Thus, for example, because Navigator was not componentized, an ISV that did not want to access the Internet without launching a separate browser could write only to IE. At least some of the ISVs subject to First Wave agreements presumably would have committed to IE for technical reasons in any event. OLSs have no incentive to promote any third-party browser. Indeed, AOL insisted on the right to modify browsing software so that a subscriber would not realize that the software she was using to surf the Web was anything other than AOL software. OLSs probably would not have promoted Navigator regardless of their commitment to refrain from doing so. Further, AOL had the right under its agreement with Microsoft to include Navigator as the browser in 15 percent of its shipments, but in fact after the agreement 92 percent of AOL subscribers came to use access software based on IE.¹⁵⁰ The reason is self-evident: AOL's interest was in encouraging subscribers to use its proprietary access software, which was based on IE, and subscribers had little interest in using anything else. Indeed, because Microsoft gave AOL a \$2 credit for each new subscriber that used IE¹⁵¹—conduct the appellate court did not condemn—AOL had an even greater incentive to foster the use of IE.

Both First Wave ISVs and Apple agreed to make IE their default browser, though Apple could distribute Navigator as well. Because logically only one browser can be the default, the agreements effectively called for IE to be the exclusive default browser. Similarly, Apple promised to make

the IE icon the exclusive browser icon on its desktop. Neither the default browser nor the icon placement agreement prevented a user from installing and using Navigator, but they increased the user's costs of doing so. To that extent, they had the potential to reduce Navigator usage. But the exclusivity commitments that potentially had the greatest impact are the ISP shipment restrictions. Microsoft waived these restrictions within about two years,¹⁵² and so the period of their impact was short. Judge Jackson emphasized that Microsoft did not waive the restrictions in its agreements with OLSs,¹⁵³ but as noted above, those restrictions were not important. Even though the ISP restrictions were short-lived, during a standards war, a brief period cannot be dismissed out of hand as inconsequential, and Microsoft's intent at the outset may have been to maintain and enforce the agreements indefinitely.

In theory, standard exclusive dealing arrangements can serve a number of efficiency-increasing functions.¹⁵⁴ For example, they can reduce the transaction costs of both suppliers and dealers. They can stimulate the provision of promotional and presale services by concentrating the dealers' efforts on sale of the supplier's product and by eliminating the possibility of free riding that could occur if a dealer could shift buyers to a competing product. They can reduce risk. The only justification Microsoft proffered for its exclusive dealing arrangements, which it offered for its agreements with IAPs, is that they were designed "to keep [applications] developers focused upon its APIs."¹⁵⁵ The appellate court characterized the goal pejoratively as preserving monopoly power in the operating system market, but of course one could also characterize it as ensuring a uniform applications platform that maximized benefits for users and developers. The court concluded that the objective was not unlawful, but that it also was not "a procompetitive justification for the specific means here in question, namely exclusive dealing contracts with IAPs."¹⁵⁶

If a uniform platform benefits consumers, albeit Microsoft and developers as well, then practices that result in uniformity increase efficiency. The available consumer benefits, however, are a function of uniformity in the presence of network effects, not the particular platform that becomes the standard. The flip side of Microsoft's argument that competition to be the standard prevents the contest winner at any given time from having monopoly power is that competition to become the standard warrants legal protection. If the sole point of a practice is to impose costs on a rival in a standards contest, the fact that the practice results in the actor's standard becoming dominant does not imply that the practice increased efficiency. Maybe this is what the appellate court

had in mind. Conceivably, the restrictions in *Microsoft* could have increased efficiency in other ways, but Microsoft's failure to press any other justifications before the appellate court is telling. And the conventional justifications for exclusive dealing, such as the reduction of transaction costs and the elimination of free riding, are undercut by the fact that the exclusivity in the case involved only a partial prohibition on disseminating rival browsers, which was agreed to by several distributors. No distributor was agreeing to ship only IE, and so the agreements did not eliminate transactions with Netscape and the potential for free riding. A fair inference is that the restrictive aspects of the agreements were not justified by efficiency concerns.

The shipment restrictions accepted by some ISPs, therefore, could have had an anticompetitive effect and had little, if any, potential to increase efficiency. Viewed in isolation, their actual effect was probably minimal. Though time can be critical in a standards contest, the two-year period during which these restrictions were in force was not particularly significant. After all, Navigator was not technologically capable of challenging Windows as an applications platform at the time distribution was curtailed; it was not then competing to be the standard. But the shipment restrictions cannot properly be viewed in isolation. Preinstallation of browsers by OEMs was at least as efficient a method of distribution as was ISP distribution; Judge Jackson identified OEM and IAP distribution as the two most efficient channels for distributing browsers.¹⁵⁷ If Netscape had been free to distribute Navigator through OEMs, the ISP restrictions would probably have had no impact. The browser would have been installed on every computer shipped by an OEM with respect to which Netscape could secure an installation agreement; later installation of ISP software containing Navigator would have been irrelevant. Of course, OEM distribution was not completely open to Netscape. But to the extent the restrictions on OEM distribution were justified by efficiency concerns, or the agreements to preinstall IE effectively prevented Navigator installation but resulted from legitimate competition between Microsoft and Netscape, the only significant anticompetitive effects flowed from the ISP restrictions; and again, these were insubstantial.

Java

In an important sense, the case against Microsoft based on the suppression of Java was stronger than the case based on the suppression of Navigator. The technologies comprising Java were intended to run on multiple

operating systems and become a platform for full-featured desktop applications. Java started out as a programming language that could be used on small digital devices, such as cell phones, and it evolved into a popular platform for server-based applications. But Sun Microsystems intended Java to become true platform middleware for PC applications. Its aspiration was captured in its slogan, “write once, run anywhere.”¹⁵⁸ If Java had fulfilled the dreams of its developers, it could indeed have rendered the underlying operating system a fungible commodity. By contrast, Netscape did not, at least originally, envision the browser as becoming an applications platform in itself. The very fact that Netscape agreed to allow Navigator to become the principal distribution channel for Java suggests that it did not intend to compete with Java for the attention of applications developers. The potential of Navigator to become a desktop applications platform, therefore, was decidedly more speculative than that of Java.

Despite the difference in the aspirations of the respective developers and indeed in the real platform potential of the two technologies, the anticompetitive theory was identical: Microsoft could preserve its monopoly power in operating systems by reducing installation and use of some cross-platform middleware to a level below the minimum necessary to induce applications developers to write to it. In the case of Java, according to the government, Microsoft’s strategy was to create and propagate a version of Java that was Windows-specific, thus reducing the use of Sun’s multiplatform Java. Whether Microsoft injured consumers by actions that were expected to inhibit the spread of Sun’s Java depended on the nature of those actions, the effect of those actions on Sun’s Java, and the assumption that consumers would have been better off in a world in which Sun had a platform monopoly at the middleware level than one in which Microsoft had a platform monopoly at the operating system level. And whether Microsoft should have been held liable for its conduct in any event depends on the significance of intent. We explore these ideas in this section.

After Netscape agreed in May 1995 to include a copy of Sun’s Java runtime environment with every copy of Netscape, Navigator became the primary distribution vehicle for it.¹⁵⁹ The government contended that Microsoft was able to kill two middleware birds with one exclusionary stone: by suppressing the distribution of Navigator, Microsoft was also able to impede the spread of Java. Developers were less inclined to write to cross-platform Java to the extent that compliant JVMs were not installed on computers. Judge Jackson agreed that Microsoft

“indirectly” stunted the growth of Java by anticompetitively minimizing Navigator’s usage share.¹⁶⁰ In fact, the Java runtime environment distributed by Navigator was not of particularly high quality, and Navigator’s JVMs were inconsistent across operating systems and did not provide support for all of Sun’s standards. Even an anticompetitive restriction of Navigator’s distribution, therefore, would not have had the adverse effect on the growth of Java that it might otherwise have had. In general, though, our analysis of the acts by which Microsoft injured Netscape applies precisely to the claim that Microsoft injured Sun’s Java technologies by stifling Navigator. What remains to be discussed are Microsoft’s other actions directed at Java.

Apart from conduct targeting Navigator, Judge Jackson identified a cluster of specific interrelated actions—“an array of tactics”¹⁶¹—designed to suppress Sun’s Java.¹⁶² He assigned liability for several of them: Microsoft created an implementation of Java that was incompatible with Sun’s cross-platform implementation; it tricked developers into unwittingly writing Java applications that used Windows-specific Java; it offered valuable consideration to developers for making Microsoft’s JVM the default and in one case the exclusive JVM used and distributed by their Java applications; and it thwarted the creation of cross-platform Java interfaces by pressuring Intel to stop developing them.¹⁶³

Microsoft licensed Java from Sun in 1996. Because Java never exposed enough APIs to allow developers to write full-featured applications programs relying exclusively on Java APIs, a full-featured program written in the Java language had to make use of both Java APIs and APIs of the underlying operating system. To that extent, Java never offered an applications platform that was wholly independent of the operating system platform. But Sun’s implementation of Java contained an interface designed to enable a developer writing in Java to rely on APIs native to the underlying operating system and yet port the application with relative ease to JVMs running on different operating systems. Sun developed a JVM for use on Windows that contained its implementation of the native method interface. But Microsoft developed different native method interfaces enabling calls to Windows code and implemented them in its developer tools and JVM. The Microsoft technologies, therefore, created a distinct Java runtime environment. Critically, the Microsoft methods were easier for developers to use than Sun’s method and resulted in applications that ran on Windows faster than did Sun’s.¹⁶⁴ But applications using the Microsoft technologies were more difficult to port to JVMs running on different operating systems. Without porting, applications

using Sun's native call process would not run on Microsoft's JVM, and applications using Microsoft's processes would not run on any cross-platform JVM. Judge Jackson found that the benefits of the Microsoft modifications were slight and that Microsoft could easily have implemented Sun's native method along with its own in its developer tools and JVM, thereby allowing developers to choose between speed (Microsoft's Java runtime environment) and portability (Sun's Java runtime environment).¹⁶⁵

Next, Judge Jackson found that in an effort to increase incompatibility between applications written for its Windows JVM and other JVMs and to increase the difficulty of porting, Microsoft designed its Java developer tools to encourage developers to use keywords and compiler directives that could be executed properly only by Microsoft's Java runtime environment.¹⁶⁶ Simply urging users to opt for one technology over another could not be condemned under any sensible liability standard. But Microsoft shipped its developer tools with its extensions enabled by default and failed to warn developers that their use would result in applications that would run properly only on Microsoft's Java runtime environment and might be impossible to port. The gist of the finding was that Microsoft intended to deceive developers into using Microsoft-specific Java technologies "unwittingly,"¹⁶⁷ though Judge Jackson did not find that any developers had actually been fooled.¹⁶⁸

Judge Jackson believed that ISVs writing in Java could break down the applications barrier to entry into the operating system market in two ways: applications could be written for cross-platform JVMs, and Java applications themselves were a distribution channel for cross-platform JVMs. He found that Microsoft entered into First Wave agreements with dozens of ISVs in 1997 and 1998 that conditioned Microsoft's provision of valuable technical information and permission to use Microsoft seals of approval on the ISVs' commitment to use Microsoft's JVM as the default in their applications covered by the agreements. The commitment was understood to require that applications subject to it were compatible with Microsoft's JVM, and to ensure compatibility, ISVs were effectively forced to use Microsoft's developer tools. Using these tools meant that applications used Microsoft's methods for making native calls and potentially Microsoft's other extensions. The applications, therefore, would run only on Microsoft's JVM, and developers had no reason to distribute Sun's JVM with their Java applications. In one instance, the ISV explicitly agreed to distribute only Microsoft's JVM and to rely only on Microsoft's native call methods.¹⁶⁹

Finally, Judge Jackson found that Microsoft pressured Intel to suppress products that improved cross-platform Java. While Intel was developing a high-performance, cross-platform JVM, Microsoft urged it not to work with Sun or Netscape on the project, and after Intel had developed the JVM, Microsoft urged it not to allow Netscape to ship the JVM with Navigator.¹⁷⁰ Further, the greater the functionality provided in Java class libraries, the less any Java applications program had to make calls on the underlying operating system through that operating system's APIs, and the more portable the program became. Judge Jackson found that Microsoft stifled the development of new cross-platform Java APIs, specifically multimedia interfaces, by inducing Intel to stop aiding Sun in developing them.¹⁷¹ Microsoft threatened to support the proprietary technology of Intel's competitor if Intel assisted Sun, and it offered to incorporate into Windows any multimedia interfaces developed by Intel that Intel agreed to withhold from Sun.

Although Judge Jackson had treated Microsoft's actions directed at Java as parts of a single, coherent strategy, the circuit court analyzed each action independently. The court held first that Microsoft's optimization of Java for Windows in its developer tools and JVM, though it decreased portability and to that extent helped preserve Microsoft's operating system monopoly, could not support liability. For the appellate court, the decisive fact was that Microsoft's implementation was *better* than Sun's along a relevant dimension—specifically, speed.¹⁷² Judge Jackson had downplayed the technical benefits of Microsoft's native call methods and emphasized their cost: relative to Sun's method, they were "slightly" easier to use and "tended" to result in faster applications, yet applications using them were "much more" difficult to port.¹⁷³ And he had noted that Microsoft could easily have avoided any anticompetitive effects of its unique design by implementing Sun's technology along with its own.¹⁷⁴ The analysis implied a balancing test in which the expected anticompetitive harm of a design is weighed against any efficiencies of the design that could be achieved only by incorporating its anticompetitive features. The appellate court, however, implicitly eschewed the balancing test even as it purported to apply it.¹⁷⁵ Microsoft's modifications improved Java for Windows. For the court, that was enough. The court did not compare the value of additional speed to the loss in portability, and it did not even address the possibility that Microsoft might have incorporated Sun's method as well. Ignoring Judge Jackson's conclusion, the court declared simply that the design "does not itself have any anticompetitive effect."¹⁷⁶

Taken on its own merits, the refusal to weigh Microsoft's proven improvements in Java for applications running on Windows against the possibility that consumers might be harmed because they prevented the elimination of entry barriers protecting an operating system monopoly was defensible. Even a monopolist is entitled to innovate and reap the resulting rewards. Except when benefits are demonstrably trivial, a balancing test demands that a court weigh values that it is not well suited to measure. Based on relative institutional competence, the wiser approach arguably is to defer to the market. The appellate court effectively held that if a monopolist improves a product—if it modifies a product in ways that generate obvious consumer benefits—it cannot be held liable for refusing to incur additional costs that arguably would have yielded the same benefits in product quality but would also have increased competition. (Such a rule makes even more sense in a case like *Microsoft* in which the complex design issues were not clearly specified at the outset and the truncated proceedings prevented their examination in adequate detail.) In this respect, the appellate court's analysis illustrates a central theme of this book: antitrust courts emphasize immediate and obvious effects on consumers and discount heavily forecasts of future effects.

What is surprising about the court's actual analysis is that it conflicts with the court's ostensible reliance on a balancing test not only in the Java discussion but also in other parts of the opinion.¹⁷⁷ In describing "principles" that emerge from "a century of case law on monopolization," the court explained that a plaintiff must prove that a monopolist's act has an anticompetitive effect—that it harms the competitive process and thereby harms consumers—and that if the plaintiff makes the showing, the monopolist may proffer a procompetitive justification.¹⁷⁸ If the plaintiff cannot rebut such an asserted justification, "then the plaintiff must demonstrate that the anticompetitive harm of the conduct outweighs the procompetitive benefit."¹⁷⁹ The court, therefore, explicitly adopted a balancing test.

In a later passage, the court appeared to endorse a balancing test specifically in the context of product design decisions, though obtusely. As we explain in the last chapter, in discussing the integration of IE and Windows as an exclusionary act for section 2 purposes, the court remarked that, in general, courts are "skeptical about claims that competition has been harmed by a dominant firm's product design decisions," but that "[j]udicial deference to product innovation . . . does not mean that a monopolist's product design decisions are per se lawful."¹⁸⁰ Thus, a court's deference to a monopolist's design decisions is not to be absolute. To say that a design embodies "innovation" implies that it provides

benefits for consumers. If a court nonetheless is prohibited from simply deferring to it, the court must weigh its benefits against something, presumably its potential anticompetitive effects. But the court was less clear in applying the principle to the browser integration. By taking IE out of the Add/Remove Programs utility, Microsoft “reduce[d] the usage share of rival browsers not by making Microsoft’s own browser more attractive to consumers but, rather, by discouraging OEMs from distributing rival products.”¹⁸¹ The court characterized the conduct as “something other than competition on the merits,” declared it anticompetitive because it protected Microsoft’s operating system monopoly, and deferred “the question whether it was nonetheless justified.”¹⁸²

Again, the sequence of analysis is consistent with a balancing approach: once anticompetitive effects are shown, the monopolist may assert a procompetitive justification that can be weighed against them. But the court stated that the design did not make the “browser more attractive to consumers.” Once the court has concluded that the design had no consumer benefits, it is not clear what justification could be offered or why consideration of a possible justification should be deferred. Indeed, when the court did turn to the question of justification, it found that Microsoft offered none.¹⁸³ If the court truly believed that only conduct that both (1) provides no benefits to consumers and (2) protects monopoly power is anticompetitive, and that anticompetitive conduct can be justified, then its analysis did invoke an explicit balancing test. Alternatively, the court might have implicitly used a balancing test in determining that the conduct was anticompetitive: the protection of monopoly power was not offset by any consumer benefits. Finally, in addressing browser integration as a tying violation, the court repudiated the highly deferential approach it had taken to design decisions in the consent decree litigation. The court stated, “To the extent that the [consent decree] decision completely disclaimed judicial capacity to evaluate ‘high-tech product design,’ . . . it cannot be said to conform to prevailing antitrust doctrine. . . .”¹⁸⁴ The import of the passage is that a court must weigh product improvements against anticompetitive effects.

The court’s treatment of the design decisions affecting Java was quite different. If a court is permitted, indeed obligated, to determine for itself whether a design choice that benefits consumers should nevertheless be condemned because of its effects on competition in the short or long run, just why the appellate court was willing to conclude that Microsoft’s modifications of Java technologies were lawful because they benefited consumers without considering their potential to preserve Microsoft’s operating system monopoly is mysterious. A characterization so decisive

required detailed explanation. Perhaps the reason is that the court was going to find the other three Java-related actions unlawful anyway, and so it felt no need to be terribly precise in its analysis of the product improvements. But the court's decision was unprincipled.

Judge Jackson had also found that Microsoft created and then included in software development tools various extensions—keywords and compiler directives—that could be executed properly only by Microsoft's Java runtime environment and did so to increase incompatibility and porting costs. Under Judge Jackson's explanation, these actions were not related to improving applications written in Java; they were simply made to reduce the number of applications written to Sun's Java implementation and increase the number written to Microsoft's. The circuit court, therefore, could not dismiss the conduct on the ground that it produced obvious consumer benefits. Instead the court concluded tersely that the creation of “tools incompatible with Sun's cross-platform aspirations for Java [was] no violation, to be sure.”¹⁸⁵ The court apparently thought that adopting a design feature that triggers the use of a superior underlying design, even though the feature is not necessary to reap the benefits of the design, is unobjectionable so long as users are allowed to make a fully informed choice. The court may have assumed that any reduction in the spread of cross-platform Java in such circumstances would be attributed to the superior quality of Microsoft's underlying Java runtime environment, not the unnecessary extensions.

In determining whether Microsoft could be held liable for the other three categories of conduct directed at Java, the circuit court held that Microsoft offered no procompetitive justification for any.¹⁸⁶ For the court, therefore, the only relevant question was whether to infer that each had anticompetitive effects. Judge Jackson had found that First Wave agreements requiring ISVs merely to make Microsoft's JVM the default in fact meant that they would use only Microsoft's implementation of Java and would not distribute Sun's JVM. The circuit court agreed that the arrangements “as a practical matter” required ISVs to use Microsoft's implementation exclusively.¹⁸⁷

As we discuss above, exclusive dealing can be rational in theory and have anticompetitive effects, depending on the scope of foreclosure and the economic importance to the competitor of the amount of the market foreclosed. The consideration given in exchange for exclusivity is not directly important. The question is whether exclusive dealing denies competitors enough trade to cause anticompetitive effects, here by preventing Sun's implementation from achieving the critical level of popularity. For the court, the fact that Microsoft entered into deals “with the

leading ISVs” whose products “reached millions of consumers” established that the agreements “foreclosed a substantial portion of the field” and were therefore anticompetitive.¹⁸⁸ The extent of the foreclosure is not so clear, though. The agreements were limited to a period between the fall of 1997 and the spring of 1998, and they pertained to specific applications, not the ISVs’ full product lines. Even though an agreement might have been reached with a leading ISV, therefore, the exclusivity might not have foreclosed Sun from all of the firm’s software products. Microsoft reportedly had First Wave agreements covering 119 applications, but many of these applications were not written in any form of Java.¹⁸⁹ If the exclusivity provisions had an anticompetitive effect, the effect would have been applications written to Microsoft’s Java implementation rather than Sun’s.

The circuit court also upheld Judge Jackson’s conclusion that Microsoft’s attempt to deceive developers into using the extensions that Microsoft built in to its developer tools and therefore producing applications incompatible with Sun’s Java runtime environment was anticompetitive. Oddly, though, Judge Jackson had found that Microsoft had “designed its Java developer tools to encourage developers” to write applications using the extensions¹⁹⁰ and concluded that Microsoft had “deliberately designed its Java development tools so that developers . . . would . . . unwittingly write Java applications that would run only on Windows.”¹⁹¹ The offending conduct was producing a design that was intended and had the capacity to deceive. But the circuit court mischaracterized Judge Jackson as concluding that developers “unwittingly [*wrote*] Java applications that [*ran*] only on Windows.”¹⁹² Later, the court referred to Microsoft documents confirming that “Microsoft intended to deceive Java developers,”¹⁹³ and it concluded that “Microsoft’s conduct . . . served to protect its monopoly of the operating system” and was therefore anticompetitive.¹⁹⁴ The court’s holding, therefore, is ambiguous. Albeit relying on a misconception of the record, the court might be saying that a monopolist violates section 2 by actually deceiving users into adopting its technology rather than a rival’s, even if the plaintiff cannot prove that the number of products unwittingly developed for the monopolist’s technology was sufficient to prevent the erosion of monopoly power. Alternatively, the court might be saying that the deliberate attempt to deceive developers is sufficient for liability, even if no developer is actually deceived.

The record is devoid of evidence that any developers were actually deceived, and there is reason to doubt that many sophisticated ISVs would be tricked into using Microsoft extensions by default settings. The fact

that a Microsoft official advocated use of the default tactic based on the assumption that developers would write Microsoft-specific applications “without ever realizing” it may suggest nothing more than wishful thinking, where Microsoft had virtually nothing to lose in the attempt.¹⁹⁵ Certainly no inference of successful deceit could be drawn from developers’ use of the Microsoft extensions. The appellate court recognized that the Microsoft Java implementation was better than the Sun implementation for Java applications running on Windows, and so one would assume that a fully-informed developer—one who penetrates Microsoft’s subterfuge and understands that use of the default settings would lock him into Microsoft-specific Java—would likely choose the Microsoft implementation and its extensions to produce a Windows application.

Whether intent to deceive should be enough to support liability for monopolization poses a question that goes to the heart of the *Microsoft* case. Much of the evidence in the case demonstrated an intent to thwart a perceived threat to a monopoly position through actions that might or might not have improved the quality of product offerings. Intent is an ambiguous concept in antitrust. An intent to maintain monopoly power or even to injure a rival is not the least bit objectionable. That may be the motivation for developing better or cheaper products. One might think that if an action has no capacity to increase efficiency and is undertaken merely to reduce competition, there is little reason not to impose liability for it. But mistakes can be made in determining intent and efficiency, and antitrust litigation is expensive. Trundling out the machinery of antitrust to condemn ill-motivated conduct that has no anticompetitive effect is not worth the cost.

The justification for imposing liability is stronger when the conduct had a dangerous probability of succeeding and not being discovered, so that the firm has an incentive to try to injure competition if the attempt intrinsically is not especially costly. For example, Microsoft could presumably set default extensions at virtually no cost, and *not* warning developers about the settings is completely costless. Punishing the unsuccessful attempt in such a case increases the firm’s expected cost of engaging in the behavior. Absent any evidence that enabling Microsoft extensions by default was intended to accomplish anything other than developer deception, assigning liability for it in the context of a much larger case did little harm, so long as the penalty for that conduct reflected its low expected social cost. As we explain below, the court eventually imposed no penalty for the Java deception.

The appellate court had little trouble concluding that Microsoft’s efforts to deter Intel from improving and distributing cross-platform Java

technologies were exclusionary.¹⁹⁶ Dismissing as “lame[]” Microsoft’s characterization of its conduct as mere “advice,” the court pointed to record evidence demonstrating the “anticompetitive effect and intent of its actions.”¹⁹⁷ Once again, the record did indeed contain evidence that Microsoft intended to induce Intel to back away from cross-platform Java through persuasion and threats of coercion. But Judge Jackson did not find that Microsoft was successful in persuading Intel to stop helping Netscape to ship the improved JVM with Navigator.¹⁹⁸ He found only that Microsoft’s efforts to induce Intel not to help Sun develop multimedia cross-platform Java APIs “*apparently* bore fruit,” citing testimony of a Microsoft executive.¹⁹⁹ The appellate court cited only that executive’s deposition testimony as proof of effect.²⁰⁰ It is curious that no Sun or Intel official testified to this effect, given that an official of the pressured firm or of the victim would seem to be the natural complainant and privy to the relevant evidence. Even if Intel stopped assisting in the improvement of cross-platform Java in response to Microsoft’s pressure, whether the loss of that assistance had any effect on the quality or availability of cross-platform Java is a separate question. The appellate court inferred an actual impact on quality from tenuous evidence that Microsoft’s efforts had an impact on Intel, merely one participant in joint efforts to improve quality.

Thus far, we have focused on the capacity of various acts to inhibit the spread of a potential applications platform competitor to Windows. But consumers could not be injured unless absent those acts the platform competitor would have emerged or at least would emerge sooner. There are two principal reasons to doubt that Microsoft’s conduct had a significant impact on the development of cross-platform Java. First, as even Judge Jackson recognized, Java has technological limitations as a platform for personal computer desktop applications. Some believe that the Java programming language is easier to learn than other popular languages, and it does allow the developer to write programs that will run on multiple operating systems more quickly than she could if she wrote directly to the operating system. It has become a serious competitor of Microsoft in server-based applications and non-PC devices. But full-featured applications written in Java have always executed more slowly than applications written to the operating system. The developer, therefore, must trade off portability against speed. One commentator colorfully offered the analogy of a courtyard: a person wanting entry into a courtyard can use a ladder to scale the wall or a key to open the door.²⁰¹ If the person wants entry into several courtyards, the advantage of the ladder is that it is universal, whereas he would need a different

key for each door. But scaling the wall is much slower and a lot more trouble than using a key.

Second, the preference for speed over portability makes sense in light of the economic reality of the marketplace. Windows has an overwhelming share of the individual computer operating system market. The choice facing a typical applications developer is to write the program to Windows and have access to more than 80 percent of the market or to write an inferior program in Java at nearly the same cost and have access to almost all of the market. The great majority of developers understandably conclude that opting for quality is more profitable. Of course, this assumes that the Windows monopoly is itself legitimate, lest the benefits of a monopoly be used to excuse the anticompetitive exclusion of a competitor. But the government and the courts assumed that a monopoly operating system would naturally emerge, primarily as a result of network effects. The case against Microsoft was based on efforts to suppress developing competitive threats in the form of middleware. If a particular form of middleware is technologically inadequate to overcome the economic advantage of the dominant operating system, the owner of the operating system cannot be condemned.

6

Remedies

In the debate over the *Microsoft* case, courts and commentators considered every traditional antitrust remedy. In this chapter, we examine the relief courts actually imposed, but also the most important proposed remedies to fall by the wayside during the course of the litigation. The 1998 government case began with a complaint seeking only conduct remedies. After the trial, however, Judge Jackson adopted government proposals for a structural remedy—breaking Microsoft up into two firms—and more extensive conduct restrictions. The court of appeals reversed that order, and the United States shortly thereafter abandoned its proposal for structural relief. As we explain in chapter 2, Judge Colleen Kollar-Kotelly approved a consent decree containing conduct restrictions and granted the nonsettling states essentially the same relief, decisions the court of appeals finally approved in 2004. Those final judgments are now being implemented. But the government case was only the beginning of the remedial story. The European Commission antitrust authority imposed more onerous conduct remedies in its closely related case involving media software and low-end server operating systems, both technologies already covered by the U.S. decree, albeit in more limited ways. Moreover, Microsoft’s rivals, customers, and consumers brought a

flood of private actions seeking damages, most of which have now been settled for enormous sums.

The Goals of Antitrust Remedies

As our historical survey in chapter 1 shows, neither structural nor conduct remedies in monopolization cases have done much to increase consumer welfare.¹ Some might suggest that this dismal record teaches that more radical remedies should have been implemented. Many observers believed, for example, that Microsoft received a slap on the wrist in the 1995 consent decree that settled one of the Department of Justice's earlier lawsuits alleging exclusionary conduct. But worse than an ineffective remedy is one that destroys or deters the very efficiencies that the law is designed to promote. Courts have properly balanced the need for effective relief with an appropriate reluctance "to destroy [a] finely adjusted . . . industrial machine."² As our account of the conceptual origins of antitrust demonstrates, the Sherman Act recognizes that the profit motive is a powerful engine for the destruction of monopolies and rejects the idea that government should engineer market outcomes. To speak of antitrust as "kick start[ing]"³ competition or setting the market on a "competitive trajectory"⁴ exaggerates the role government intervention can usefully perform in a market economy. Markets are not machines with a defined function or projectiles with a defined target; market structures emerge from the countless choices of consumers and producers. The market structure that emerges, once obstacles to normal market mechanisms are removed, is likely to be more efficient than one a court designs.

Courts in all antitrust cases, and especially those involving high-technology industries, have limited capacities to correct monopolistic abuses.⁵ Because litigation is slow and gathers limited information, courts must act on imperfect knowledge of complex markets. It is sometimes only after the litigation that economic theory advances to explain important aspects of the case. The emergence of the theory of multisided platform markets in the wake of *Microsoft* is one instance of this theoretical lag. Moreover, courts' mistakes are likely to be durable and costly. Antitrust remedies that deprive the defendant of the rents that would have flowed from legitimate competition may well interfere with the market's own self-correcting forces. This concern is not only a matter of "fairness" to the defendant, but of efficiency. Market rewards drive innovation. If a remedy takes those rewards away, innovation will predictably decline, and consumers will suffer. In *Microsoft*, the courts were even more limited in their understanding by the restrictions Judge

Thomas Penfield Jackson placed on the parties' presentations in the interest of expediting the proceedings. The informational constraints of the trial process necessarily affect the proper scope of remedies. Because courts cannot hope to understand the markets—past, present, and future—in their full complexity, they should focus primarily on identifying and interdicting specific offenses.

As we show later in this chapter, the law of antitrust damages recognizes this principle. The plaintiff in a treble damage suit is entitled to recover the difference between its actual condition during the damage period and its condition in a hypothetical “but for” world in which the defendant’s illegal conduct did not occur.⁶ If several of the defendant’s acts harmed the plaintiff, but only one is found unlawful, the plaintiff’s damage model must distinguish harm caused by the illegal act and harm caused by lawful competition.⁷ Thus, for example, a competitor plaintiff may recover for lost profits attributable to illegal exclusionary practices, but not for those attributable to vigorous competition. And a purchaser from a monopolist is entitled to recover the increment in the price attributable to illegal exclusionary actions, but not the difference between the actual price and an ideal competitive price.⁸

This principle of proportional relief is the appropriate starting point in cases seeking equitable relief as well. Though the objective in a monopolization case is to restore competition,⁹ the “competition” the court should seek to restore is not some economic utopia but the market that would have existed had the defendant not engaged in anticompetitive behavior. A civil antitrust remedy “must not be punitive.”¹⁰ It should deprive the offender of the benefits of the violation,¹¹ but not the benefits of lawful conduct. Antitrust remedies involve costs that a court should impose only if doing so is justified by expected benefits. Those costs may stem from administration of a decree, future misconduct of the kind found unlawful, continuing anticompetitive effects of past misconduct, inefficiencies of product configuration,¹² and impaired incentives to innovate.¹³

Structural Remedies

The courts ultimately rejected any form of structural relief in *Microsoft*. Their reasoning in doing so was consistent with the principles of antitrust remedies we have just outlined. Some argued that structural remedies would be the most effective means of correcting Microsoft’s abuses without burdening Microsoft and the courts with a regulatory decree that would require constant supervision.¹⁴ The court of appeals, however, treated structural relief as a last resort, demanding special evidentiary

justification for it.¹⁵ In an earlier era, courts sometimes imposed a corporate death sentence on monopolists by annulling their corporate charters.¹⁶ Today, however, dismemberment is viewed as the “most drastic” antitrust remedy,¹⁷ which “is not to be used indiscriminately, without regard to the type of violation or whether other effective methods, less harsh are available.”¹⁸ These misgivings are justified: structural relief is less likely to be effective, and more likely to be harmful, than even imperfect conduct remedies. One study found that between 1890 and 1999, courts ordered substantial divestiture in only fifteen government monopolization cases that involved exclusionary practices and not a merger, and most of these orders were in consent decrees.¹⁹ Another study found that between 1890 and 1996, courts ordered divestiture or dissolution in forty-six government monopolization cases that did not involve mergers, and forty-three of these involved coordinated price behavior; only three were single-firm divestitures in which neither conspiracy nor acquisitions were involved. Another thirty-two cases resulted in restrictions on business activities, a remedy classified as a weak form of “structural” relief; three of these involved coordinated price behavior, and none involved single-firm exclusionary conduct.²⁰

The lesson is that courts rarely order structural relief in cases involving only single-firm exclusionary conduct. Divestiture makes sense mainly where monopolization is the result of illegal acquisitions,²¹ because courts can relatively easily separate the acquiring and acquired firms.²² As Kenneth Elzinga, David Evans, and Albert Nichols put it, “[P]ast mergers usually offer a ‘seam’ so that rending the corporation is less intrusive to business operations.”²³ One might argue that divestiture would also make sense in a regulated industry in which a monopolist’s exclusionary actions have shown the conduct strictures of the existing regulatory structure to be ineffective.²⁴ But that justification is not wholly convincing either. One of the supposed advantages of structural relief is that it avoids the costs of ongoing judicial supervision that usually accompanies a conduct remedy. A structural order, however, also requires ongoing enforcement. The consent decree that required AT&T to divest its operating companies, for example, required Judge Harold Green to regulate U.S. telecommunications for twelve years.²⁵ Any structural remedy that confines divested entities to prescribed activities is likely to require continuing judicial administration that may well cost more than would a focused conduct remedy.

Over the course of the *Microsoft* litigation, the courts and commentators considered two kinds of structural remedies. One, which we call horizontal divestiture, would have forced Microsoft to create operating

system competitors by conveying the source code for Windows to other firms. The other, which we call vertical divestiture, would have forced Microsoft to spin off its operating system and applications businesses into independent corporations. Both remedies have unique advantages and disadvantages, but neither would have been appropriate as a remedy for Microsoft's illegal conduct.²⁶

Rejecting Horizontal Divestiture. Microsoft's monopoly power in operating systems rests on its intellectual property in the Windows source code. Consequently, a court could create any number of identical competitors, or clones, by auctioning off the code; a court could even force Microsoft to make the code freely available for public use and modification, thereby converting it to open source. One proposal of this kind was advocated by partisans and considered in the academic literature, but the government never proposed it to Judge Jackson. A later, far more limited proposal by the nonsettling states had similar features, but was also rejected.

Perhaps the most frequently mentioned variant of horizontal divestiture was the proposal to create three or more rival "Baby Bills" (analogous to the Baby Bells created by the AT&T divestiture), each with licenses to the Windows source code.²⁷ Though this sort of divestiture would have certainly introduced competition in operating systems, it posed two difficulties. First, multiple versions of Windows would likely have emerged, undermining the efficiencies of the standard Windows API. Developers would incur porting costs, and consumers would incur training, confusion, and file incompatibility costs.²⁸ Innovation in high technology markets requires a stable, yet evolving platform to foster innovation by complementors.²⁹ The courts' emphasis in *Microsoft* on network effects in the market for operating systems implicitly acknowledged that Microsoft achieved its monopoly in part because of the efficiencies and attendant consumer benefits inherent in a common standard. The courts recognized the costs of fragmenting the Windows standard in their refusal to order a remedy for commingling code. Creating multiple versions of Windows controlled by separate firms risked imposing far greater costs. Some scholars argued that the Baby Bills would have produced compatible operating systems, thus avoiding fragmentation costs.³⁰ But that result would hardly have been preordained. If divestiture succeeded in promoting innovation,³¹ each clone producer may have sought to become the dominant standard. Neither UNIX nor Linux, two existing alternative operating systems, has developed into versions that are fully compatible, despite network effects.³²

Further, savings in enforcement costs would not have compensated for reduced productive efficiency. Microsoft and the Baby Bills presumably would not have had market power, and so they would have had less ability to impair competition. But in the scramble following the decree, a court certainly would have been required to keep an eye on market outcomes. If, for example, the court had mandated that the firms maintain compatibility, enforcing the order would have required the court or its designee to review virtually every change in every version of Windows.

Second, the dissolution of Microsoft's operating system monopoly would not be responsive to the theory of the lawsuit. Microsoft was not held to have acquired its operating system monopoly illegally or to have maintained it by excluding rival operating systems. Instead, it impeded the development of two immature forms of middleware, each beset by its own technical shortcomings, that might someday have undermined its monopoly power in operating systems by weakening the applications barrier to entry. Dismantling Microsoft consequently would not have been responsive to the proven offenses. Such an action would not have furthered the goal of restoring competitive conditions that would have existed but for the proven illegal acts. Worse, it would have deprived Microsoft of much of the value of a monopoly it had lawfully acquired, and it would inevitably have dampened the incentives of future innovators by making the rewards from success more doubtful.

Neither the United States nor any of the nonsettling states pursued horizontal divestiture after the reversal of Judge Jackson's order. Nevertheless, echoes of the proposed remedy and the courts' responses to it can be heard in the proposals of the nonsettling states to require vastly more extensive disclosure of Windows applications programming interfaces (APIs) and communications protocols than those required in the consent decree. As we show below, Judge Kollar-Kotelly approved provisions requiring Microsoft to disclose the APIs that Microsoft Middleware Products use to run on Windows³³ and the communications protocols that Microsoft PC operating systems use to interoperate with Microsoft servers.³⁴ The nonsettling states proposed to require Microsoft to disclose far more detailed information and to offer royalty-free licenses of technical information, sufficient to allow "full interchangeability," ostensibly to prevent Microsoft from selectively disclosing information to protect the Windows monopoly.³⁵ Judge Kollar-Kotelly, however, found these disclosures insufficiently connected to any of the anticompetitive conduct to support the remedy. More important for present purposes, the court found that the proposed disclosures would have enabled the cloning of

Windows.³⁶ This sort of cloning would have approximated the effects of horizontal divestiture, albeit without the licensing of intellectual property. Yet Judge Kollar-Kotelly found that it would have divested Microsoft of the value of its intellectual property and given a windfall to Microsoft's competitors without a corresponding benefit to competition, particularly of the type the decision on the merits contemplated. Indeed, it would have undermined incentives for innovation and actually harmed competition in other respects.³⁷

Rejecting Vertical Divestiture. Judge Jackson ordered divestiture of Microsoft's operating system and applications businesses, coupled with conduct restrictions. This proposal had little to do with the case the government actually presented, which focused on cross-platform middleware, but did echo arguments in the 1996 Netscape white paper that formed the basis for the guiding narrative.³⁸ Apart from its lack of support in the record, the cost of this vertical division would likely have outweighed any benefits to competition. Not surprisingly, the court of appeals reversed the order, and the United States and the settling states abandoned their pursuit of such a remedy. The nonsettling states likewise did not pursue the most radical form of vertical divestiture, but still pursued a remnant of it in their proposal that the court require Microsoft to open-source Internet Explorer (IE) and to port the Microsoft Office suite for rival operating systems.

Judge Jackson's decree would have broken Microsoft into an applications business (Apps. Co.) and an operating systems business (OS Co.),³⁹ which would have remained subject to conduct restrictions for a time.⁴⁰ Vertical divestiture along these lines would likely have reduced both productive and allocative efficiency, and imposed significant costs of supervision. The fact that software firms that lack market power are often integrated vertically suggests that production of complementary software through an integrated enterprise generates productive efficiencies. As we have explained, the line between the operating system and applications is permeable. Annabelle Gawer and Michael Cusumano emphasize the multitude of variables that affect critical choices by platform leaders and "wannabes" about the "scope of the firm," choices that can affect the health of the entire industry.⁴¹ The court of appeals recognized in its discussion of tying that much of the innovation in platform software takes the form of adding new functionality that previously existed as separate programs. The OS Co. would have been unable to innovate in important ways. Divestiture would also have diminished

human capital by placing personnel with broad expertise in one part of the business or the other, and it would have raised challenging corporate finance problems.⁴²

Vertical divestiture would also have likely raised prices. It would have left the Windows monopoly intact as a separate profit center from the leading applications, giving each firm an incentive to maximize profits independently. Economic theory predicts that double marginalization, in which vertically related monopolies each set marginal revenue equal to marginal cost, leads to lower output and higher prices than would prevail under vertical integration.⁴³ Judge Jackson found that Microsoft may not have been charging the short-run profit-maximizing price, but instead may have been pursuing a low-price strategy in the sale of its products generally and Windows specifically.⁴⁴ If the divested companies adopted a conventional profit-maximizing strategy for their products, the resulting increase in the costs to consumers could have been dramatic.⁴⁵

The decree would also have involved significant costs of supervision. The decree imposed a confusing set of restrictions on the dealings between the OS Co. and the Apps. Co. that would have remained in effect for the duration of the final judgment⁴⁶ and would likely have required frequent judicial interpretation. The costly regulatory remedy in *AT&T* loomed as an unhappy precedent. This is not to say that a remedy that requires judicial monitoring should be rejected for that reason. A pure conduct remedy requires it, and yet we argue that just such relief was appropriate in *Microsoft*. But the dependence of vertical divestiture on conduct relief was inconsistent with one of the primary justifications for structural remedies—that they do not require courts to act as regulators.

These costs would have outweighed any competitive benefits of vertical divestiture. The government's expert at the remedy stage, Carl Shapiro, acknowledged that divestiture might permit double marginalization, but argued that it would also lower entry barriers in the operating system market. Consequently, the likelihood of increased prices from double marginalization was outweighed by the prospect of increased competition and innovation from the Mac and Linux operating systems.⁴⁷ But, as David McGowan has pointed out, the fragmentation of the Linux standard casts doubt on Shapiro's scenario, and the track record of public antitrust actions in other computer markets is not encouraging.⁴⁸

The government also argued that Microsoft's Office suite might develop into a platform competitor of Windows by exposing APIs, and that Linux could become a serious competitor to Windows if Office were

ported to it. According to the government, neither form of competition was likely to evolve unless the ownership of Office was severed from the ownership of Windows, because an integrated Microsoft had no incentive to transform Office into a platform competitor or to allow it to strengthen the market position of a rival. But the notion that Apps Co. would pursue a platform strategy for Office was speculative. Producers of other dominant applications have not attempted to turn them into rival platforms.⁴⁹ The claim that an Apps Co. would likely have ported Office to minor operating systems, particularly Linux, was also not supported by the record.⁵⁰ The applications entry barrier that protects Microsoft's monopoly exists because independent software vendors (ISVs) have little incentive to port applications to unpopular operating systems; that condition would not have changed simply because a separate company owned Office.⁵¹ The Apps Co. probably would have found it more profitable to invest in enhancing Office for Windows or in developing other applications for the Windows platform.⁵² In any event, according to Judge Jackson's account of the applications barrier to entry, even if Office were ported to Linux, the change would not likely have an appreciable impact on the popularity of Linux. The court found that Microsoft's monopoly power was protected by an entry barrier built of seventy thousand applications, and that the next most popular operating system supported twelve thousand applications. The porting of a single application to Linux would not reduce the barrier appreciably, any more than has the porting of Office to the Mac OS.⁵³

This disjuncture between the evidence and the proposed divestiture is in part a function of the failure of the trial court to hold an evidentiary hearing on relief. The court of appeals, in reversing the decree, pointed out the factual disputes about "the feasibility of dividing Microsoft, the likely impact on consumers, and the effect of divestiture on shareholders"⁵⁴ that Judge Jackson brushed aside by his unsupported adoption of the plaintiff's proposed decree.⁵⁵ For example, Microsoft offered to show that the vertical divestiture would raise software prices, impede innovation, and greatly reduce shareholder wealth.⁵⁶ But the shortcomings of proof went beyond the denial of due process at the remedial phase. The record on liability was closed; no amount of procedure after the fact could have corrected the failure of proof at trial to establish the requisite causal link between the acts found unlawful and a reduction in competition that would have justified structural relief. As we noted, the Office software suite was critical to the theory of the breakup plan, yet it was all but ignored during the trial on liability. That failure could not have been cured in a remedial phase.

The United States and the settling states abandoned the proposal for vertical divestiture following the reversal of Judge Jackson's remedial order. The nonsettling states, however, continued to press for a version of the remedy, asking that Microsoft be ordered to make IE open source by granting a royalty-free license to all of its browsing source code and to auction the source code for Office.⁵⁷ In a decision affirmed by the appellate court,⁵⁸ however, Judge Kollar-Kotelly recognized the structural character of the proposals and concluded that the plaintiffs had failed to establish the causal connection between the liability findings and the proposed remedies required by the court of appeals.⁵⁹ The judge observed that "[n]either 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."⁶⁰ The court noted especially that the proposals were not addressed directly to the theory of liability in the case, because they did not seek to remove obstacles to the evolution of middleware that would allow developers to write cross-platform applications and thus undermine the applications barrier to entry. Instead, the proposals aimed to benefit rival operating system producers like Apple and Linux, a very different goal.⁶¹

Conduct Remedies

Conduct remedies impose lower costs and provide greater benefits than structural remedies in cases, like *Microsoft*, in which a firm that has acquired monopoly power lawfully is alleged to have maintained it by specific actions. Conduct remedies are less costly because structural remedies impose the enormous direct and indirect costs of divestiture without avoiding the costs of judicial supervision associated with conduct remedies. They are also likely to be more effective. The track record of courts attempting structural remedies in public monopolization cases has been abysmal, and the proposals for structural remedies in *Microsoft* were ill suited to the conduct at issue. Conduct remedies, of course, involve challenges of their own, but they can be made effective if courts remain cognizant of the market's self-correcting capacity. Properly designed conduct remedies can reinforce the market forces that constantly tear at monopolies.

Judge Jackson believed that conduct relief would be inadequate because Microsoft had refused "to accept the notion that it broke the law or accede to an order amending its conduct"⁶² and "ha[d] proved untrustworthy in the past."⁶³ But Microsoft's determination to appeal

remedial orders did not imply that it would disobey them once they became final.⁶⁴ The court, in any event, had ample powers to assure compliance, as Judge Kollar-Kotelly emphasized in retaining jurisdiction over the eventual consent decree. As our discussion throughout this chapter shows, Microsoft has proven generally compliant in the remedial phase.

Just as in choosing between structural and conduct relief, the objective in choosing the content of a conduct remedy is to maximize net expected social benefits. A conduct remedy, therefore, should actually constrain conduct, but without imposing avoidable social costs. A conduct remedy should “restore competition” in the relevant sense of removing obstacles to the self-correcting forces of the market, but this does not mean that a textbook example of perfect competition would emerge were illegal activity to cease.⁶⁵ The market for operating systems is characterized by economies of scale in consumption—network effects—and in production,⁶⁶ which push the market toward a single, if temporary, dominant supplier regardless of anticompetitive conduct. Indeed, Judge Jackson recognized this characteristic when he concluded that Microsoft’s product initially “became the predominant operating system” through no culpable conduct.⁶⁷ The objective of a conduct remedy, therefore, is to restore this competition for the market between the Windows API set and rival middleware. Judge Jackson did find that “Microsoft has retarded, and *perhaps altogether extinguished*,” platform competition from Navigator and Java,⁶⁸ suggesting that the market is now locked in to the Microsoft standard. Indeed, some five years after his decision, he observed ruefully, “Microsoft has won the browser war in the United States.”⁶⁹ But lock-in, as we have explained, is not permanent.⁷⁰

The government sought only conduct relief in its original complaint. It asked the court to enjoin Microsoft from engaging in a number of acts: conditioning the licensing of Windows on licensing the browser;⁷¹ requiring any firm not to promote other browsers or “software products” or “to do so on any disadvantageous, restrictive or exclusionary terms”;⁷² retaliating against any firm that refused to distribute Microsoft’s browser or other software;⁷³ and preventing original equipment manufacturers (OEMs) from modifying the boot-up sequence of Windows to launch competing browsers or other software in addition to or in place of Microsoft’s products “so long as such addition or substitution does not materially impair the performance of such Microsoft operating system product.”⁷⁴ The order proposed by the government would have required Microsoft, for three years, if it included IE with Windows, also

to include Netscape's browser and to allow OEMs 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."⁷⁵ Finally, it would have prohibited Microsoft from charging a single price for Windows and IE, unless Microsoft provided OEMs with a reasonable means of deleting the visible means of access to IE and offered them a discount equal to the cost of deletion.⁷⁶

The final judgments resemble the relief sought in the complaint in some respects, but depart from it in other ways to fit the findings and theory of liability. In reviewing these provisions and the proposals for further relief, Judge Kollar-Kotelly took as her guide the court of appeals' instruction that the "remedy imposed should be carefully 'tailored to fit the wrong creating the occasion for the remedy.'"⁷⁷ In implementing this instruction, the decree and the nonsettling states' final judgment enjoin most of the conduct specifically found to be illegal, leaving the remainder to the discipline of the market. Moreover, the judgments do *not*, except in a few instances, enjoin conduct that was not found illegal. In the following sections, we examine these remedial approaches, contrasting the consent decree's approach with that of Judge Jackson's original remedial order and, when appropriate, with the EC's remedial order.

Regulating Unlawful Conduct. The primary focus of the final judgments, of course, is the conduct the court of appeals held to be illegal.⁷⁸ For example, the decree prohibits the sort of retaliation and threats Microsoft was found to have used to induce firms to stop supporting or developing competing technologies.⁷⁹ It also requires Microsoft to provide Windows to OEMs under uniform licenses, for a single published royalty, thus prohibiting discrimination against OEMs that deal with Microsoft's rivals.⁸⁰ It prohibits Microsoft from forming contracts with ISVs, Internet access providers (IAPs), and Internet content providers (ICPs) that require those firms to refrain from distributing competing software.⁸¹ Most important, the decree addresses the issue of integration by requiring Microsoft to permit OEM licensees to configure the Windows desktop and initial boot sequence in ways that promote competing platform software and to permit OEMs and end users to delete access to Microsoft middleware.⁸² These last provisions respond directly to the central concern that integration of IE deterred OEMs from installing a second browser, because of the possibility of increased support costs and consumer confusion.

Under the decree, Microsoft must provide the means for deletion of any Microsoft Middleware Product.⁸³ Importantly, however, this category is limited to specific products, including IE and Microsoft Media Player.⁸⁴ Moreover, Microsoft need only allow deletion in the sense of removing icons, menu items, and the like, and disabling automatic launches.⁸⁵ This requirement resembles the relief originally sought by the government, which would have prohibited bundling unless OEMs were permitted to delete the means of access to IE.⁸⁶ Microsoft must also allow OEMs and others to designate a Non-Microsoft Middleware Product to launch when Windows would otherwise launch a Microsoft Middleware Product.⁸⁷ Microsoft may, however, design Windows to invoke its own middleware to connect to a Microsoft server or when the rival's product cannot technically perform the function—the rationale for the court of appeals' approval of the default override.⁸⁸

Judge Kollar-Kotelly rejected the much broader definition of middleware proposed by the states, which would have covered essentially any software that exposed an API that could be ported to more than one operating system. Unlike the separate designations of specific Microsoft and non-Microsoft middleware products in the approved judgments, the nonsettling states' definition encompassed any block of code that exposed an API within any larger software product, including Windows.⁸⁹ Judge Kollar-Kotelly properly rejected this definition on the ground that it failed to identify software that would have significant potential to evolve into a platform that would erode the applications barrier to entry.

How important are these provisions? Although Dell reportedly has begun installing Firefox as the default browser and the only icon on the desktop of PCs it is selling in the UK,⁹⁰ and Hewlett-Packard agreed to add the new Netscape browser on new PCs, few OEMs are taking advantage of their authorization to delete IE in favor of another browser. Nevertheless, Firefox has made some inroads in IE's usage share in 2004 to 2006.⁹¹ One reason OEMs have not chosen to delete IE may be that their primary reason for doing so would be to sell exclusivity on the desktop to a rival producer. Because Firefox is open source, it cannot afford to pay for desktop placement, much less bid for exclusivity; it has sought to obtain OEM bundling on the strength of its security and its compliance with Internet standards. It may be that bundling will become less and less important as the process of downloading becomes faster and easier: the Firefox browser achieved more than 100 million downloads in its first year.⁹²

Notably absent from the judgments is a requirement that Microsoft charge a lower license fee to OEMs that delete access to Microsoft

middleware. Judge Jackson's remedial order had required Microsoft to provide a discount to OEMs that deleted access to Microsoft middleware calculated on the basis of "the ratio of the number of amount in bytes of binary code of (a) the Middleware Product as distributed separately from a Windows Operating System Product to (b) the applicable version of Windows."⁹³ This provision disappeared from the OEM-flexibility provisions in the negotiation of the consent decree, for good reason. It is not clear that a proven violation would justify any discount. Even the European Commission order requiring Microsoft to market a version of Windows without the Media Player does not explicitly require the unbundled version to be sold at a discount, though it does prevent Microsoft from discounting the bundled version.⁹⁴ And assuming some discount could be justified, the provision Judge Jackson imposed was completely arbitrary: the number of lines of code bears no relationship to the value of the deleted functionality. Such a provision, if it had any effect at all, would certainly have created perverse incentives.

Significantly, the judgments do not address directly all of the conduct found to be illegal. For example, the decree does not address Microsoft's "deception" of ISVs in favor of the Windows-specific implementation of Java. The court of appeals affirmed Judge Kollar-Kotelly's finding that this violation was an isolated instance that had "ceased in accordance with a consent decree into which it had entered in" litigation with Sun Microsystems.⁹⁵ The judgments also do not impose a remedy specifically aimed at the offense of commingling code. A remedy for commingling might have required courts to supervise the redesign of a complex product, assuring deletion of browser-specific code, as the European antitrust authority has done in its *Microsoft* proceeding.⁹⁶

Moreover, had the court adopted the nonsettling states' sweeping definition of middleware, the task might have required supervising the creation of multiple versions of Windows with different combinations of middleware code included or deleted. Judge Kollar-Kotelly justified her refusal to undertake such a task by citing the apparent impracticality of distinguishing middleware and Windows code⁹⁷ and the danger of fragmenting Windows' APIs, on which developers were able to rely. The evidence in the remedies phase "establishe[d] not only that Microsoft's innovation would be stifled by the requirement that it redesign its products, but that the ability of ISVs to innovate would be slowed because of the detrimental effects of the presence in the marketplace of multiple versions of Microsoft's Windows operating system, each with different code and different APIs."⁹⁸ All of these costs would come with no benefit because the theory of anticompetitive effect rested on the supposed

confusion of users, not ISVs, at the presence of two browsers. Deletion of visible means of access would address that confusion. The court of appeals agreed that the decree's approach was sufficient in "reducing the costs an OEM might face in having to support multiple internet browsers," thus thwarting "Microsoft's efforts to reduce software developers' interest in writing to the [APIs] exposed by any operating system other than Windows," all "without intruding itself into the design and engineering of the Windows operating system."⁹⁹ Any "accidental invocations" of Microsoft middleware that the underlying code allowed would not raise competitive concerns.

More important, the court of appeals shared Judge Kollar-Kotelly's solicitude for preserving the Microsoft API set. The court of appeals in its 2001 decision had rejected Microsoft's argument that preserving the integrity of its API set justified its exclusive dealing contracts with IAPs. In that context, the court of appeals refused to accept Microsoft's desire to provide a consistent base of APIs for developers as a procompetitive justification, characterizing it instead as merely a wish to preserve the Microsoft monopoly. This response was striking because, during oral argument, the court had entertained Microsoft's contention that competition to become the standard API set was a legitimate enterprise. In its analysis of the exclusive contracts with IAPs, the court appeared to repudiate this concern. Consequently, Massachusetts contended in its challenge to the consent decree that Judge Kollar-Kotelly had in effect allowed Microsoft to justify its design choices by the need to preserve the very basis of its monopoly—the network effects that created the applications barrier to entry. But the court of appeals responded that it had never held that fragmentation of the API set itself was intrinsically procompetitive, only that artificial means of reinforcing the API set should be enjoined. It might also have noted that the court had pointed to just this concern in its tying analysis. As we suggest in chapter 4, a fair reading of the 2001 opinion endorses the preservation of shared code. In the 2004 opinion, the court explicitly recognized that network effects generate real benefits to consumers that Judge Kollar-Kotelly properly valued in shaping her remedy. Although the fragmentation of the API set would obviously "pose a threat to Microsoft's ability to keep software developers focused upon its APIs, addressing the applications barrier to entry in a manner likely to harm consumers is not self-evidently an appropriate way to remedy an antitrust violation."¹⁰⁰

It is worth noting the critical difference in approach of the European Commission in its decision concerning Microsoft's bundling of its Windows Media Player (WMP) with Windows. Because WMP is

middleware, it was already subject to the provisions of the consent decree in the U.S. case that required Microsoft to allow means for removal of visible means of access. But the European agency found this remedy inadequate because it reinforced the applications barrier to entry by encouraging content providers to encode their products in Microsoft's standard.¹⁰¹ It rejected Microsoft's argument that providing a consistent standard justified preserving the underlying code of WMP, because Microsoft became the standard only by leveraging its monopoly power. Moreover, it rejected Microsoft's proposal to include other media players in Windows along with its own, even though such a remedy would have preserved the consistent standard. Thus, the network effects that the U.S. courts found beneficial to consumers and worth preserving the European Commission found anticompetitive for reinforcing the Microsoft monopoly. The European agency's remedy, therefore, required Microsoft to provide a version of Windows without much of the WMP code, particularly the files supporting the Microsoft media format.¹⁰²

Ian Ayres and Barry Nalebuff argue that the Commission's remedy is warranted, but should have been combined with Microsoft's proposed must-carry requirement.¹⁰³ They argue that the goal of the remedy should be to assure that a critical mass of users do not predictably have access to the WMP's code to preserve the incentive of media content providers to encode their content in other formats. If WMP remained on all machines, "[c]ontent will only be encoded in WMP format. Microsoft will have a virtuous circle between its player and digitized content. Rival players may hang on, but only if Microsoft deigns to license its decoder. Microsoft will make all the rules."¹⁰⁴ Requiring Microsoft to offer a stripped version of Windows would prevent this outcome because, to the extent anyone bought it, at least some users would have only non-Microsoft media players.

This approach to remedies is at odds with the U.S. courts' principle of fostering an unbiased choice among standards without imposing restrictions that needlessly harm consumers.¹⁰⁵ It may well be that no rational consumer would order a version of Windows with less functionality if the price were the same as the bundled version. But Ayres and Nalebuff suggest the price may not be the same because suppliers of rival media players can pay OEMs to designate them as the default player; Microsoft cannot respond in kind because the pricing provision of the European Commission order forbids them from offering a discount to induce buyers to take the Windows/WMP bundle. Ayres and Nalebuff applaud this result, but it only makes clear how the interests of consumers and OEMs may diverge, especially under a restrictive court

order. If the decree has any effect, it will be because OEMs have been paid to present consumers with a biased, limited choice of players. Fortunately, however, it seems unlikely to have much effect; neither OEMs nor users have shown interest in the stripped version of Windows XP. Nor has there been a trend toward dominance by the WMP's encoding standard, and for good reason: content providers have every incentive to ensure they do not become dependent on a monopolized standard.¹⁰⁶

Regulating Lawful Conduct. The flip side of Judge Kollar-Kotelly's focused approach to relief aimed at conduct held illegal was her refusal to prohibit most instances of conduct that was not found illegal. One example is her treatment of Judge Jackson's vivid findings of "bad" conduct by Microsoft that had injured competitors but did not support the surviving liability holdings. These included, for example, the withholding of technical information from Netscape after the June 21, 1995, meeting.¹⁰⁷ The nonsettling plaintiffs urged that these and subsequent bad acts justified requiring Microsoft to support industry standards to ensure interoperability with rivals. Judge Kollar-Kotelly rejected these contentions on the ground that the conduct was insufficiently related to any liability findings.¹⁰⁸ Similarly, she frequently referred to the court of appeals' approval of certain types of conduct in rejecting broader relief. For example, the appellate court's approval of Microsoft's development of an incompatible form of Java contradicted the plaintiffs' proposal to require Microsoft to support industry standards.¹⁰⁹ On similar grounds, she refused to prohibit contractual tying in Windows licenses, noting that the court of appeals had reversed the tying claim, and the government had not pursued it on remand.

Judge Kollar-Kotelly also allowed Microsoft to enter into productive arrangements that might have an indirectly exclusionary effect. Thus, though the decree requires Microsoft to establish uniform license fees, it allows Microsoft to enter into nondiscriminatory market development allowance agreements with OEMs, specifically because they give OEMs "an attractive deal" and may be procompetitive.¹¹⁰ Similarly, Judge Kollar-Kotelly qualified the decree's prohibition of retaliation against an OEM for promoting another supplier's products with a provision permitting Microsoft to pay OEMs a consideration for promotional services. She explained that this proviso means Microsoft can "provide compensation for OEM action which promotes or supports Microsoft products, but Microsoft cannot withhold . . . consideration based upon OEM action which tends to favor non-Microsoft products."¹¹¹ This "hairsplitting" was necessary because the court of appeals had

condemned only “conditioning of the receipt of consideration upon some degree of exclusivity”¹¹² and had refused to condemn “offering [a] product at an attractive price,” including by making side payments.¹¹³ The evidence presented in the remedies phase had confirmed that compensating OEMs for specific support services was “obviously beneficial.”¹¹⁴ The court of appeals affirmed, reasoning that a market development discount would offer OEMs only a choice between Microsoft’s discount and rival middleware.¹¹⁵ Analogously, the judgments prohibit only contracts with IAPs and ICPs that contain exclusivity provisions. Unlike Judge Jackson’s remedial order, they allow Microsoft to exchange placement of icons in return for agreements to promote Microsoft products. Judge Kollar-Kotelly recognized that a decree should not prevent Microsoft from forming relationships that provide better services to consumers.¹¹⁶

Nevertheless, the final judgments do regulate lawful conduct when necessary “to foster competition in the monopolized market in a manner consistent with the theory of liability in this case.”¹¹⁷ Thus, the judgments apply to “middleware,” a category that encompasses far more than browsers and Java, the types of middleware that were the subject of the litigation.¹¹⁸ Moreover, the remedy includes mandatory disclosures of APIs, communications protocols, and technical information necessary to ensure interoperation with third-party software and with rival server operating systems, which the court found to be the “functional equivalent” of middleware platforms.¹¹⁹ Pursuant to this latter requirement, Microsoft has instituted a protocol-licensing program. But Judge Kollar-Kotelly rejected the more sweeping regulations of lawful conduct proposed by the nonsettling states. For example, the plaintiffs sought far more extensive disclosures to ensure interoperability—much as the European Commission *Microsoft* decision has required.¹²⁰ Judge Kollar-Kotelly reasoned, however, that the proposed disclosures went beyond what was necessary to remove barriers to platform threats, the theory of the government’s case on liability, and might have allowed cloning of Windows. She also rejected the proposal that the interoperability requirements be extended to handheld devices, as had Judge Jackson’s remedial order.

Enforcement Mechanisms. Because the nonsettling states were granted slightly more extensive relief than that contained in the consent decree, Microsoft was eventually subjected to two sets of remedies. The United States and the settling states, called the New York Group, participated in the consent decree; the nonsettling states, called the California Group,

received a separate judgment. Although the remedies are quite similar, there are a few differences in the prohibited conduct. For example, under the nonsettling states' remedy, Microsoft must permit OEMs to configure the initial boot sequence to allow a broader category of non-Microsoft middleware to launch and to insert their own IAP offers¹²¹ without meeting Microsoft's technical restrictions.¹²² In addition, the nonsettling states' remedy prohibits not only retaliation against OEMs, ISVs, and independent hardware vendors (IHVs), but also *threats* of retaliation.¹²³

But the two decrees differ mainly in their enforcement mechanisms. Enforcement was a contentious issue because it posed both difficult technical questions and significant risks of damage to Microsoft. The dangers are evident in Judge Jackson's enforcement provision, which would have required Microsoft to provide OEMs, ISVs, and IHVs access to a secure facility in which they could "study, interrogate and interact with relevant and necessary portions of the source code and any related documentation of Microsoft Platform Software for the sole purpose of enabling their products to interoperate effectively with Microsoft Platform Software."¹²⁴ This approach to compliance disappeared during the negotiation of the consent decree, presumably because it raised obvious risks that the rivals would misappropriate Microsoft's intellectual property. The consent decree seeks to achieve compatibility and yet avoid this danger by relying on a three-member Technical Committee (TC) composed of disinterested software experts based at Microsoft's headquarters to monitor Microsoft's compliance with the decree.¹²⁵ The TC can receive complaints from a compliance officer appointed by Microsoft or from either the plaintiffs or third parties. In investigating and resolving the complaints, the TC has access to Microsoft source code and can make requests for information from the company. If the TC finds the complaint meritorious, it informs Microsoft and the plaintiffs, who presumably could ask the district court for enforcement if Microsoft did not correct the problem. The states' remedy, in contrast, jettisons the TC and instead requires Microsoft to appoint a compliance committee of its board of directors, which in turn is to hire a compliance officer who is to monitor compliance directly and report any evidence of a violation to the plaintiffs.¹²⁶

In the implementation of the two judgments, the two sets of plaintiffs have coordinated their activities to minimize conflicting efforts.¹²⁷ For example, the California Group has appointed a technical consultant who works with the TC in reviewing complaints and new versions of Microsoft software to assure compliance. There has been a steady stream

of status reports on compliance. The report of October 2005¹²⁸ indicated that Microsoft was cooperating with the compliance officials and attempting to address issues that arose according to an agreed timetable.

Much of the focus of both compliance programs has been on implementation of the Microsoft Communications Protocol Program (MCP), which requires Microsoft to license protocols for client-to-server communications and to provide supporting technical documentation.¹²⁹ The compliance officials sought to develop for licensees “prototype implementations of each task covered by the MCP,” a project that required Microsoft to respond to numerous issues promptly to facilitate modifications of the technical documentation. In addition, Microsoft undertook a complex and costly “Project Troika” to develop “protocol parsers” that could “help a licensee detect traffic generated by its products that implement MCP protocols that would aid licensees in implementing the protocols” and “to develop an automated validation tool that could be used by Microsoft in conjunction with the parsers to help verify the accuracy and completeness of the technical documentation.”¹³⁰ Because of its complexity and scale, the Troika project has been plagued by delays. In addition to these measures, Microsoft committed to providing five hundred hours of free technical assistance to MCP licensees. Nevertheless, only twenty-three firms had obtained licenses by October 2005, and only half of those had produced products under the program. It is unclear whether the poor showing from the program is because it provides for inadequate disclosure or because it is unnecessary for most firms’ business objectives.¹³¹

By early 2006, enforcement officials were insisting Microsoft devote still more resources to meeting deadlines for responding to issues submitted by the TC pertaining to documentation Microsoft provided to licensees.¹³² By May 2006, the government and Microsoft had concluded that the process of “trying to fix issues identified by the TC one at a time was unlikely, in the foreseeable future, to result in documentation that is satisfactory.”¹³³ The parties agreed that Microsoft instead would rewrite substantial portions of the documentation, taking advantage of what it had learned during the previous several years. But because the rewrite process promised to be lengthy, the parties, with the court’s approval, agreed to extend the term of the final judgments related to communications protocol licensing for two years, until November 2009. Microsoft committed to make the then-current and future protocols available for license through 2012, and indicated its intent to continue to document and license future protocols after 2012 on a voluntary basis.¹³⁴

The October 2005 report also focused on the OEM and end-user flexibility provisions of the final judgments. Shortly after the entry of the final judgments, Microsoft created a feature of Windows XP called Set Program Access and Defaults to facilitate disabling access to Microsoft middleware and setting other programs as defaults. Compliance efforts have sought to improve this feature. In response to the plaintiffs' concerns, Microsoft modified Windows to remove more shortcuts to a Microsoft middleware product that an OEM or end user "deletes" by disabling access, and to replace the IE icon with the default browser icon when the OEM or end user sets a default browser other than IE.¹³⁵ In addition, the plaintiffs have pressed for changes to this feature in Windows Vista, the successor to Windows XP to be released in 2007, that would allow each user of a computer to set a different combination of choices for access and defaults.¹³⁶ Microsoft has also provided additional information to ISVs so that they can better configure their products to register properly as defaults in Windows. Here again, the program's impact is unclear. OEMs have not deleted access to any Microsoft middleware, and most likely few end users have deleted access either. Instead, they install rival middleware and use it together with Microsoft middleware, as they have always been able to do.¹³⁷

The October 2005 report and a supplemental report also addressed a trivial but embarrassing incident, in which Microsoft distributed to manufacturers of portable music players a CD containing WMP, but with a stipulation that, if the manufacturer chose to package the CD with its player, it could not also package a competing media player.¹³⁸ After a complaint, Microsoft hastily withdrew the exclusivity term and, in a supplemental report to Judge Kollar-Kotelly, detailed its antitrust compliance efforts.¹³⁹ It described, for example, its program for mandatory education of its executives and employees in the requirements of the final judgments and the antitrust laws. This program involved 580 training sessions all over the world with an enrollment of more than 28,000. In addition, Microsoft created a "DealPoint" system under which antitrust counsel has scrutinized more than 14,000 contracts for compliance with the judgments. It created a parallel system for review of design choices that might come in conflict with the integration provisions. Microsoft's report concluded that "[t]aken together, the business and legal teams form a robust compliance review network that provides broad coverage with respect to ongoing monitoring of the company's obligations under the Final Judgments."¹⁴⁰ These reports suggested that Judge Jackson's perception in 2000 that "Microsoft as it is presently organized and led

is unwilling to accept the notion that it broke the law or accede to an order amending its conduct”¹⁴¹ is no longer justified.

Damage Remedies

The government case prompted a flood of private damage actions by rivals of Microsoft and purchasers of its products. Most of the follow-on cases have now been settled for enormous amounts; none has been litigated to a jury award. We cannot reconstruct all of the considerations that motivated the parties in the negotiations of these settlements, but they certainly included not only the holdings in the government case, but also the constraints that the law imposes on private damage actions. Whether cases settle depends in part on the parties’ evaluations of their respective prospects for success at trial; when those estimates are not too far apart, the parties have an incentive to avoid the costs of trial.¹⁴² The estimates depend on a variety of factors, but the governing law provides the context.¹⁴³

Follow-on cases are common because when a federal enforcer decides to sue, there is probably good evidence of a violation.¹⁴⁴ Moreover, if the federal action produces a judgment, it may preclude relitigation of certain issues in private cases.¹⁴⁵ Nevertheless, a holding of antitrust liability does not necessarily imply that any private actor can recover damages.¹⁴⁶ An array of other doctrines limit the availability and scope of private relief. Recall that the court of appeals recognized that the standard for proof of causation for structural relief was much higher than the standard for proof of conduct remedies or of liability alone.¹⁴⁷ The same point can be made with still greater force concerning private remedies.

First, only a relatively small subset of the holdings in the government case will be strictly binding on the defendant in subsequent private cases under the doctrine of collateral estoppel.¹⁴⁸ Both federal¹⁴⁹ and state¹⁵⁰ courts have rejected broad readings of the preclusive effect of the government case, instead giving collateral estoppel effect only to rulings that were *essential* to support the liability determinations that the D.C. Circuit affirmed.¹⁵¹ Very few of Judge Jackson’s findings and conclusions meet this standard. A state court in one of the indirect purchaser cases gave collateral estoppel effect only to Judge Jackson’s findings on relevant market and monopoly power, the court of appeals’ statements of Microsoft’s specific acts of monopolization, and the bare conclusion that Microsoft maintained its monopoly illegally.¹⁵² As important as these findings were, there remained important elements private plaintiffs

were required to prove to recover treble damages. All private plaintiffs must prove that the offender's actions harmed them in fact,¹⁵³ that they suffered antitrust injury,¹⁵⁴ and that they have antitrust standing.¹⁵⁵ In addition, if the plaintiffs are suing in a class action, they must meet the requirements for class certification. In this section, we examine how these requirements applied to the most important categories of private plaintiffs—Microsoft's rivals, OEMs, and consumers.

The antitrust injury doctrine requires that any alleged harm be “attributable to an anti-competitive aspect of the practice under scrutiny.”¹⁵⁶ The doctrine recognizes that complex business practices—even ones that overstep antitrust prohibitions—have a variety of dimensions that may harm other firms, but not all of the harms are matters of antitrust concern. The doctrine “ensures that the harm claimed by the plaintiff corresponds to the rationale for finding a violation of the antitrust laws in the first place, and it prevents losses that stem from competition from supporting suits by private plaintiffs for either damages or equitable relief.”¹⁵⁷ Thus, the doctrine requires courts, first, to identify how a practice harms competition, and, second, to determine whether the harm to the plaintiff is connected to the reduction in competition.

The most obvious measure of harm to competition is the effect of a practice on price or output.¹⁵⁸ By this measure, a successful cartel's overcharge to the purchaser is obviously antitrust injury because the amount of the overcharge corresponds directly to the output restriction.¹⁵⁹ Exclusionary practices can also impose antitrust injury if, for example, they succeed in reducing output and increasing prices to consumers, either by raising the costs of rivals or by driving them from the market entirely. In such cases, consumers who pay the overcharge suffer antitrust injury, as do the violator's rivals, because the exclusion of their output from the market is the mechanism of the overcharge.¹⁶⁰ But this sort of anti-competitive exclusion must be distinguished from the sort of exclusion inflicted by competition itself, which plainly does not stem from any output restriction. Competitors harmed simply by an increase in output or the maintenance of existing output do not suffer antitrust injury, even if the increase is the result of an unlawful practice.¹⁶¹ If a practice has both procompetitive and anticompetitive effects, the plaintiff's damage theory must disaggregate its harms attributable to those effects, because only the latter type of harm is compensable.¹⁶²

Harm to competition might be defined more broadly than the effect of the practice on price and output. Some have suggested that competition is harmed when a practice interferes with a market process that is necessary to effective competition, or “competition on the merits.”¹⁶³ As

we discuss in chapter 4, for example, the D.C. Circuit in *Microsoft* appeared to endorse such a definition in affirming the holding of monopoly maintenance, even though the government did not present direct proof that Microsoft's conduct actually reinforced its monopoly power.¹⁶⁴ Its "edentulous" standard of causation imposed liability for bad acts rather than for proven effects on competition. We criticized this result because it is extraordinarily difficult to separate harmful from neutral and beneficial practices based on some aspect of their nature that is predicted to lead to an output restriction in the long run.

Predatory pricing illustrates the importance of defining the relevant harm to competition in the analysis of antitrust injury. True predatory pricing harms competition. But because price cutting is the essence of competition, the Supreme Court (as we discuss in chapter 4) has required that the prices be below incremental cost and that the offender be capable of recouping its losses from the predatory campaign.¹⁶⁵ Even if these requirements are met, unsuccessful predation is in general a "boon to consumers."¹⁶⁶ One court has therefore inferred that "the losses inflicted on [the plaintiff] by the pricing are not the stuff of antitrust injury."¹⁶⁷ If, however, one defined harm more broadly to include harm to the competitive process, one might reach a different result. But harm from nonpredatory price cutting is not antitrust injury, even if the defendant is guilty of other antitrust violations.

In addition to suffering antitrust injury, the plaintiff must have antitrust standing. The doctrine of antitrust standing bars recovery for harms that are unduly remote, or speculative, or for which there is a class of plaintiffs better situated to bring suit.¹⁶⁸ The doctrine's most important implication is that indirect purchasers cannot sue for overcharges under the federal antitrust laws. The Supreme Court reasoned in *Illinois Brick*¹⁶⁹ that direct purchasers, who pay the initial overcharge, should have the full right to sue, because dividing the right to sue for the overcharge among the various levels of distribution would undermine the efficiency of antitrust enforcement. Many states, however, have authorized indirect purchaser suits under state antitrust or consumer protection laws, and the Supreme Court held in *ARC America*¹⁷⁰ that federal antitrust law does not preempt these laws.

Allegations of harm from reduced innovation—a critical issue in *Microsoft*—pose problems of both antitrust injury and antitrust standing. One court has held that harm to innovation can cause antitrust injury, but its effects would be borne by OEMs as well as consumers, so recognizing consumer standing would pose at least as many problems of apportionment of harm as consumer standing to sue for an overcharge.¹⁷¹

This result makes sense under both doctrines. Suppressing an innovation by anticompetitive means could be tantamount to exclusion of a more efficient competitor. But perhaps even more than predatory pricing, harm to innovation is easily claimed but difficult for courts to identify and usually impossible to quantify. Because economists do not have a determinate theory of the process of innovation,¹⁷² claims of harm to innovation are intrinsically more speculative than other forms of asserted monopolization.¹⁷³ If a court were to condemn a practice as tending to harm innovation, the problems of sorting out and proving antitrust harm would be insurmountable.

Competitors. According to Judge Jackson's findings, the competitors most clearly affected by Microsoft's conduct beginning in 1995 were Netscape and Sun Microsystems. We focus here on Netscape, though the issues are similar for both firms. For Netscape to have recovered antitrust damages, it was required to show that it suffered lost profits as a result of illegal exclusionary activity. The courts agreed that some of Microsoft's actions in constricting the various channels of browser distribution illegally hampered the development of Navigator, both limiting its usage share among browsers and denying it the opportunity to evolve into a platform competitor. But the court of appeals, and to a lesser extent Judge Jackson,¹⁷⁴ also held that Microsoft limited Navigator's usage share by lawful actions, particularly product innovation and price cutting. For Netscape to recover, it would have been required to segregate the illegal causal factors from the others.

The most ambitious theory of damages that Netscape might have offered would have been its lost profits as a successful platform competitor of Microsoft. Indeed, if Bill Gates's fear that Netscape would "commoditize the underlying operating system" had come to pass, the browser would be the dominant platform to which applications would be written. Judge Jackson held that Microsoft had at least delayed the possible development of the browser by persuading developers that Netscape would not be a standard to which applications could be written.¹⁷⁵ In principle, Netscape could have proven that it would have become a platform competitor. If so, it might have claimed the difference between its profits as a platform competitor and its actual profits.

A damage model based on this theory, however, would have faced a number of practical difficulties. First, Netscape would have had to identify the source of platform profits and provide a reasonable method of estimating their magnitude. Microsoft earns profits as a platform supplier principally by licensing Windows to OEMs and consumers in

exchange for royalty payments; ISVs are not charged for writing to the Windows APIs. But browsers are distributed free. After Navigator supplanted Windows as the monopoly platform, Microsoft presumably would have continued to provide IE for free, so Netscape would have been unable to charge for Navigator. Netscape might have claimed that it could have earned revenue from other sources. Even though the browser did not become a platform, Netscape's browser business earned revenue from sources such as Web sites. But those sources might not have been identical after Navigator became the dominant platform, and certainly the revenue streams would have been greater. As the sources and amounts of revenue become hypothetical, damage estimates become fatally speculative.

Second, we can assume that Netscape would have profited somehow from becoming the monopoly platform, but the measure of its compensable loss would not be its forgone profits. If a monopolist *merely* prevents another firm from taking over its monopoly, it does not harm consumers measurably because they pay a monopoly price in any event.¹⁷⁶ If consumers suffer no injury, then the excluded rival does not suffer antitrust injury. In *Microsoft*, however, the government's theory was that the second monopoly, having won in the process of competition for the market, might be *better* for consumers, providing a cheaper or superior product. A better monopoly implies greater consumer surplus, but also greater monopoly profits. In such circumstances, the foreclosed monopolist's antitrust injury would be the *difference* between the monopoly profits earned by the actual monopolist and the greater monopoly profits it would have earned from the better monopoly. Such a calculation would be all but impossible to make, depending as it does on hypothetical cost and demand functions.

In addition, Netscape would be entitled to incremental monopoly profits for only the period during which it would have held the monopoly. Substantial additional evidence would be required to locate the beginning of that period because Judge Jackson was unable to find that Netscape would have actually become an effective platform competitor by the time the case was decided.¹⁷⁷ Netscape would certainly have been met by the testimony of its CEO, James Barksdale, that the company never believed Navigator could displace Windows as a platform.¹⁷⁸ Further complicating matters, any theory of damages would have to account for the effects of lawful competition in delaying the development of the Netscape platform. If Microsoft's lawful competition alone had caused a drop in usage share, it presumably would have delayed evolution of Navigator into a platform. All of the causal factors would have had to

be segregated and supported by evidence that met the appropriate standard of proof. Moreover, the end of the damage period would have been difficult to determine. In a market of rapid technological progress freed of exclusionary conduct, Netscape would likely have been supplanted as the monopolist at some point, and that point cannot be estimated with any rigor.

If Netscape were unable to prove that it would have become the standard platform, it could still perhaps have argued that it lost profits as a result of its drop in usage share. A loss in usage share is not by itself anticompetitive and so would not necessarily constitute antitrust injury standing alone. But one might argue that this decline is linked to a reduction in consumer welfare, perhaps because it reflects a decreased probability of new platform competition. In chapter 4, we refute this argument, but even if it were accepted, Netscape would have to segregate the effects of Microsoft's legal and illegal competitive actions in calculating damages; assuming usage share is correlated with profits and welfare loss, only usage share lost as a result of anticompetitive conduct represents compensable injury.

This task would not necessarily be insurmountable, however, as Jonathan Tomlin has suggested.¹⁷⁹ Economists for the government, for example, attempted to show the effect of Microsoft's restrictions on IAPs by comparing the reduction in Netscape's usage share among restricted IAPs with the reduction among unrestricted IAPs. The economists attributed the reduction in usage share among unrestricted IAPs to Microsoft's enhancements in IE's quality; the difference between this amount and the increase in usage share among restricted IAPs, they reasoned, was the result of the restrictive terms.¹⁸⁰ Microsoft's economist in the remedies proceeding, Kevin Murphy, however, argued that the appropriate control group included IAPs that signed agreements with Microsoft that provided lawful free licenses for IE and the IE Access Kit. His analysis of hit data showed that the reduction in Netscape's usage share among these IAPs, during the eighteen months the restrictions were in effect, did not differ significantly from the reduction in usage share among IAPs that signed restrictive terms.¹⁸¹ The government's economists also argued that the contractual and technological binding of IE to Windows reduced, to an undetermined extent, Netscape's usage share because OEMs were unwilling to install two browsers and it was difficult to install only Netscape's browser. Murphy, however, argued that IT professionals, who could acquire and install Netscape's browser at very low cost, provided a control group that would be unaffected by the OEM restrictions (although not by the end-user restrictions). He found

that the changes in usage share among this group were essentially the same as the changes among other users.¹⁸²

No court ever resolved these issues. Indeed, Judge Kollar-Kotelly found that the Microsoft economist's analysis was inconsistent with the court of appeals' affirmance of Judge Jackson's findings on usage share, and thus not entitled to much weight. It was this consideration that, in all likelihood, led Microsoft to settle the Netscape lawsuit. A court may have viewed it as anomalous to find that the primary target of Microsoft's actions suffered no compensable harm. Yet, the antitrust injury principle and the differing standards for proof of remedy, which the court of appeals itself emphasized, would have greatly complicated Netscape's task on the merits.

OEMs. So far as we have been able to find, only two of the major OEMs—IBM and Gateway—have sued Microsoft for damages based on the allegations in the government case.¹⁸³ Although there may be many reasons that more OEMs have not sued, one reason may be the difficulties of proving an overcharge, given the evidence that emerged in the government case. To prove an overcharge, an OEM would have to demonstrate that Microsoft's illegal actions caused it to pay a higher monopoly price than it would otherwise have paid. Only the *increment* in the monopoly price attributable to illegal activity constitutes a compensable overcharge.¹⁸⁴ The result in the government case offered little support for such a theory. Judge Jackson held, and the court of appeals affirmed, that Microsoft had monopoly power in the market for Intel-compatible operating systems, as evidenced by its market share and the existence of the applications barrier to entry,¹⁸⁵ and that it had maintained that power in part by exclusionary actions against Netscape and Java¹⁸⁶ and in part by lawful conduct.¹⁸⁷ The courts did not find, nor did the government ever allege, that Microsoft *acquired* its monopoly power unlawfully. Indeed, in earlier litigation, the government had argued that Microsoft gained its initial lead in the operating system market mainly by luck, and that the positive feedback associated with network effects caused the market to tip in its direction.¹⁸⁸

Moreover, Judge Jackson did not hold that Microsoft ever charged a profit-maximizing monopoly price for Windows.¹⁸⁹ He held instead that Microsoft *could* have charged a supracompetitive price,¹⁹⁰ but that it may have chosen to “keep the price of Windows low today” to spur the growth of the operating system market;¹⁹¹ or it may have exercised some of its monopoly power by offering lower prices to OEMs who agreed to restrictive terms.¹⁹² Moreover, as we show in chapter 4, it is

a fair reading of Judge Jackson's opinion that Microsoft charged either nothing or a negative price for IE. The trial court did hold that some of Microsoft's pricing decisions were consistent with monopoly power.¹⁹³ For example, Microsoft raised the price of an outdated version of Windows upon introducing Windows 98;¹⁹⁴ it priced an upgrade of Windows 98 at \$89, even though an internal study had found that \$49 would have been profitable;¹⁹⁵ and it charged different prices to different OEMs.¹⁹⁶ But these findings related only to whether Microsoft *had* monopoly power, not to whether the actions themselves were unlawful or constituted any sort of overcharge.

Thus, far from holding that Microsoft imposed an overcharge, *United States v. Microsoft* actually suggests that prices of the operating system and the browser were lower, at least in the short run, because of the illegal conduct alleged in the government's case. As the government's expert witness testified, "Microsoft has used its power to protect its operating system's monopoly from a threat that might not have materialized by this time anyway. And, in doing that, it has given away a lot of things."¹⁹⁷ This conclusion does not mean that consumers were unequivocally better off because of Microsoft's actions during the browser wars. Judge Jackson suggested they may have suffered a loss in system performance in being forced to take IE,¹⁹⁸ and may have been hurt by reduced innovation in platform software. But these harms, if they occurred, would be difficult to translate into an overcharge.

For OEMs to prove an overcharge, therefore, they would have had to take one of two paths. First, they could have tried to prove that Microsoft gained monopoly power illegally before 1995. As we have seen, the government never made such an allegation, and even indicated in its settlement of an earlier case that Microsoft had not illegally acquired its monopoly. In the *Caldera* litigation, however, a private plaintiff contended that Microsoft had acquired its operating system monopoly illegally by excluding DR-DOS, a competitor of its earlier MS-DOS operating system.¹⁹⁹ If Microsoft did acquire its monopoly illegally, then OEMs could allege that the present price of Windows includes an overcharge in relation to the price that would have prevailed absent the much earlier monopolistic conduct.

Such a task would be complicated. Judge Jackson found that Microsoft was charging less than it could, in part to spur growth of the PC market.²⁰⁰ This finding suggests that the price of Windows has not necessarily been higher than the price of a hypothetical operating system that might have emerged absent Microsoft's actions. Given the winner-take-most character of the market, which the courts recognized, any

operating system that succeeded would likely have gained a measure of monopoly power. If so, it might well have charged a higher price than Microsoft has charged for Windows. Of course, if Microsoft excluded a *better* product, consumers could have suffered harm, even if the price of Windows is no higher than the price of the excluded operating system. The relevant comparison is between quality-adjusted prices. But quality differences for a product that was never allowed to evolve would be impossible to establish.

The second path to proof of an overcharge would lie in Judge Jackson's holding that Microsoft's actions since 1995 have deterred the development of cross-platform technologies that might have eroded the Windows monopoly.²⁰¹ A consumer plaintiff could allege that, absent Microsoft's illegal activities, Netscape and Java would have emerged as a new platform that would have commoditized the underlying operating system. As noted above, however, Judge Jackson refused to hold that a genuine platform competitor would have emerged absent Microsoft's actions.²⁰² The government's economic expert testified that consumers were harmed by Microsoft's discouragement of innovation that threatened the Microsoft monopoly, but added "those effects have only just begun."²⁰³ Similarly, the court of appeals recognized that Microsoft had targeted not "established substitutes," but "nascent threats" that were "merely *potential* substitutes" that might not "actually have developed into viable platform substitutes."²⁰⁴ As we have noted, one court has held that purchasers would have no standing to sue Microsoft for harms to innovation, precisely because any such theory would be speculative.²⁰⁵

There is another complicating factor in proving an overcharge. Judge Jackson suggested that one of the reasons Microsoft did not charge a higher monopoly price was that it exerted its monopoly in part by inducing OEMs to accept restrictive and exclusionary licensing terms.²⁰⁶ OEMs performed many services for Microsoft, some of which were unlawfully exclusionary in Judge Jackson's view and some of which were legitimately competitive.²⁰⁷ Microsoft compensated OEMs for these services in various ways, by offering royalty discounts, in-kind assistance, and marketing allowances.²⁰⁸ Thus, Judge Jackson found that "Microsoft expends a significant portion of its monopoly power, which could otherwise be spent maximizing price, on imposing burdensome restrictions on its customers—and in inducing them to behave in ways—that augment and prolong that monopoly power."²⁰⁹ Models of exclusionary conduct demonstrate that a monopolist may be able to induce customers to accept conditions that perpetuate the monopoly while still

charging some or even all of them the monopoly price.²¹⁰ But the court's observation suggests that Microsoft in fact bought off OEMs by providing discounts off the monopoly price to induce them to participate in an exclusionary arrangement.

Thus, if Microsoft *maintained* its monopoly power illegally after 1995 by restrictions accepted by OEMs, then OEMs might attempt to prove that, but for the restrictions, a middleware competitor would have emerged and driven prices down still further. But in that case, OEMs were one of the primary means by which the monopoly was illegally maintained. OEMs would then have received lower prices to induce them to accept the very conditions that might have deterred the emergence of middleware platform technology. If Microsoft were successful in preventing middleware entry by imposing those OEM restrictions, in theory the compensation that OEMs were paid for participating in that scheme would have to be offset against any overcharge.²¹¹

The compensation in fact was not the same for all OEMs.²¹² For example, Judge Jackson found that "Compaq committed itself to promote Internet Explorer exclusively" and "stopped pre-installing Navigator"²¹³ in return for prices "significantly lower than the prices paid by other OEMs."²¹⁴ By contrast, Gateway and IBM refused to promote or distribute IE exclusively, and at least Gateway paid higher prices for Windows than Compaq.²¹⁵ Judge Jackson calculated that other "OEMs would still pay substantially more than Compaq even if they qualified for all of the royalty reductions listed in Microsoft's Market Development Agreements."²¹⁶ Presumably, the difference in price compensated Compaq for its accession to Microsoft's exclusionary demands and thus reflected the implicit overcharge. But each OEM's situation would be somewhat different.²¹⁷ Significantly, as we have seen, Gateway and IBM are apparently the only major OEMs that have sued Microsoft, and they have won substantial settlements.

Consumers. The most important consumer suits against Microsoft have been the indirect purchaser class actions brought in state courts under state antitrust and consumer protection statutes. Most consumers acquired their copies of Windows already installed on new computer systems, which they purchased from OEMs. To the extent OEMs suffered an overcharge—a complex issue we discussed in the last section—some portion of it may have been passed on to consumers in the form of higher prices of their new computers. Economic theory suggests that direct purchasers will typically pass on some portion of an overcharge, just as they would an excise tax on each unit sold.²¹⁸ According to the widely used

tax-incidence analogy, how much of the overcharge perfectly competitive direct purchasers would pass on depends on the relative elasticities of supply and demand facing the direct purchasers. Consumers have relied on this theory to claim that they paid overcharges as a result of Microsoft's conduct.

As we note earlier in this chapter, consumers who are indirect purchasers are barred from suing under the federal antitrust laws by the *Illinois Brick* rule, but may sue under *Illinois Brick* repealer statutes that allow indirect purchasers to sue in state courts for passed-on overcharges.²¹⁹ Other states' courts have interpreted preexisting antitrust or consumer protection laws to authorize indirect purchaser standing.²²⁰ Consequently, most antitrust violations of national scope are followed by both direct purchaser actions in federal court and by indirect purchaser class actions in the repealer states.²²¹ The *Microsoft* litigation was no exception. As we observe in chapter 2, consumer class actions were filed against Microsoft in most states in the wake of the government's lawsuit. Many of these cases were dismissed on the ground that the state followed the federal rule barring indirect purchaser actions. But many others survived when courts recognized a state right of action.

Virtually all of these cases, like the competitor and direct purchaser cases, have now been settled. Unlike the competitor and direct purchaser cases, however, we do have a body of opinions examining the evidence and theory on which the indirect purchaser cases rested. Because they were class actions, the consumer suits have been required to meet the requirements for class certification under the state counterparts of Federal Rule of Civil Procedure 23. The best evidence of how the state courts understood the plaintiffs' cases is contained in the opinions on the class certification issue.

The most important issue in the certification inquiry is whether class issues predominate over individual issues, thus making class treatment appropriate.²²² This step is critical because if a class is certified, the defendant is virtually forced to settle for a substantial amount to avoid the massive costs of litigation and the risks of facing a jury. If, on the other hand, the court denies certification, the plaintiff will be forced to terminate the litigation because it is impractical for indirect purchaser cases to proceed as individual actions. One might have thought that the certification requirement would impose a significant hurdle in the *Microsoft* indirect purchaser cases. Many state courts, in litigation before the government's suit against Microsoft, had refused to certify indirect purchaser suits as class actions, even when state law allowed the claims, on the grounds that issues specific to the individual plaintiffs,

particularly issues related to the impact of the overcharge on class members, predominated over the issues common to the class, such as liability issues.²²³ In these courts' skeptical view, the complexities of proving whether and by how much the direct purchasers had passed on the overcharge to the plaintiffs would require individualized determinations that would render the class procedure impractical at trial. A minority of courts, however, took a sanguine view of the problems of proving passing on and freely certified indirect purchaser class actions with minimal scrutiny of the theories and evidence by which the plaintiffs proposed to prove classwide impact.²²⁴

The courts in the *Microsoft* indirect purchaser cases broke the pattern, overwhelmingly adopting the sanguine view. Of the fourteen opinions in these cases, three (two in Michigan and one in Maine) denied certification,²²⁵ while eleven granted it.²²⁶ These results are surprising because the *Microsoft* cases presented *greater* problems of proof, in some respects, than earlier indirect purchaser cases. Once certified, the *Microsoft* class actions, like virtually all others, have been settled for enormous sums, little of which has reached the pockets of consumers because of low claims rates. In our view, the certification of these actions did not advance the consumer interest and raised serious questions about the ability of the court system, at least the state courts in which these cases were filed, to make rational determinations affecting antitrust penalties. Given the importance of the certification decision to the outcome of the litigation, the inquiry should have entailed rigorous scrutiny of the questions bearing on certification. For class issues to predominate, there should have been a reasonable basis for the court to conclude that Microsoft imposed a consistent overcharge on OEMs and that the overcharge was passed on in a consistent way. The courts failed to address these issues adequately.

Standards of Certification. In indirect purchaser cases, the issues of the defendant's liability—what the defendant did that was illegal—are typically common to the class; thus, whether the common issues predominate over individual issues at the certification stage normally depends on whether the plaintiffs propose a reasonable basis for proving the fact and amount of damages on a classwide basis. In most of the *Microsoft* certification cases, plaintiffs relied on the testimony of the same expert to show how they planned to prove the effect of Microsoft's monopolistic conduct on the state's consumers on a classwide basis.²²⁷ The expert apparently made substantially the same initial submission in support of certification in all of the cases, outlining methodologies that

he could use to prove damages, but without actually implementing any of the methods or examining data specific to each state.²²⁸ Microsoft offered objections to the methodologies, pointing to complexities in the relevant state market that would make the expert's proposed methods unworkable, and the plaintiff's expert then responded to the objections.

The initial submissions proposed to prove, first, how much Microsoft overcharged OEMs, and, second, how much of the overcharge the OEMs passed on to consumers. Assuming that there would be proof that Microsoft engaged in illegal actions in operating system markets prior to the damage period (for example, involving MS-DOS and early versions of Windows), the expert suggested that an overcharge would be "embedded" in prices at every level of distribution.²²⁹ He identified three theories under which the plaintiffs might prove an overcharge by comparing Microsoft's prices or profit margins with those in "yardstick" markets unaffected by illegal activity.²³⁰

To prove how much of an overcharge the intermediate purchasers passed on to end users, he proposed to estimate the relationship between Microsoft's prices to its customers and the prices paid by end users using "basic economic principles," standard statistical methods, and data that "should be readily available."²³¹ For example, regression analysis could control for other costs of the computer systems in which Microsoft's operating system is installed. Relying on the tax incidence model, he stated that because OEMs are competitive, they would pass on 100 percent of the overcharge. Because end users have no good substitutes for Windows, all would pay higher prices regardless of where they purchased the product. According to the expert, the overcharge for all consumers, regardless of where they purchased their computers, could be estimated with one model.²³² Microsoft challenged these assertions through its own experts, claiming that the plaintiffs' account did not take account of numerous demand, cost, and competitive factors in different locations and at different times that would affect the pass-on rate.²³³ Microsoft also argued that the assumption that the distribution level was perfectly competitive ignored the role of brand names, product differentiation, and high fixed costs in computer manufacture.²³⁴

The overwhelming majority of courts facing the same proposals certified their *Microsoft* class actions, accepting the expert's proposed yardstick measures of proving the overcharge, and the statistical methods of proving passing on.²³⁵ These results are questionable. The courts appear to have underestimated a number of uncertainties about the initial overcharge that, at a minimum, suggested that any overcharge was not

uniform. The courts also appear to have applied an unduly lenient standard in upholding the plaintiffs' proposal to prove the overcharge by classwide proof.

The usual point of contention in an indirect purchaser case is whether the class can establish by classwide proof that direct purchasers passed on the overcharge. In addition, however, uncertainties about the existence and consistency of the initial overcharge can justify the denial of certification in an indirect purchaser case,²³⁶ just as they can in direct purchaser cases.²³⁷ We have already shown in this chapter that the government's *Microsoft* case offered little or no support for a claim of an overcharge, although there was some suggestion that particular OEMs, especially Gateway and Netscape, were disfavored in an effort to exclude Microsoft's rivals. This analysis applies with full force to indirect purchasers. Recognizing this, the indirect purchaser classes did not limit their allegations about Microsoft's illegal actions to the conduct at issue in the government case. Although they continued to allege that the government case supported their arguments, they also alleged that Microsoft's actions against operating system rivals dating back to the late 1980s also caused overcharges.

Since we have not seen the evidence on which the claims of long-past violations were based, we note only that two federal enforcement agencies examined these contentions in the 1990s and chose not to sue, except to challenge the "per user" license requirement for Windows. Our focus, instead, is on the apparent assumption of many of the courts that certified indirect purchaser classes that the government's case actually supported the claim of an overcharge and thus alleviated the plaintiffs' burden in supporting their claims.²³⁸ For example, the Minnesota court, in initially granting certification, claimed that Judge Jackson "specified an amount" of an overcharge, citing the finding that Microsoft charged \$89 for an upgrade of Windows when it could have charged \$49.²³⁹ But this finding did not characterize the difference between \$89 and \$49 as an overcharge attributable to illegal conduct; it was intended to show only that Microsoft had pricing discretion and therefore had monopoly power. Even if the indirect purchaser plaintiffs were able to prove that Microsoft acquired its monopoly illegally by its actions before 1994,²⁴⁰ it would not follow that a supracompetitive price reflected an illegal overcharge. Because of network effects, a single firm would likely have dominated the market for operating systems in any plausible "but for" world.²⁴¹ In any event, the single instance of the exercise of pricing discretion did not show Microsoft was consistently charging a supracompetitive price at all.

A number of the certification decisions noted Judge Jackson's finding that Microsoft's actions "have harmed consumers in ways that are immediate and easily discernible."²⁴² But this holding is also of little relevance to the indirect purchasers' cases. First, it was probably not entitled to collateral estoppel effect because it was not essential to the finding of liability, which was based on a theory of incipient harm.²⁴³ More important, none of the harms identified by Judge Jackson was an overcharge. Judge Jackson suggested that consumers were harmed by an unspecified reduction in innovation—a type of harm the indirect purchaser plaintiffs did not allege.²⁴⁴

In one case, Microsoft attempted to use the government case to support its position, pointing to holdings that some of its conduct, such as providing a free Web browser, benefited consumers.²⁴⁵ As nonparties to the government case, the plaintiffs were not bound by this finding, but it does suggest that the evidence was likely to show that the harm to computer users was not uniform: some consumers who did not want a Web browser might have been injured by receiving a free browser, while those who did want one might have benefited. Nevertheless, the Florida court accepted the expert's response that Microsoft should not be able to offset overcharges on the operating system by its "predatory actions with respect to browsers."²⁴⁶ But, as we explain in chapter 4, the court of appeals opinion made clear that providing a free browser integrated with the operating system was not predatory; only the failure to provide a means of removing IE was harmful, and was so only to consumers who would have wanted to remove the browser. Providing it free with the operating system was a benefit to consumers who wanted it.

Interestingly, none of the courts in the indirect purchaser cases seems to have addressed the implication of the government case that most clearly suggests that harm to consumers was not uniform. As we have seen, Judge Jackson found that Microsoft charged lower prices for Windows to OEMs that agreed to restrictive terms and more to those that did not. Consequently, depending on the state of competition in different areas and at different times in the sales of computers by OEMs, the size of any overcharge likely turned on whether the OEM cooperated with Microsoft with respect to particular arrangements. For whatever reason, this concern never presented an obstacle to certification of the *Microsoft* class actions.

As problematic as the initial overcharge was, only the issue of passing on the overcharge posed a significant problem in the certification decisions. Courts in two states refused to certify *Microsoft* classes, applying

exacting standards of certification.²⁴⁷ In one case, the court found plaintiffs had not “set forth a viable method for proving actual damages on a class-wide basis” as required by state law.²⁴⁸ The court interpreted state law to require the “rigorous analysis” demanded by the “skeptical” view of the problems of passing on, under which certification would be appropriate only if there were a “minimum number of variables involved” and the plaintiff does “more than promise that [the necessary calculation of damages] will be available in the future.”²⁴⁹ All of the other courts, however, certified the indirect purchaser classes, applying what we have called the sanguine view of the problems of proving passing on. The courts were willing to accept the prospect of many individualized issues on the amount of damage to members of the case.²⁵⁰ They characterized Microsoft’s objections to the proposed methodology as a “battle of experts” that could be resolved only by an examination of the merits, which was precluded at the certification stage.²⁵¹ Many courts applied the peculiarly deferential standard that the expert need offer only a method that was not so “insubstantial as to amount to no method at all.”²⁵² Some noted also that if the evidence ultimately did not establish impact by common proof, the class could be decertified at a later stage.²⁵³ There also appeared to be a kind of snowball effect—later cases cited earlier ones as precedent and characterized the contrary decisions as aberrations.²⁵⁴

As we mention earlier, most pre-*Microsoft* indirect purchaser cases had denied certification. In Minnesota, for example, certification was denied in all of the pre-*Microsoft* indirect purchaser cases. The court in the Minnesota *Microsoft* case, however, was able to distinguish those cases by suggesting that the *Microsoft* class was more suited to certification.²⁵⁵ It pointed out that, in the earlier cases, there had been many defendants, products, and transactions; or the products at issue gained value through repackaging at intermediate levels; or buyers had no records of the amount of the product they bought or the price they paid; or the proposed methodologies had never been used before. In the *Microsoft* class action, in contrast, there was a single seller of only two primary products; there were relatively infrequent transactions for each class member, and there were likely to be records of those transactions.²⁵⁶ The court found the plaintiffs’ proposed methods of proof sufficient, declining to resolve the battle of experts at the certification stage.²⁵⁷ More than two years later, after discovery, the court refused to decertify the class, suggesting that the conflicts over the evidence presented issues for the jury.²⁵⁸

The Consumer Interest. The dust has largely settled in the *Microsoft* indirect purchaser litigation. It now seems that many of the certifications in these cases were based on the sanguine view of the problems of proving passing on of an overcharge. Certainly, some aspects of the cases made them better suited to certification than some earlier indirect purchaser suits. These included the existence of a single seller and a relatively small number of intermediate levels of distribution that were generally, though far from perfectly, competitive. The classes were enormous, but the purchases of Microsoft software by each class member were relatively few and probably documented better than most consumer transactions.²⁵⁹ On the other hand, some important aspects of the case seemed to count against certification. The government case strongly suggested that there was no consistent overcharge to OEMs. Proving that OEMs passed on an overcharge consistently would have been difficult because the OEMs incorporated Windows into computers, did not bill for it separately, and had different incentives and policies relating to passing on. Nevertheless, only a very few of the decisions closely analyzed these differences. In general, the decisions were based on bare proposals to use statistical methodologies, not on application of those methodologies to the specific markets in the state. Microsoft's objections based on the specifics of the market were generally met with the response that class certification was not the time to resolve a battle of experts.

Because all of the *Microsoft* indirect purchaser class actions have so far settled without a decision on the merits, we cannot tell definitively if the sanguine courts' deferential approach to certification was warranted. In the abstract, however, a lenient standard makes erroneous grants of certification more likely, while a strict standard makes erroneous denials more likely.²⁶⁰ Which is preferable depends on the ex ante estimate of the magnitude of the costs associated with the two types of error. Sanguine courts estimate that the costs of an erroneous denial are greater, first, because a denial ends the action, while a grant is only provisional, and, second, because an erroneous denial thwarts the substantive law's policy, while an erroneous grant only defers to a later time the proper termination of the action. Consequently, these courts suggest that the lenient certification standard is appropriate.

Robert Bone and David Evans have objected to this reasoning. They point out, first, that virtually all cases settle soon after certification because of economic pressures on the defendant.²⁶¹ Where the risk of an erroneous finding of liability is significant, a defendant has strong incentives to settle even an unmeritorious lawsuit. Courts, moreover, only very rarely decertify a class action.²⁶² Thus, an erroneous grant is likely

to be final and to produce a costly settlement.²⁶³ Bone and Evans also dispute the premise that an erroneous denial of certification necessarily thwarts social policies. In some instances, individual suits are possible in place of a class action; in cases in which they are not possible, the class action would not likely have produced compensation, so the primary consideration for social policy is deterrence, which may be achieved by other means, including public enforcement.²⁶⁴ They also argue that a lenient certification standard encourages the filing of frivolous lawsuits.²⁶⁵ On balance, they suggest that the social costs of the lenient rule outweigh the costs of a more stringent rule.²⁶⁶

Experience in the *Microsoft* indirect purchaser class actions tends to support the skeptical rule of certification. Many of Bone and Evans's empirical observations are consistent with the *Microsoft* experience. All of the cases have settled without an adjudication on the merits. Only one ever reached the stage of a motion for decertification, and that motion was denied, albeit on different grounds than the original grant. Moreover, like virtually all of the indirect purchaser class action settlements, the *Microsoft* settlements have provided little compensation to consumers.²⁶⁷ The vouchers were for small amounts, and only a relatively small percentage of consumers ever filed claims to receive the payments. For example, in the Minnesota case, five days before the deadline, 87,000 of an estimated 1 million possible claimants had filed claims for vouchers worth \$15 for operating system software, \$9 for Word, and \$23 for Office and Excel.²⁶⁸ The largest share of the unclaimed amounts generally went to the state or to schools; in some of the settlements, a portion reverted to Microsoft. Thus, even if the three denials of certification in *Microsoft* indirect purchaser cases were erroneous, they probably did not thwart a social policy in favor of compensation.

If there was an overcharge, the actions might still be justified on a deterrence theory. As Bone and Evans point out, the primary goal of class actions involving small individual stakes is deterrence. In fact, deterrence is preferable to compensation as an antitrust goal because, if it is effective, it makes compensation unnecessary. The rationale of *Illinois Brick* is to concentrate the full right to recover in the direct purchasers, to ensure that they have an adequate incentive to sue for the overcharge. But that rationale assumes that if direct purchasers are given the full overcharge, the direct purchasers would actually sue, and the indirect purchasers would not. Since the rise of indirect purchaser suits in state court, of course, the issue has changed because both direct and indirect purchasers can sue. This change has largely eliminated the concern about adequate deterrence, but created much greater concerns about overdeterrence.

If multiple levels of purchasers could sue for the full overcharge, then defendants could be subject to duplicative recoveries.²⁶⁹ Penalties should not be arbitrarily large; they should reasonably approximate an optimal penalty. It is difficult to say with any confidence, of course, what an optimal penalty is in a particular case.²⁷⁰ But if we take as a benchmark the federal measure of the treble damages for those who have suffered antitrust injury and have standing, it is doubtful that indirect purchaser class actions are typically necessary to achieve deterrence. Consequently, a more stringent standard for certification is likely to have minimal social costs.

One of the courts in the indirect purchaser cases suggested that the direct purchasers had not sued, thus making indirect purchaser suits more important to vindicate the consumer interest.²⁷¹ Since then, the direct purchasers with the most plausible claims in light of the findings of fact—Gateway and IBM—did sue and settled for an amount of more than \$1 billion. More important, *Microsoft*, unlike most overcharge cases, was about exclusionary practices, which imposed harm most directly on competitors rather than purchasers.²⁷² Predictably, all of the excluded competitors have sued, and most have already received settlements totaling in the billions. Consequently, the indirect purchaser overcharge litigation was probably unnecessary to impose an adequate deterrent penalty.

Aftermath

In chapter 1, we argue that the Sherman Act reflects a compromise between interventionist and laissez-faire ideologies that have shaped the debate over economic policy for more than a century. The statute recognizes that courts will intervene in markets, but contemplates that they will do so intermittently and only to restore competitive conditions, not to dictate market outcomes. The drafters' choice of broad terms like *monopolization* and *restraint of trade* requires the courts to frame more precise standards, determine liability, and impose remedies based on knowledge that they gather both from their own experiences, the evidence in particular cases, and the available scholarship. As we have seen, this framing of the mechanism for the evolution and application of antitrust law leaves plenty of room for policy disagreement. Yet antitrust doctrine has shown a capacity to incorporate the lessons of hard experience and advances in economic theory.

Experience over the course of a century indicates that the public monopolization case is often counterproductive or does little that the market itself would not accomplish at lower cost. In the aftermath of the *IBM* fiasco, antitrust enforcers retreated from the public monopolization case, recognizing its enormous potential costs. At the same time, in part under the influence of the Chicago School, the courts in monopolization cases came to endorse hard

competition, particularly involving price cutting or innovation, even by dominant firms, because these practices benefit consumers immediately. Harm to competitors came to be seen as relevant only to the extent it was a vehicle for hurting consumers by restricting output and raising prices.

The *Microsoft* case was filed in the face of these high winds. It drew on the new theory of network effects and path dependence to explain the emergence and persistence of Microsoft as the dominant supplier of operating systems, and it gained urgency from the importance of the products to the “new economy.” The guiding narrative portrayed the browser wars as a critical point at which Microsoft’s practices could thwart consumer preference and preserve and extend its dominance in ways that could not occur in more typical markets. All of Microsoft’s practices aimed at Netscape and Java were seen as elements of a broad campaign that only a public monopolization case could interdict and roll back. Judge Jackson, in an admirable attempt to avoid the morass that doomed the *IBM* case, set a radically curtailed schedule for pretrial and trial of the case. Ultimately, however, he adopted the guiding narrative in almost every detail. In the conclusions of law, he was able to reconcile this result with the new law of monopolization by emphasizing the standard, drawn from the *Aspen* case, that Microsoft’s campaign made no sense except as a means of preserving its monopoly power, secured by the network effects underlying the applications barrier to entry. Thus, not only were the integration of the browser and the operating system, the exclusive contracts, and the measures against Java anticompetitive, but many of Microsoft’s pricing decisions and product innovations were as well. The sweeping structural remedy continued this undifferentiated approach. Throughout, however, the parties and the court framed the debate over both liability and remedies in terms of the consumer interest.

The court of appeals’ opinion reversing in part and affirming in part took seriously both the consumer orientation of modern monopolization law and the new economic theories on which the government’s case rested. It focused on immediate benefits of specific practices to consumers, rejecting Judge Jackson’s profit-sacrifice standard and his condemnation of Microsoft’s entire competitive campaign against Netscape and Java. In this analysis, many of the flawed liability rulings of the trial court fell, especially those that involved low pricing and improved products. Other important liability rulings fell ostensibly for other reasons—the court of appeals reversed the tying claim because Judge Jackson should have applied a rule of reason, and the attempted monopolization claim because the government had not proved the existence of a browser market.

Yet the court of appeals itself was inconsistent in its application of its announced criteria and failed to insist on a showing of real anticompetitive effect, or harm to consumers, a particularly significant shortcoming in a case in which the alleged victims' products did not compete in any established market with the defendant's. We argue in chapter 4 that the court should have insisted that the government articulate its dynamic theory of anticompetitive effect and show that the theory's preconditions were met. Had it done so, the claim of anticompetitive effect from integration, for example, would have been difficult to sustain. Despite these criticisms, we have argued that the focused conduct remedies in the final judgments significantly limit any social costs of the liability rulings.

We have said that antitrust law has shown the capacity to incorporate the lessons of experience and theory. Implicit in our analysis of the courts' decisions over the course of the *Microsoft* litigation are numerous recommendations for judicial scrutiny of future monopolization cases. But our analysis also provides a basis for evaluating other actors in the system of antitrust enforcement. Some of the Antitrust Division's actions in this litigation deserve criticism. It expanded the case from a sharply focused attack on tying to a blurry challenge of a host of practices when its tying theory appeared in jeopardy. It failed to articulate a clear, coherent anticompetitive theory. Was this case really about price predation after all? It failed at the outset of the litigation to recognize that an appropriate and effective remedy was problematic, and it failed even more seriously at the close of the liability phase in its misguided breakup proposal.

Nevertheless, unlike some libertarian critics (and Microsoft at one time), we do not claim that the division's decision to sue was driven by the interests of Microsoft's rivals. The division evidently based its decision on its own assessment of the consumer interest. The fact that the division brought the case based on information and arguments provided by Microsoft's rivals does not mean it brought the case simply to benefit those rivals. Nevertheless, conceptions of the public interest are never entirely unbiased. The theory underlying the *Microsoft* case reflected the influence of the intentional vision in many respects. One lesson of the case is that enforcers should use special caution in basing enforcement actions on novel theories of liability. Given the limited resources of enforcement agencies, the constraints of the judicial process, and the resilience of markets, enforcers should shape policies based on the broadest consensus of economists.¹

The role of the states in the process was far more questionable. Political considerations appear to have played a substantial role in states'

choices in the litigation.² Some attorneys general admitted that their decisions with respect to participation in the *Microsoft* case was influenced by the wishes of firms headquartered in the state. Texas, for example, dropped out of the states' suit after meetings with executives of Dell and Compaq.³ It is also not surprising that the state of Washington, where Microsoft is headquartered, was not among the plaintiffs. The special influence of large firms on state participation probably stems from their unusual importance to those states' economies. The state attorneys general have an incentive to make enforcement choices in light of the effect of those choices on the wealth of their state, not the United States as a whole. While this influence is not special-interest dominance, it does suggest that states may be influenced by parochial considerations.

The states' role in the direction of the litigation has been largely duplicative. Where they departed from the Antitrust Division's position, the results were generally harmful. It was reportedly the intransigence of some states that prevented the case from being settled in the negotiations with Judge Posner in 1999. Posner later wrote that he was "appalled by the irresponsible and unreasonable position taken by several of the state attorneys general in the mediation."⁴ Later, the California Group of states held out for more extensive remedial measures after the United States reached terms with Microsoft in 2001, prolonging the case once again. In doing so, they attempted to add allegations about Microsoft's conduct that went beyond the original case, prompting Judge Kollar-Kotelly to observe that they had "shown little respect for the parameters of liability that were so carefully delineated by the appellate court."⁵ Massachusetts continued to press the case until Judge Kollar-Kotelly's decisions were affirmed in 2004. The case could have been terminated five years earlier, on similar terms and at far less cost, had the states never been involved. This experience lends support to Judge Posner's suggestion that the states' role in national antitrust enforcement should be curtailed.⁶

The experience in the private follow-on litigation was disturbing, primarily because of the indirect purchaser class actions. These cases, despite their great cost, provided little benefit to consumers, their supposed beneficiaries. This experience is consistent with our earlier studies of indirect purchaser class actions in other contexts, which show that when courts apply appropriate standards, they often refuse to certify indirect purchaser classes. Where indirect purchaser classes have been certified, they have resulted in settlements that provided little benefit to the consumers who actually paid an overcharge. It is possible that the Class Action Fairness Act of 2005⁷ will mitigate these costs by allowing

these actions to be removed to federal court and transferred to a single district by the Judicial Panel on Multidistrict Litigation. Federal courts may apply stricter certification standards, and consolidation facilitates settlements. But the deficiencies of these actions are, in all likelihood, too great for any strictly procedural measures to remedy. A preferable approach is to abolish indirect purchaser suits and concentrate the right to sue for the overcharge in direct purchasers.

The European Commission's antitrust case against Microsoft also suggests the need for reform in global antitrust enforcement. The European Commission case focuses on Microsoft's purported leveraging of its Windows monopoly to gain a competitive advantage in the media player and workgroup server operating systems markets. The European Commission remedy required Microsoft to create a version of Windows without its media player and mandated disclosures of communications protocols. The result in the U.S. case does not conflict directly with the European measures. Although the U.S. final judgments address media players as a form of middleware and require disclosures of some communications protocols, the substantive focus of the U.S. case was on the effects of Microsoft's conduct in the market for operating systems.⁸ The government dropped its tying claim, which would have required Microsoft to prove an anticompetitive effect in a defined browser market. Nevertheless, U.S. antitrust enforcers were fully aware of the conduct at issue in the European case, and rejected both the substantive theory underlying the European case⁹ and its approach to remedies.¹⁰ The European Commission's pursuit of costly relief in the face of evident U.S. opposition is dubious. Where the U.S. authorities have considered conduct by a U.S. firm whose only significant rivals are U.S. firms, and where the conduct affects U.S. consumers in precisely the same way it affects foreign consumers, foreign antitrust authorities should defer to the U.S. authorities' decisions.

In spite of these concerns, the net effect of antitrust actions on Microsoft has been less harmful than one might have predicted during the height of speculation over possible remedies. And, as we have seen in our discussion of enforcement of the final judgments, Microsoft's attention to antitrust issues has changed markedly as a result of its experience in the litigation. How these changes will affect the responses of Microsoft and other dominant firms to new competitive threats remains to be seen.¹¹

Notes

PREFACE

1. 2 Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* 179 (Edwin Cannan ed., U. of Chicago Press 1976) (1776).

CHAPTER ONE

1. For background, see William H. Page, *Ideological Conflict and the Origins of Antitrust Policy*, 66 Tul. L. Rev. 1 (1991).

2. See generally *The Legislative History of the Federal Antitrust Laws and Related Statutes, Part I: The Antitrust Laws* (Earl W. Kintner ed., 1978); Hans B. Thorelli, *The Federal Antitrust Policy* 164–214 (1954); William Letwin, *Law and Economic Policy in America* 85–99 (1965).

3. Richard A. Posner, *Antitrust Law* 34 (2d ed. 2001).

4. 15 U.S.C. § 2 (2000).

5. 15 U.S.C. § 1 (2000).

6. See 21 Cong. Rec. 3152 (1890) (remarks of Sen. Hoar, arguing that the “great thing this bill does, except affording a remedy, is to extend the common-law principles, which protected fair competition in trade in old times in England, to international and interstate commerce in the United States”).

7. See, e.g., Daniel A. Farber & Brett H. McDonnell, “Is There a Text in This Class?” *The Conflict between Textualism and Antitrust*, 14 J. Contemp. Legal Issues 619 (2005); Frank H. Easterbrook, *Workable Antitrust Policy*, 84 Mich. L. Rev. 1696, 1698 (1986).

8. See 21 Cong. Rec. 2460 (1890); *id.* at 4089 (remarks of Rep. Culberson) (“[J]ust what contracts [combinations, or conspiracies] . . . will be in restraint of the trade or commerce mentioned in the bill will not be known until the courts have construed and interpreted this provision.”).

9. See Thorelli, *supra* note 2, at 53; Letwin, *supra* note 2, at 82.

10. Robert Bork, *The Antitrust Paradox* (1978).

11. Thomas J. DiLorenzo, *The Origins of Antitrust: An Interest-Group Perspective*, 5 Int’l Rev. L. & Econ. 73 (1985).

12. Donald J. Boudreaux et al., *Antitrust before the Sherman Act*, in *The Causes and Consequences of Antitrust: The Public-Choice Perspective* 255 (Fred S. McChesney & William F. Shughart eds., 1995) (hereinafter *Causes and Consequences*); Gary D. Libecap, *The Rise of the Chicago Packers and the Origins of Meat Inspection and Antitrust*, 30 Econ. Inquiry 242 (1992). But cf. *The Political Economy of Antitrust: Principal Paper by William Baxter* (Robert D. Tollison ed., 1980); George J. Stigler, *The Origin of the Sherman Act*, 14 J. Legal Stud. 1 (1985), both of which fail to find evidence for a special interest purpose.

13. McChesney & Shughart, *The Unjoined Debate*, in *Causes and Consequences*, *supra* note 12, at 349.

14. Donald Dewey, *The Antitrust Experiment in America* 1 (1990).

15. See generally Page, *supra* note 1.

16. For more detailed accounts of these ideologies, see Thomas Sowell, *A Conflict of Visions: Ideological Origins of Political Struggles* (1987). See also Harold Demsetz, *Two Systems of Belief about Monopoly, in Industrial Concentration: The New Learning* 164 (Harvey Goldschmid et al. eds., 1974).

17. See generally Sidney Fine, *Laissez Faire and the General-Welfare State: A Study of Conflict in American Thought, 1865–1901* (1956).

18. See, e.g., Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* 49 (Edward Canaan ed., Univ. of Chicago Press 1976) (1776) (“By pursuing his own interest [the individual] frequently promotes that of society more effectually than when he really intends to promote it.”).

19. See Page, *supra* note 1, at 9–23.

20. *Id.* at 35–37.

21. *United States v. American Can Co.*, 230 F. 859, 902 (D. Md. 1916), *appeal dismissed*, 256 U.S. 706 (1921).

22. See, e.g., Elizabeth Granitz & Benjamin Klein, *Monopolization by “Raising Rivals’s Costs”: The Standard Oil Case*, 39 J.L. & Econ. 1 (1996); John E. Lopatka & Paul E. Godek, *Another Look at Alcoa: Raising Rivals’ Costs Does Not Improve the View*, 35 J.L. & Econ. 311 (1992); Scott E. Masten & Edward Snyder, *United States v. United Shoe Machinery Corporation: On the Merits*, 36 J.L. & Econ. 33 (1993); John S. McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 J.L. & Econ. 137 (1958); David Reiffen & Andrew N. Kleit, *Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?* 33 J.L. & Econ. 419, 437 (1990).

23. Posner, *supra* note 3, at 105.

24. See *United States v. Jellico Mountain Coal & Coke Co.*, 46 F. 432 (C.C.M.D. Tenn. 1891). See also Thorelli, *supra* note 2, at 436. President Benjamin Harrison signed the Sherman Act into law on July 2, 1890. The Federal

Trade Commission Act, which empowers the commission to attack monopolization as an unfair method of competition, was passed in 1914, and though the commission has taken a secondary role in pursuing monopolization cases, it has brought them occasionally. 15 U.S.C. § 45(a)(1) (2000). See generally Timothy J. Muris, *The FTC and the Law of Monopolization*, 67 *Antitrust L.J.* 693 (2000).

25. See generally Donald I. Baker, *Government Enforcement of Section Two*, 61 *Notre Dame L. Rev.* 898, 898 (1986) (“In the monopolization area, the government enforcement agencies tend to be dealing with proven market success. They therefore must be especially concerned that they neither punish success for its own sake nor be perceived as doing so.”).

26. Posner, *supra* note 3, at 1111.

27. *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 184 (D.D.C. 2002) (“Thus, although the remedy crafted by the Court is undoubtedly forward-looking, it is beyond the capacity of this Court, counsel, or any witness, to craft a remedy in 2002, for antitrust violations which commenced in the mid-1990s, which will be appropriately tailored to the needs of a rapidly changing industry in 2012.”).

28. See generally Robert W. Crandall & Kenneth Elzinga, *Injunctive Relief in Sherman Act Monopolization Cases*, 21 *Res. L. & Econ.* 277 (2004); Robert W. Crandall, *The Failure of Structural Remedies in Sherman Act Monopolization Cases*, 80 *Or. L. Rev.* 109 (2001).

29. Posner, *supra* note 3, at 112–13; Bork, *supra* note 10, at 194–95.

30. Of course, uncertainty is a two-way street. A decision not to attack ambiguous practices that in fact are anticompetitive also entails costs because it sacrifices the benefits of restoring competitive conditions.

31. Equally important, if during litigation the benefits of pursuing a judgment and the proposed remedy no longer outweigh the expected costs, the government should abandon the case.

32. Samuel P. Hays, *The Response to Industrialism: 1885–1914*, at 139 (1957).

33. In the same year, Justice Peckham authored *United States v. Trans-Missouri Freight Ass’n*, 166 U.S. 290 (1897) (announcing the per se illegality of price fixing), and *Allgeyer v. Louisiana*, 165 U.S. 578 (1897) (articulating the scope of liberty of contract). See Page, *supra* note 1, at 36; James May, *Antitrust in the Formative Era: Political and Economic Theory in Constitutional Analysis, 1880–1918*, 50 *Ohio St. L.J.* 257, 269–81 (1989).

34. *Lochner v. New York*, 198 U.S. 45 (1905).

35. *Standard Oil Co. v. United States*, 221 U.S. 1 (1911).

36. *Id.* at 51–52.

37. *Id.* at 52. See generally Letwin, *supra* note 2, at 32–39.

38. *Standard Oil Co.*, 221 U.S. at 55.

39. *Id.* at 62.

40. *People ex rel. Annan v. Walsh*, 22 N.E. 682, 693 (N.Y. 1889) (Peckham, J., dissenting), quoted in Alan J. Meese, *Liberty and Antitrust in the Formative Era*, 79 *B.U. L. Rev.* 1, 301–31 (1999).

41. *Standard Oil Co.*, 221 U.S. at 75. The record showed acts that “necessarily involved the intent to drive others from the field and to exclude them from

their right to trade and thus accomplish the mastery which was the end in view.” Id. at 76.

42. Id.

43. Bork, *supra* note 10, at 38–39; Einer Elhauge, *Defining Better Monopolization Standards*, 56 *Stan. L. Rev.* 253, 267 (2003).

44. John McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 *J.L. & Econ.* 137, 168–69 (1958).

45. See Granitz & Klein, *supra* note 22.

46. *United States v. Standard Oil Co. of N.J.*, 173 F. 177, 197, 199 (C.C.E.D. Mo. 1909), *aff’d as modified*, 221 U.S. 1 (1911).

47. E. Thomas Sullivan, *The Jurisprudence of Antitrust Divestiture: The Path Less Traveled*, 86 *Minn. L. Rev.* 565, 579 (2002).

48. See 2 Harold F. Williamson et al., *The American Petroleum Industry: The Age of Energy 1899–1959*, at 168 (1963); Crandall, *supra* note 28, at 123–24. Granitz and Klein similarly note that Standard lost its dominance of refining “when new fields were discovered where it did not control transportation.” Granitz & Klein, *supra* note 22, at 44.

49. See Crandall, *supra* note 28, at 129.

50. Id. at 136.

51. For a different assessment, see William S. Comanor & F. M. Scherer, *Rewriting History: The Early Sherman Act Monopolization Cases*, 2 *Int’l J. Econ. of Business* 263 (1995). This essay compares the performance of the firms created by the breakup of Standard Oil with the lackluster performance of U.S. Steel, which was not broken up after the government defeat in *United States v. United States Steel Corp.*, 251 U.S. 417 (1920), and concludes that the breakup made the firms more competitive. Posner criticizes this conclusion as “conjectural.” Posner, *supra* note 3, at 108.

See also Posner’s negative assessment of the consequences of the breakups in American Tobacco in *United States v. American Tobacco Co.*, 221 U.S. 106 (1911); *Corn Prods. Ref. Co. v. United States*, 249 U.S. 621 (1919); and *International Harvester Co. v. United States*, 248 U.S. 587 (1918). Posner, *supra* note 3, at 108–9. For a favorable assessment of an early consent decree against nonprice predation, see Kenneth Brevoort & Howard Marvel, *Successful Monopolization through Predation: The National Cash Register Company*, 21 *Res. L. & Econ.* 85 (2004).

52. *United States v. American Can Co.*, 230 F. 859, 903 (D. Md. 1916), *appeal dismissed*, 256 U.S. 706 (1921).

53. Id. at 902.

54. Ellis W. Hawley, *The New Deal and the Problem of Monopoly: A Study in Economic Ambivalence* 53–71 (1966).

55. Id. at 283–303.

56. *United States v. Philadelphia Nat’l Bank*, 374 U.S. 321, 393 (1963) (Harlan, J., dissenting).

57. See, e.g., *Northern Pac. Ry. v. United States*, 356 U.S. 1 (1958).

58. William H. Page, *Legal Realism and the Shaping of Modern Antitrust*, 44 *Emory L.J.* 1, 23–42 (1995) (discussing the era of “formal realism”).

59. *United States v. Aluminum Co. of Am.*, 148 F.2d 416 (2d Cir. 1945).

60. *Id.* at 423–26.

61. *Id.* at 425.

62. Some modern scholars have suggested that Alcoa entered into naked exclusionary rights agreements with suppliers of electric power—contracts pursuant to which the suppliers anticipated selling no power to Alcoa, but merely promised not to sell to Alcoa’s competitors. Thomas G. Krattenmaker & Steven C. Salop, *Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power over Price*, 96 *Yale L.J.* 209, 227, 236–37 (1986). In fact, the covenants were not naked because they were all attached to Alcoa’s power or incipient power purchases, and, as the district court found, they were not exclusionary. See *United States v. Aluminum Co. of Am.*, 44 F. Supp. 97, 144 (S.D.N.Y. 1941) (observing that “[i]n order to produce aluminum it is necessary . . . only to have bauxite and water power; of course, accompanied by energy and industry and brains”), *aff’d in part and rev’d in part*, 148 F.2d 416 (2d Cir. 1945); Lopatka & Godek, *supra* note 22, at 319.

63. *Alcoa*, 148 F.2d at 431.

64. *Id.*

65. *Id.* at 427, 428.

66. *Id.* at 431.

67. *Id.* at 445.

68. *Id.* at 447.

69. *Id.* at 446.

70. See David Smith, *From Monopoly to Competition: The Transformation of Alcoa 1888–1986*, at 191–92 (1988).

71. As of March 1944, the annual production of Alcoa’s own plants was about 828 million pounds of aluminum; the production of plants leased by Alcoa from the government was roughly 1,293 million pounds; and the combined production of plants leased by the other two firms was 202 million pounds. See *Alcoa*, 148 F.2d at 445.

72. See *Alcoa*, 148 F.2d at 446.

73. See 2 Simon N. Whitney, *Antitrust Policies: American Experience in Twenty Industries* 95 (1958).

74. *Id.* at 97–98.

75. See *United States v. Aluminum Co. of Am.*, 91 F. Supp. 333 (S.D.N.Y. 1950).

76. See *United States v. Aluminum Co. of Am.*, 153 F. Supp. 132 (S.D.N.Y. 1957).

77. See Crandall, *supra* note 28, at 150–51.

78. *United States v. United Shoe Mach. Co. of N.J.*, 247 U.S. 32 (1918). Another case struck down some lease terms under the newly enacted section 3 of the Clayton Act. *United Shoe Mach. Corp. v. United States*, 258 U.S. 451 (1922).

79. *United States v. United Shoe Mach. Corp.*, 110 F. Supp. 295 (D. Mass. 1953), *aff’d*, 347 U.S. 521 (1954).

80. *Id.* at 343.

81. *Id.* at 344.

82. *Id.* at 346.

83. Bork, *supra* note 10, at 137–41.
84. See Masten & Snyder, *supra* note 22, at 35.
85. *United Shoe*, 110 F. Supp. at 348.
86. *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 247 (1968).
87. *United States v. United Shoe Mach. Corp.*, 266 F. Supp. 328, 334 (D. Mass. 1967) (“What the Government is complaining of is not that the decree did not work as expected, but that working in the foreseeable and intended way the decree did not accomplish what the Government had originally prayed for and what this Court had rejected.”).
88. *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968).
89. See Crandall, *supra* note 28, at 168–73; Crandall & Elzinga, *supra* note 28, at 281–83. Posner has characterized as “nominal” the divestiture in *United Shoe Machinery* of assets accounting for \$8.5 million in sales. Posner, *supra* note 3, at 106 n.9. Nevertheless, the harm to United may have been significant.
90. 342 U.S. 143 (1951).
91. *Id.* at 147.
92. *Id.* at 148.
93. *Id.* at 152–53.
94. *Id.* at 150.
95. See, e.g., Krattenmaker & Salop, *supra* note 62, at 218; Bork, *supra* note 10, at 344; Timothy J. Brennan, *Refusing to Cooperate with Competitors: A Theory of Boycotts*, 35 J.L. & Econ. 247 (1992).
96. See John E. Lopatka & Andrew N. Kleit, *The Mystery of Lorain Journal and the Quest for Foreclosure in Antitrust*, 73 Tex. L. Rev. 1255 (1995).
97. *Id.* at 1278–80.
98. *Id.* at 1278. The policy did not apply to all of the radio station’s local advertisers, only those located in Lorain, and though local advertising revenue represented at least 86 percent of the station’s total revenue even after the policy was discontinued, Lorain advertising revenue represented no more than 32 percent of total revenue. Moreover, the policy had no effect on those Lorain merchants who either preferred radio advertising or were indifferent between radio and newspaper advertising. *Id.* at 1274–78.
99. See *id.* at 1287–96.
100. See generally Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 Am. Econ. Rev. 837 (1990).
101. See Lopatka & Kleit, *supra* note 96, at 1290–96. The two kinds of advertising media may have been to some extent imperfect substitutes in demand, which could be used in varying proportions. The newspaper was the monopoly supplier of informational advertising media, but with the entry of WEOL, the market for the sale of notice advertising media became competitive. In such a case, an input monopolist can increase profits by tying the sale of the monopoly input to the purchase of the competitive input. The welfare effects are ambiguous; they are positive if the productive efficiency attendant to eliminating the distortion in the input mix exceeds any allocative loss in raising output prices. See generally Roger D. Blair & David L. Kaserman, *Law and Economics of Vertical Integration and Control* 56 (1983).
102. See Lopatka & Kleit, *supra* note 96, at 1296–1305.

103. See *Lorain Journal*, 342 U.S. at 154 n.8; Bork, *supra* note 10, at 345 (“There was no apparent efficiency justifications for [the newspaper’s] conduct.”).

104. See *Lorain Journal*, 342 U.S. at 157–58.

105. The government stipulated to dismissal of the case, and so there was no judicial resolution of the merits. For brief histories of the litigation, see *In re IBM Corp.*, 687 F.2d 591 (2d Cir. 1982); *In re IBM Corp.*, 618 F.2d 923, 925 (2d Cir. 1980). For a short analysis of the case, see John E. Lopatka, *United States v. IBM: A Monument to Arrogance*, 68 *Antitrust L.J.* 145 (2000).

106. Just as in *Microsoft*, the defendant disputed that it had monopoly power. IBM claimed that the government’s market definition was contrived: in defining a market to include only U.S. manufacturers of general purpose digital computer systems, composed of hardware, software, maintenance, and services, the government improperly excluded a host of competitive constraints on IBM’s behavior. See Franklin M. Fisher et al., *Folded, Spindled, and Mutilated* 61–92 (1983). Nevertheless, IBM was the largest firm in any appropriately defined market.

107. This is not to say that the government believed that IBM had acquired its market position lawfully; rather, the Antitrust Division reportedly focused on monopoly maintenance because proving unlawful acquisition would have taken too long. See Lewis Bernstein, *Big Blue: A Personal Reaction*, *Antitrust*, Winter 1988, at 40.

108. See Fisher et al., *supra* note 106, at 360–68 (reproducing amended complaint).

109. David McGowan, *Between Logic and Experience: Error Costs and United States v. Microsoft Corp.*, 20 *Berkeley Tech. L.J.* 1185, 1201–2 (2005).

110. See Lopatka, *supra* note 105, at 145.

111. Robert H. Bork, *The Antitrust Paradox* 432 (rev. ed. 1993).

112. See William M. Carley, *Cut Up IBM? Logical, Maybe, but How?* *Wall St. J.*, May 13, 1969, at 20.

113. See *In re IBM Corp.*, 618 F.2d 923, 925 (2d Cir. 1980).

114. *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966). This standard has been quoted in almost federal court monopolization opinion, including the most recent Supreme Court monopolization case (*Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004)) and in *Microsoft v. United States v. Microsoft Corp.*, 253 F.3d 34, 50 (D.C. Cir. 2001).

115. As Judge Wyzanski put it in 1964, antitrust history had “left the informed observer with the abiding conviction that durable non-statutory monopolies (ones created without patents or licenses or lasting beyond their term) are, to a moral certainty, due to acquisitions of competitors or restraints of trade prohibited by § 1.” *United States v. Grinnell Corp.*, 236 F. Supp. 244, 248 (D.R.I. 1964), *aff’d in part, rev’d in part*, 384 U.S. 563 (1966).

116. The Supreme Court in *Grinnell* found it unnecessary to reach Judge Wyzanski’s endorsement of this view. *Grinnell*, 384 U.S. at 577 n.7.

117. Seminal works of the Chicago School include Aaron Director & Edward Levi, *Law and the Future: Trade Regulation*, 51 *Nw. U. L. Rev.* 281, 290

(1956); Bork, *supra* note 10; Posner, *supra* note 3. See generally William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 Va. L. Rev. 1221 (1989).

118. *Stamatakis Indus., Inc. v. King*, 965 F.2d 469, 471 (7th Cir. 1992) (“[A] producer’s loss is no concern of the antitrust laws, which protect consumers from suppliers rather than suppliers from each other.”) (Easterbrook, J.). See also *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 458–59 (1993).

119. Page, *supra* note 117.

120. See *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36 (1977). The Chicago School’s influence was apparent in other decisions of that term, including *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489 (1977), where the Court held that a private antitrust plaintiff could recover damages only for “antitrust injury, which is to say injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendants’ acts unlawful.” See generally John E. Lopatka & William H. Page, *Antitrust Injury and the Evolution of Antitrust Law*, Antitrust, Fall 2002, at 20. We discuss in chapter 6 the role of the antitrust injury doctrine in the *Microsoft* private litigation.

121. *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2d Cir. 1979).

122. *Id.* at 281 (quoting *United Shoe Machinery*, 110 F. Supp. at 344).

123. William F. Baxter, *Antitrust Policy, in American Economic Policy in the 1980s*, at 605 (Martin Feldstein ed., 1994).

124. *Id.*

125. *Id.* at 605.

126. *Id.* at 600, 605–6 (citing *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2d Cir. 1979)).

127. *In re IBM Corp.*, 687 F.2d 591, 594 (2d Cir. 1982) (quoting William F. Baxter).

128. *Id.* at 600.

129. Baker, *supra* note 25, at 912.

130. *United States v. AT&T*, 552 F. Supp. 131, 226–34 (D.D.C. 1982).

131. 47 U.S.C. § 271 (2000). See generally Steve Coll, *The Deal of the Century: The Break Up of AT&T* (1986); Joseph D. Kearney, *From the Fall of the Bell System to the Telecommunications Act of 1996: Regulation of Telecommunications under Judge Greene*, 50 Hastings L.J. 1395 (1999).

132. Clement G. Krouse et al., *The Bell System Divestiture/Deregulation and Efficiency of the Operating Companies*, 42 J.L. & Econ. 61 (1999).

133. Posner, *supra* note 3, at 111.

134. Kearney, *supra* note 131.

135. See Crandall, *supra* note 28, at 184–92.

136. For a detailed account of this aspect of the MFJ, see McGowan, *supra* note 109, at 1203–11.

137. *United States v. AT&T*, 552 F. Supp. 131, 138 (D.D.C. 1982).

138. McGowan, *supra* note 109, at 1203–4.

139. *Id.* at 1204.

140. *Id.* at 1204–11.

141. *Id.* at 1207–8.

142. See, e.g., Bork, *supra* note 10, at 149. Richard Posner has consistently maintained that predatory pricing cannot be dismissed as irrational, but he contends that the conditions necessary for it to be rational are uncommon and that the costs of identifying it in practice are substantial. See Posner, *supra* note 3, at 207–23.

143. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986).

144. *Id.* at 589–90.

145. *Id.* at 587.

146. *Id.* at 594.

147. *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993).

148. *Id.* at 225.

149. *United States v. AMR Corp.*, 335 F.3d 1109 (10th Cir. 2003). But cf. *Spirit Airlines, Inc. v. Northwest Airlines, Inc.*, 431 F.3d 917 (6th Cir. 2005) (reversing summary judgment).

150. 506 U.S. 447 (1993).

151. *Spectrum Sports*, 506 U.S. at 459.

152. *Id.* at 457.

153. *Id.* at 459 (quoting *Copperweld Corp. v. Independence Tube Corp.*, 467 U.S. 752, 767–69 (1984)).

154. Joseph C. Gallo et al., *Department of Justice Antitrust Enforcement, 1955–1997: An Empirical Study*, 17 *Rev. Indus. Org.* 75, 100 (2000) (showing 78 monopolization cases for the period 1955–79, but only one for the period 1980–97).

155. See, e.g., Jonathan B. Baker, *Recent Developments in Economics That Challenge the Chicago School Views*, 58 *Antitrust L.J.* 645 (1989); Herbert Hovenkamp, *Antitrust Policy after Chicago*, 84 *Mich. L. Rev.* 213, 223 (1985). For discussion of the influence of post-Chicago economics, see John E. Lopatka & William H. Page, “Obvious” *Consumer Harm in Antitrust Policy: The Chicago School, the Post-Chicago School, and the Courts*, in *Post-Chicago Developments in Antitrust Law* (Antonio Cucinotta et al. eds., 2002); Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 *Colum. Bus. L. Rev.* 257, 312.

156. See, e.g., *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992) (holding that a firm without monopoly power in equipment could nevertheless monopolize markets in replacement parts and repair service). The influence of *Kodak*, however, was short-lived. Hovenkamp, *Post-Chicago Antitrust*, *supra* note 155, at 283–88.

157. *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992).

158. *Id.* at 458–60.

159. *Id.* at 465.

160. *Id.* at 495 (Scalia, J., dissenting).

161. *Id.* at 472–74. For a network effects analysis of *Kodak*, see Carl Shapiro & David J. Teece, *Systems Competition and Aftermarkets: An*

Economic Analysis of Kodak, 39 Antitrust Bull. 135 (1994). For a discussion of pre-Chicago ideas of market coercion and their role in *Kodak*, see Page, *supra* note 58, at 66–69.

162. *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985).

163. See John E. Lopatka & William H. Page, *Bargaining and Monopolization: In Search of the “Boundary of Section 2 Liability” between Aspen and Trinko*, 73 Antitrust L.J. 115 (2005).

164. See John E. Lopatka & William H. Page, *Monopolization, Innovation, and Consumer Welfare*, 69 Geo. Wash. L. Rev. 367, 373–76 (2001). For recent attempts to specify standards for identifying anticompetitive exclusion, see Einer Elhauge, *Defining Better Monopolization Standards*, 56 Stan. L. Rev. 253 (2003); A. Douglas Melamed, *Exclusive Dealing Agreements and Other Exclusionary Conduct—Are There Unifying Principles?* 73 Antitrust L.J. 375 (2006); Mark S. Popofsky, *Defining Exclusionary Conduct: Section 2, the Rule of Reason, and the Unifying Principle Underlying Antitrust Rules*, 73 Antitrust L.J. 435 (2006); Steven C. Salop, *Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard*, 73 Antitrust L.J. 311 (2006); Gregory J. Werden, *Identifying Exclusionary Conduct under Section 2: The “No Economic Sense” Test*, 73 Antitrust L.J. 413 (2006).

165. See, e.g., Warren S. Grimes, *The Antitrust Tying Law Schism: A Critique of Microsoft III and a Response to Hylton and Salinger*, 70 Antitrust L.J. 199, 209–10 (2002) (arguing that the court of appeals decision in the 1998 case reflects post-Chicago approaches to tying and “information issues”).

166. For brief accounts of the history of Microsoft operating systems, see Annabelle C. Gawer & Michael A. Cusumano, *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation* 137–42 (2003); Stuart Taylor Jr., *What to Do about the Microsoft Monster*, Am. Law., Nov. 1993, at 72. See also *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 13 (D.D.C. 1999) (Finding 6) (hereinafter *Findings 1999*).

167. Daniel J. Gifford, *Developing Models for a Coherent Treatment of Standard-Setting Issues under the Patent, Copyright, and Antitrust Laws*, 43 Idea 331, 346 (2003).

168. Neil Gandal, Shane Greenstein & David Salant, *Adoptions and Orphans in the Early Microcomputer Market*, 47 J. Indus. Econ. 87 (1999). See also Stephen Manes & Paul Andrews, *Gates: How Microsoft’s Mogul Reinvented an Industry—and Made Himself the Richest Man in America* 162, 193–95 (1994).

169. *Findings 1999*, 84 F. Supp. 2d at 13 (Finding 7).

170. Apple’s claim that Windows infringed its copyrights was rejected. *Apple Computer, Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994).

171. For criticism of this mediated (and therefore imprecise) relationship between the user and the computer, see Neal Stephenson, *In the Beginning Was the Command Line* (1999).

172. Dylan Loeb McClain, *The Kitchen Sink Operating System*, N.Y. Times, May 21, 1998, at D5 (describing additions to Windows from version 1.0 to Windows 98).

173. *Findings 1999*, 84 F. Supp. 2d at 9 (D.D.C. 1999) (Finding 7).

174. *Id.* at 17 (Finding 28). See also *United States v. Microsoft Corp.*, 147 F.3d 935, 949 (D.C. Cir. 1998) (“Windows 95 is integrated in the sense that the two functionalities—DOS and graphical interface—do not exist separately: the code that is required to produce one also produces the other”); *Caldera, Inc. v. Microsoft Corp.*, 72 F. Supp. 2d 1295, 1322–28 (D. Utah 1999) (refusing summary judgment for the defendant in response to a claim that the “integration” of MS-DOS and Windows 3.1 into Windows 95 constituted a per se tying violation).

175. McClain, *supra* note 172.

176. *Findings* 1999, 84 F. Supp. 2d at 43–44 (Finding 135).

177. *Id.* at 98–99 (Finding 360).

178. The term *network externalities* reflected a presumption of market failure when network effects are present. In fact, market failure occurs in only a subset of the markets characterized by network effects. See Stan J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. Econ. Persp. 133 (1994). Most scholars came to prefer the neutral term when referring generally to the economic phenomenon.

179. See David S. Evans, *The Antitrust Economics of Multi-sided Platform Markets*, 20 Yale J. on Reg. 325, 365 (2003) (describing leapfrog competition in the video game market).

180. *Hydrogen Cars Are Almost Here, But . . .*, BusinessWeek Online, Jan. 24, 2005, http://www.businessweek.com/print/magazine/content/05_04/b3917097_mz018.htm?chan.

181. For accessible introductions to network effects, see Carl Shapiro & Hal Varian, *Information Rules: A Strategic Guide to the Network Economy* (1999); Oz Shy, *The Economics of Network Industries* (2001); Stan Liebowitz, *Re-thinking the Network Economy* (2002). For a summary and a detailed bibliography of the literature of network effects, see William H. Page & John E. Lopatka, *Network Externalities*, in *Encyclopedia of Law and Economics* (Boudwijn Bouckaert & Gerrit DeGeest eds., 2000). For a discussion of how the law should respond to claims that a market is characterized by network effects, see Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 Cal. L. Rev. 479, 518 (1998).

182. *Findings* 1999, 84 F. Supp. 2d at 20–21 (Findings 39–42) (surveying rival operating systems).

183. Indirect network effects only rarely produce a monopoly; the optimal size of the network depends on a variety of factors, as we show in chapter 3.

184. See, e.g., Shapiro & Varian, *supra* note 181, which offers management advice (e.g., “recognizing” and “managing” lock-in) based on network effects theory. See also Liebowitz, *supra* note 181, at 26–30 (criticizing consultants who claimed the network economy invalidated conventional economics).

185. *Findings* 1999, 84 F. Supp. 2d at 22–23 (Findings 45–50).

186. *Caldera, Inc. v. Microsoft Corp.*, 72 F. Supp. 2d 1295, 1298 (D. Utah 1999).

187. Caldera, then the owner of DR-DOS, brought a monopolization suit alleging Microsoft had engaged, for example, in “vaporware” (false pre-announcements of a product in order to deter consumers from switching

to a rivals' product), restrictive licensing agreements, and intentional incompatibilities. The suit survived summary judgment, and was later settled. *Id.* at 1299–1300.

188. Taylor, *supra* note 166, at 79.

189. *Findings* 1999, 84 F. Supp. 2d at 23 (Finding 50).

190. Robert A. Guth, *Free to Choose*, Wall St. J., May 19, 2003 (describing Linux inroads and Microsoft's responses).

191. *Findings* 1999, 84 F. Supp. 2d at 14 (Finding 16).

192. James Wallace, *Overdrive: Bill Gates and the Race to Control Cyberspace* 194–98 (1997) (describing development of Mosaic at the University of Illinois's National Center for Supercomputing Applications).

193. *Id.* at 175–80. Litigation between Netscape and the University of Illinois over the rights to Mosaic was eventually settled. *Id.* at 200–201.

194. “Andreessen and Clark [Netscape's founders] had decided to give the company's browser away for free in order to get it onto as many computers as possible.” *Id.* at 193–95.

195. Michael A. Cusumano & David B. Yoffie, *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft* 40 (1998).

196. *Findings* 1999, 84 F. Supp. 2d at 29 (Finding 72).

197. John Heilemann, *Pride Before the Fall: The Trials of Bill Gates and the End of the Microsoft Era* 65 (2002) (quoting Microsoft's Steve Ballmer: “Once upon a time, there was a piece of software that was an extension of the operating system, and it had a nice little user interface, and it had some programming interfaces, and people kind of liked it. One day, the thing that it was built on top of wasn't all that important anymore. . . .”).

198. Spyglass had the master license to sell licenses for the Mosaic browser. Wallace, *supra* note 192, at 214.

199. The 1994 license allowed Microsoft to use Mosaic to develop a browser for Windows 95. *Id.* at 222–23. The license for Windows 3.1 was not negotiated until November 1995. *Id.* at 280–82.

200. *Findings* 1999, 84 F. Supp. 2d at 43–44 (Finding 135).

201. *Id.* at 44 (Finding 136).

202. *Id.* at 49 (Finding 158).

203. *Id.* at 29 (Findings 73–75).

204. *Id.* at 29 (Finding 73).

205. Wallace, *supra* note 192, at 282–83.

206. *Id.* at 284–85.

207. *Findings* 1999, 84 F. Supp. 2d at 30 (Finding 76).

208. *Findings* 1999, 84 F. Supp. 2d at 105–10 (Findings 386–406).

209. See *United States v. Microsoft Corp.*, 1995-1 Trade Cas. (CCH)

¶ 70,928 (D.D.C. 1995).

210. Antitrust Procedures and Penalties Act, 15 U.S.C. § 16 (2000). The act requires the Department of Justice to solicit and report to the court on comments from the public on proposed consent decrees.

211. See *United States v. Microsoft Corp.*, 56 F.3d 1448 (D.C. Cir. 1995) (reversing district court's disapproval of consent decree and ordering entry of the decree).

212. G. Christian Hill et al., *Microsoft Drops Bid for Intuit-A Victory for Antitrust Agency*, Wall St. J., May 22, 1995, at A1, A6.

213. Wallace, supra note 192, at 270-71.

214. See generally William H. Page, *Microsoft and the Public Choice Critique of Antitrust*, 44 Antitrust Bull. 5 (1999).

215. Gary Reback & Susan Creighton, White Paper Regarding the Recent Anticompetitive Conduct of the Microsoft Corporation (July 1996) (unpublished manuscript). For details on the drafting of the white paper by Creighton and the discussions over how best to use it, see Heilemann, supra note 197, at 16-20.

216. Memorandum of Amici Curiae in Opposition to Proposed Final Judgment, filed in *United States v. Microsoft Corp.*, No. 94-1564 (D.D.C. July 15, 1994). The brief acknowledged assistance from Brian Arthur and Garth Saloner. See *United States v. Microsoft Corp.*, 159 F.R.D. 318 (D.D.C.) (Sporkin, J.), rev'd, 56 F.3d 1448 (D.C. Cir. 1995).

217. Gary L. Reback et al., White Paper: Technological, Economic, and Legal Perspectives Regarding Microsoft's Business Strategy in Light of the Proposed Acquisition of Intuit (Nov. 14, 1994) (unpublished manuscript). This white paper states that the "economic arguments . . . were prepared in extensive consultation with" Brian Arthur and Garth Saloner.

218. Id. at 164.

219. See, e.g., Joseph Farrell & Garth Saloner, *Installed Base and Compatibility: Innovation, Product Preannouncements, & Predation*, 76 Am. Econ. Rev. 940 (1986); Joseph Farrell & Garth Saloner, *Standardization, Compatibility, and Innovation*, 16 Rand J. Econ. 70 (1985).

220. Reback & Creighton, supra note 215, at 27-33.

221. Id. at 49.

222. Id. (quoting Bill Gates, *The Internet PC*, Apr. 10, 1996).

223. Heilemann, supra note 197, at 93-94.

224. *United States v. Microsoft Corp.*, 980 F. Supp. 537 (D.D.C. 1997), *aff'd in part, rev'd in part*, 147 F.3d 935 (D.C. Cir. 1998). The reasoning of the court of appeals in that case formed the basis for Microsoft's motion for summary judgment in the 1998 case, a motion Judge Jackson later denied. *United States v. Microsoft Corp.*, No. 98-1232, 1998 WL 614485 (D.D.C. Sept. 14, 1998). Judge Jackson was assigned the *Microsoft* litigation after the court of appeals ordered the first *Microsoft* case removed from the control of his friend, Judge Stanley Sporkin, for entry of the consent decree because of Judge Sporkin's improper conduct in the Tunney Act proceeding. See *United States v. Microsoft Corp.*, 56 F.3d 1448, 1463-65 (D.C. Cir. 1995); Ken Auletta, *World War 3.0: Microsoft and Its Enemies* 6 (2001). The reassignment to Judge Jackson was ironic given the appellate court's rebuke of the judge's conduct during the trial of the later case. See *United States v. Microsoft Corp.*, 253 F.3d 34, 107-16 (D.C. Cir. 2001).

225. *United States v. Microsoft Corp.*, No. 98-1232 (D.D.C. May 18, 1998); *New York v. Microsoft Corp.*, No. 98-1233 (D.D.C. May 18, 1998). The state and federal suits were filed separately and later consolidated, *United States v. Microsoft Corp.*, 253 F.3d 34, 47 (D.C. Cir. 2001), but diverged again in the

remedies phase. *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 87 (D.D.C. 2002).

226. The states filed a separate complaint alleging offenses relating to Microsoft Office and some claims under state law. The states' amended complaint, however, limited its factual allegations to the same ones raised by the United States, and Judge Jackson ruled that the claims under state law did not warrant any different rulings on liability. *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 53 (D.D.C. 2000).

227. Complaint, *United States v. Microsoft Corp.*, No. 98-1232, at ¶ 7 (D.D.C. filed May 18, 1998), available at <http://www.usdoj.gov/atr/cases/f1700/1763.htm>.

228. See Declaration of Franklin M. Fisher, at ¶ 7, available at <http://www.usdoj.gov/atr/cases/f212700/212766.htm>; Declaration of David S. Sibley, at ¶ 18, available at <http://www.usdoj.gov/atr/cases/f1700/1767.htm>.

229. Friedman is quoted in Gerald F. Seib, *Libertarians Choose Sides as Antitrust Case Expands*, Wall St. J. Interactive Ed., June 9, 1998.

230. Thomas Sowell, *Microsoft's Sin: Not Thinking like a Lawyer*, Chi. Sun-Times, June 5, 1998, at 33.

231. McChesney & Shughart, *supra* note 13, at 341, 343. The FTC only split in their vote, according to McChesney and Shughart, because the president had not indicated what vote he wanted in the case, and the FTC chairmanship was open; the commissioners would otherwise have voted in such a way as to maximize their chances of being appointed chairman. *Id.* See also David B. Kopel, *Antitrust after Microsoft: The Obsolescence of Antitrust in the Digital Era* 148–55 (2001).

232. Bill Gates, *Why the Justice Department Is Wrong*, Wall St. J., Nov. 10, 1997, at A22.

233. John Simons & John Harwood, *Gates Opening: For the Tech Industry, Market in Washington Is Toughest to Crack*, Wall St. J., Mar. 4, 1998, at A1.

234. Indeed, Reback had antagonized Joel I. Klein, the assistant attorney general in charge of the Antitrust Division who eventually made the decision to sue. See Heilemann, *supra* note 197, at 31–32, 37–38.

CHAPTER TWO

1. The *New York Times* coverage has been collected in Joel Brinkley & Steve Lohr, *U.S. v. Microsoft: The Inside Story of the Landmark Case* (2001).

2. According to Joel Brinkley and Steve Lohr, Judge Jackson later said, “I wanted to stay away from disasters like the IBM and AT&T cases. I’m a great believer in taking evidence, closing the record as quickly as you can and then shipping it upstairs [to the court of appeals].” Brinkley & Lohr, *supra* note 1, at 17. In addition to the restriction on direct witnesses, the judge allowed three rebuttal witnesses for each side. For a discussion of Judge Jackson’s procedural innovations, see Andrew I. Gavil, *The End of Antitrust Trend Warfare?: An Analysis of Some Procedural Aspects of the Microsoft Trial*, *Antitrust*, Summer 1999, at 7.

3. *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9 (D.D.C. 1999) (hereinafter *Findings* 1999).

4. As he was later to tell a reporter, he wanted to embed as many of his normative choices in the form of findings of fact because they could then be reversed only if clearly erroneous; his conclusions of law would be reviewed *de novo*.

5. For a lively account of the negotiations, see Ken Auletta, *World War 3.0: Microsoft and Its Enemies* 340–62 (2001).

6. For one of the final drafts of a proposed consent decree considered by the parties, see <http://web.archive.org/web/200111217192439/www.ccianet.org/legal/ms/draft18.php3>.

7. *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 44 (D.D.C. 2000) (hereinafter *Conclusions 2000*).

8. *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59, 62 (D.D.C. 2000) (hereinafter *Jackson Remedy 2000*).

9. *Microsoft Corp. v. United States*, 530 U.S. 1301 (2000).

10. *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (hereinafter *D.C. Circuit 2001*).

11. *Id.* at 107.

12. 15 U.S.C. § 16(e). For criticism of the application of the Tunney Act to proposed final judgments made after testimony has been taken, see John J. Flynn & Darren Bush, *The Misuse and Abuse of the Tunney Act: The Adverse Consequences of the “Microsoft Fallacies,”* 34 Loy. U. Chi. L.J. 749 (2003).

13. *United States v. Microsoft Corp.*, 231 F. Supp. 2d 144 (D.D.C. 2002) (hereinafter *D.D.C. 2002 Consent Decree*).

14. *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C. 2002) (hereinafter *D.D.C. 2002 States Remedy*).

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

16. Case COMP/C-3/37.792, Microsoft, Commission Decision of 24 Mar. 2004, available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>.

17. *United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966). See generally 2 Joseph P. Bauer & William H. Page, *Kintner’s Federal Antitrust Law* 328–46 (2002).

18. Bauer & Page, *supra* note 17, at 332–37.

19. Gary Reback & Susan Creighton, White Paper Regarding the Recent Anticompetitive Conduct of the Microsoft Corporation (July 1996) (unpublished manuscript). For a detailed discussion of the guiding narrative, see chapter 1.

20. Transcript of Oral Argument, Feb. 26, 2001, *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (No. 00.5212), available at <http://cyber.law.harvard.edu/msdoj/transcript02-26.html>.

21. *Findings 1999*, 84 F. Supp. at 14 (Finding 18).

22. U.S. Dep’t of Justice & Fed. Trade Comm’n, 1992 Horizontal Merger Guidelines, 57 Fed. Reg. 41552 (Sept. 10, 1992), available at <http://www.ftc.gov/bc/doc/horizmer.htm>.

23. *Findings 1999*, 84 F. Supp. at 15 (Finding 20). At the time of the litigation, Apple computers did not use Intel processors.

24. *Id.* (Finding 21). This emphasis on the greater availability of applications, incidentally, was Judge Jackson’s first reference to the applications barrier

to entry associated with network effects in the operating system market; this point was crucial to the ultimate finding of monopoly power, as we will show shortly.

25. *Id.* (Finding 19).
26. *Id.* at 17–18 (Findings 28–29).
27. *Id.* at 18 (Findings 30–31).
28. *Id.* at 17–18 (Findings 27, 29).
29. *Id.* at 19 (Finding 35).
30. *Id.* at 20 (Finding 38).
31. *Id.* (Finding 39).
32. *Id.* (Finding 40).
33. *Id.* at 20–21 (Finding 41).
34. *Id.* at 21 (Finding 43). Judge Jackson thus implied that an applications barrier is a barrier even in the Stiglerian sense because it gives a long-run cost advantage to the incumbent firm. See George J. Stigler, *Barriers to Entry, Economies of Scale, and Firm Size*, in *The Organization of Industry* 67 (1968) (defining a barrier to entry as a cost borne by a new entrant but not by an existing firm).
35. *Findings 1999*, 84 F. Supp. at 22–23 (Finding 48).
36. *Id.* at 24 (Finding 52).
37. *Id.* at 24–25 (Findings 53–55).
38. *Id.* at 25 (Finding 57).
39. *Id.* at 25–26 (Findings 56, 59–60).
40. *Id.* at 27 (Finding 65).
41. *Id.* at 26 (Finding 61).
42. *Id.* at 27–28 (Finding 66).
43. *Id.* at 28 (Finding 67).
44. *Conclusions 2000*, 87 F. Supp. 2d at 36–37 (citing Finding 33).
45. *Id.* at 36 (citing Finding 18).
46. Judge Jackson reaffirmed the finding that Microsoft’s share of the market exceeded 95 percent (citing Finding 35) and was protected by the applications barrier to entry. *Id.* (citing Findings 36–52).
47. *Id.* (citing *United States v. AT & T*, 524 F. Supp. 1336, 1347–48 (D.D.C. 1981)).
48. *Id.* at 37 (citing Findings 57–60).
49. *Id.* (citing Findings 61–66).
50. *Id.* (citing Findings 53–55).
51. *Id.* (citing Findings 67, 99, 136, 141, 215–16, 241, 261–62, 286, 291, 330, 355, 393, 407).
52. *D.C. Circuit 2001*, 253 F.3d at 52 (citing Findings 20, 23, 27).
53. *Id.* at 53.
54. *Id.* (citing Finding 28).
55. *Id.* (citing Findings 28–29).
56. *Id.* at 53–54 (citing Finding 29).
57. *Id.* at 54.
58. *Id.* at 54–55 (citing Findings 30, 36).
59. *Id.* (citing Finding 46).
60. *Id.* (citing Finding 37).

61. Id. (citing Findings 28–29, 72).

62. Id. at 56.

63. Id.

64. Id. (comparing the definition of entry barriers in Joe S. Bain, *Barriers to New Competition* 6–7 (1956), with the definition in George Stigler, *The Organization of Industry* 67 (1968)).

65. Id. (citing Findings 6, 7, 43). See George Stigler, *The Organization of Industry* 113–22 (1968). For discussion, see Gregory J. Werden, *Network Effects and Conditions of Entry: Lessons from the Microsoft Case*, 69 *Antitrust L.J.* 87 (2001).

66. *D.C. Circuit 2001*, 253 F.3d at 56 (citing Finding 44).

67. Id. at 57.

68. See generally Bauer & Page, *supra* note 17, at 346 ff.

69. See, e.g., Einer Elhauge, *Defining Better Monopolization Standards*, 56 *Stan. L. Rev.* 253, 344 (2003); John E. Lopatka & William H. Page, *Bargaining and Monopolization: In Search of the “Boundary of Section 2 Liability” between Aspen and Trinko*, 73 *Antitrust L.J.* 115 (2005).

70. *D.C. Circuit 2001*, 253 F.3d at 59.

71. Id.

72. The district court had stricken a “monopoly leveraging” claim on summary judgment, stating that it was “contrary to both economic theory and the Sherman Act’s plain language.” *United States v. Microsoft*, No. 98-1232, 1998 WL 614485, at *27 (D.D.C. Sept. 14, 1998).

73. Microsoft thus acted predatorily in that “it consciously antagonized its customers by making its products less attractive to them—or if it incurred other costs, such as large outlays of development capital and forfeited opportunities to derive revenue from it—with no prospect of compensation other than the erection or preservation of barriers against competition by equally efficient firms.” *Conclusions 2000*, 87 F. Supp. 2d at 38. If conduct is predatory, then the court can properly infer exclusionary effect because otherwise the court would have to “ascribe irrational behavior to the defendants.” Such conduct necessarily “lacks procompetitive business motivation.” Id.

74. Id. at 44.

75. Id. This measure of anticompetitive effect drew on the testimony of the lead government expert. See Direct Testimony of Franklin M. Fisher, ¶¶ 47–48, available at <http://www.usdoj.gov/atr/cases/f213400/213457.htm>.

76. *Conclusions 2000*, 87 F. Supp. 2d at 44.

77. *D.C. Circuit 2001*, 253 F.3d at 50.

78. Id. at 60.

79. This last requirement must mean that if the plaintiff were to rebut the plaintiff’s asserted justification by showing it to be pretextual, the conduct would be found exclusionary based on the prima facie case; only if procompetitive justification stands un rebutted must the plaintiff show that the anticompetitive effect outweighs it. Later in the opinion, however, the court placed on the plaintiff “the burden *not only* of rebutting a proffered justification *but also* of demonstrating that the anticompetitive effect of the challenged action outweighs it.” *D.C. Circuit 2001*, 253 F.3d at 67. This latter statement contradicts

the first, but we may safely ignore it because it makes no sense—if the procompetitive justification were rebutted, then there would be nothing to weigh against the anticompetitive effects. The important point is the court of appeals’ focus on burden shifting, which, as we will see, allowed it to dispose of virtually every issue in the case based on one party’s or the other’s failure to carry a burden of production.

80. Judge Jackson erred, the court held, by failing to identify any series of actions by Microsoft that only violated § 2 if their anticompetitive effect were viewed cumulatively. Judge Jackson did point to Microsoft’s expenditures as anticompetitive and “predacious,” but those expenditures, as we show below, the court of appeals held lawful in themselves. *D.C. Circuit 2001*, 253 F.3d at 78.

81. *Id.* at 68.

82. *Id.* at 67.

83. *Id.* at 107.

84. *Id.* at 80–84.

85. *Findings 1999*, 84 F. Supp. at 28 (Finding 68).

86. *Id.* at 30 (Finding 76).

87. *Id.* (Finding 77).

88. *Id.* at 107–08 (Finding 397).

89. *Id.* at 28 (Findings 69–70).

90. *Id.* at 29 (Finding 72).

91. *Id.* (Finding 75).

92. *Id.* at 30 (Finding 77).

93. *Id.* at 46 (Finding 143).

94. Together these channels provided almost all users with a browser, and most of those users, studies showed, would stick with the first one they tried. *Id.* at 46–47 (Finding 144). Other channels, such as retail distribution, mail-out “carpet bombing,” and downloading, were less efficient and required consumers to expend more effort. *Id.* at 48 (Findings 145–47). Consequently Microsoft used a variety of methods, both technological and contractual, to assure that OEMs and IAPs bundled IE to the disadvantage of Navigator. *Id.* at 48–49 (Finding 148). They also used contractual restrictions on ICPs and ISVs, although these were less significant.

95. Reback & Creighton, *supra* note 19, at 97–98.

96. *Findings 1999*, 84 F. Supp. at 31–32 (Findings 83–85).

97. *Id.* at 33 (Finding 88).

98. *Id.* (Finding 89).

99. *Id.* (Finding 86).

100. *Id.* at 32–33 (Finding 87).

101. *Id.* at 33–34 (Findings 90–92).

102. Transcript of Closing Argument of David Boies, Sept. 21, 1999, AM Session, Westlaw MICROSOFT-TRANS library, 1999 WL 744052, at *12 (emphasis added).

103. *Findings 1999*, 84 F. Supp. at 35 (Finding 93).

104. Microsoft had “transient and remediable concerns” about NSP’s compatibility, but mainly feared that NSP, particularly if written for both Windows

and other operating systems, would become a platform that threatened the Windows API and thus the applications barrier. Consequently, it pressured OEMs not to install NSP, and used that “chill” to persuade Intel to allow Microsoft to incorporate some of the NSP capabilities into Windows, and even to drop all efforts to develop platform level software. *Findings 1999*, 84 F. Supp. at 34–36 (Findings 97–102).

105. First, it attempted to persuade Apple to drop development of its own cross-platform APIs for its QuickTime multimedia software. It proposed instead a “single configuration” of playback software for Windows based on Microsoft’s DirectX standard; as leverage, it threatened to develop and market its own tools for authoring multimedia content that would be incompatible with QuickTime. Although Apple rejected the proposal, the attempt showed Microsoft’s intent to limit cross-platform content development. Microsoft also entered an agreement with RealNetworks, which makes multimedia software, particularly for video streaming, that Microsoft believed would limit RealNetworks to building software to run on the Windows multimedia platform. That has not occurred—RealNetworks still develops streaming software, but Judge Jackson found that the episode showed Microsoft’s intent to use its resources to persuade other firms to drop software that threatened the applications barrier. *Findings 1999*, 84 F. Supp. at 36–38 (Findings 106–14).

106. Microsoft attempted to use a lengthy audit of IBM’s Windows royalties to persuade IBM to stop bundling with their PCs IBM’s SmartSuite and other software that competed with Microsoft products, such as Office. Like RealNetworks, Apple, and Netscape, IBM refused to comply, and Microsoft took various steps to disadvantage IBM in its dealings with Microsoft over Windows, again revealing its “strategy of directing its monopoly power toward inducing other companies to abandon projects that threaten Microsoft and toward punishing those companies that resist.” *Findings 1999*, 84 F. Supp. at 45 (Finding 132).

107. *Id.* at 30–34 (Findings 79–92).

108. *Conclusions 2000*, 87 F. Supp. 2d at 39.

109. *Id.*

110. *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993).

111. *Conclusions 2000*, 87 F. Supp. 2d at 45.

112. *Id.*

113. *Id.* at 46.

114. *Id.*

115. *D.C. Circuit 2001*, 253 F.3d at 80–81.

116. Reback & Creighton, *supra* note 19, at 139–41.

117. *Findings 1999*, 84 F. Supp. at 43 (Finding 135).

118. *Id.* (Finding 134).

119. *Id.* at 44 (Finding 136).

120. *Id.* (Findings 137–38).

121. *Id.* at 71–73 (Findings 248–59).

122. *Id.* 71 (Finding 250).

123. *Id.* (Finding 252).

124. *Id.* at 72–73 (Findings 253–58).

125. *Id.* at 73–74 (Findings 259–61).
126. *Id.* at 45–46 (Findings 141–42).
127. *D.C. Circuit 2001*, 253 F.3d at 68.
128. *Id.*
129. *Conclusions 2000*, 87 F. Supp. 2d at 41 (citing Findings 250–51).
130. *Id.* (citing Findings 255–58, 261, 272, 288–90, 305–6).
131. *Id.* (citing Findings 259–60, 295).
132. *Id.*
133. *Id.* at 42.
134. *Id.* (citing Findings 259–60, 277, 284–86, 295).
135. *D.C. Circuit 2001*, 253 F.3d at 68.
136. *Id.*
137. *Id.*
138. *Findings 1999*, 84 F. Supp. at 48 (Findings 149–50, 154).
139. *Id.* (Findings 150, 152).
140. *Id.* (Finding 153).
141. *Id.* at 49 (Finding 155).
142. *Id.* (Findings 157–58).
143. *Id.* at 49–50 (Finding 159).
144. *Id.* at 58–59 (Findings 202–4).
145. *Id.* at 59–60 (Findings 204–8).
146. *Id.* at 60–61 (Findings 209–11).
147. *Id.* at 61 (Findings 212–13).
148. *Id.* at 50 (Findings 160–64).
149. *Id.* (Finding 165).
150. *Id.* at 52 (Finding 169).
151. *Id.* at 51–52 (Findings 166–69).
152. *Id.* at 52 (Findings 170).
153. *Id.* at 52–53 (Findings 171–72).
154. *Id.* at 53 (Finding 173).
155. *Id.* at 54 (Finding 174).
156. *Id.* at 53–55 (Findings 175–85).
157. *Id.* at 56–57 (Finding 193).
158. *Id.* at 57–58 (Findings 194–98).
159. *Id.* at 58 (Findings 199–201).
160. *Id.* at 55 (Finding 186).
161. *Id.* (Finding 187).
162. *Id.* (Finding 188).
163. *Id.* at 56 (Findings 190–91).
164. *Id.* (Finding 189).
165. *Id.* at 63 (Finding 217).
166. *Id.* at 64–65 (Findings 222, 224–25).
167. *Id.* at 65–66 (Finding 226).
168. *Id.* at 66 (Finding 227).
169. *Id.* (Finding 228).
170. *Id.* at 66–68 (Findings 229–35).
171. *Id.* at 68 (Findings 236–38).

172. *Id.* at 69 (Finding 241).

173. See *Division Accuses Microsoft of Violating 1995 Decree, Seeks \$1 Million a Day Fine*, 73 Antitrust & Trade Reg. Rep. (BNA) 385 (Oct. 23, 1997).

174. The consent decree, and the relevant provision, § IV(E)(i), are reported at *United States v Microsoft Corp.*, No 94-1564, 1995 WL 505998, at *3 (D.D.C. Aug. 21, 1995).

175. *United States v. Microsoft Corp.*, 147 F.3d 935 (D.C. Cir. 1998), *rev'g* 980 F. Supp. 537, 541 (D.D.C. 1997). The preliminary injunction barred Microsoft from “forcing OEMs to accept and preinstall the software code” of IE 3.0. *Id.* at 940. The government and Microsoft stipulated that this requirement could be met by “giving OEMs the options of (1) running the Add/Remove Programs utility with respect to OE 3.x and (2) removing the IE icon from the desktop and from the Programs list in the Start menu and marking the file IEXPLORE.EXE ‘hidden.’” *Id.* at 940–41. The court of appeals noted this remedy did not remove IE code. *Id.*

176. *Id.* at 950, 952. The conclusion was “subject to reexamination on a more complete record.” *Id.* at 952.

177. *Id.* at 950. Because of “the limited competence of courts to evaluate high-tech product designs and the high cost of errors,” *id.* at 950 n.13, a “court’s evaluation of a claim of integration must be narrow and deferential.” *Id.* at 949–50.

178. *Id.* at 948. The combination “must be different from what the purchaser could create from the separate products on his own” and the combined form must “be better in some respect. . . . The concept of integration should exclude a case where the manufacturer has done nothing more than to metaphorically ‘bolt’ two products together.” *Id.* at 949.

179. The court stated that while the narrow issue before it was the intent of the parties to the 1995 decree, the court “must keep procompetitive goals in mind,” *id.* at 946, in resolving that issue. Moreover, the standard of integration that it announced was “consistent with tying law.” *Id.* at 950.

180. *Conclusions 2000*, 87 F. Supp. 2d at 47.

181. *Id.* at 47–48.

182. *Id.* at 48.

183. *Id.* at 48–49.

184. *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 12–18 (1984).

185. *D.C. Circuit 2001*, 253 F.3d at 49.

186. *Id.* at 49–50.

187. *Id.* at 149–50, 162–63. Consumers still distinguish the browser from the operating system based on its specific functionality. *Id.*

188. *Conclusions 2000*, 87 F. Supp. 2d at 51.

189. *Id.* at 51 n.6.

190. *Id.* at 50.

191. *Id.* (citing Findings 158–65, 213).

192. *Id.* (citing Findings 158, 202).

193. *Id.* at 50 (citing Findings 170–72). He did not hold, however, that the commingling of operating system and browser code in the same files constituted tying.

194. *Id.* at 50.
195. *D.C. Circuit 2001*, 253 F.3d at 84.
196. *Id.* at 87–88.
197. *Id.* at 89.
198. “To the extent that the decision completely disclaimed judicial capacity to evaluate ‘high–tech product design,’ . . . it cannot be said to conform to prevailing antitrust doctrine (as opposed to resolution of the decree–interpretation issue then before us).” *Id.* at 92.
199. *Id.* at 92.
200. *Id.* at 93.
201. *Id.*
202. *Id.* at 95.
203. *Id.*
204. *Id.* at 96.
205. *Id.*
206. *Id.* (citing Findings 136–37 and *Conclusions 2000*, 87 F. Supp. 2d at 50).
207. *Conclusions 2000*, 87 F. Supp. 2d at 40 (citing Findings 155–74, 202–29, 230–38).
208. *Id.* at 40.
209. *Id.*
210. *Id.* (citing Findings 175–77).
211. *Findings 1999*, 84 F. Supp. at 49–50 (Finding 159).
212. *D.C. Circuit 2001*, 253 F.3d at 61.
213. *Id.* at 62 (citing Finding 212).
214. *Id.*
215. *Id.* at 63.
216. *Id.*
217. *Id.* at 64 (citing Finding 227).
218. *Id.* at 64–65.
219. *Id.* at 65.
220. *Id.*
221. *Id.*
222. *Id.* at 66.
223. *Id.* at 65.
224. Glenn Weadock testified that Microsoft “design[ed] [IE] so that some of the code that it uses co–resides in the same library files as other code needed for Windows.” *D.C. Circuit 2001*, 253 F.3d at 66. Edward Felten testified that SHDOCVW.DLL, “contains some functions that have to do specifically with Web browsing, and it contains some general user interface functions as well.” *Id.* Neither of these statements distinguishes shared IE and Windows code from IE code.
225. *Id.* at 66.
226. *Id.* at 66–67.
227. *Id.* at 67.
228. Oddly, the court, at this point of the opinion, assigned to the government “the burden not only of rebutting a proffered justification but also of

demonstrating that the anticompetitive effect of the challenged action outweighs it.” As we noted already, however, in its statement of the burden-shifting approach, the court required only that the government do *either* of these things. Id. at 59.

229. *Conclusions 2000*, 87 F. Supp. 2d at 51.

230. *Findings 1999*, 84 F. Supp. 69–71 (Findings 242–47).

231. Id. at 72–73 (Findings 254–58).

232. Id. at 80–82 (Findings 288–94).

233. Id. at 83 (Findings 296–98).

234. Id. at 85–86 (Findings 305–6).

235. Id. at 86–87 (Findings 307–10).

236. Id. at 87–91 (Findings 311–26).

237. Id. at 91 (Finding 329).

238. Id. at 91–93 (Findings 331–36).

239. Id. at 93–94 (Findings 337–40).

240. Id. at 94–97 (Findings 341–55).

241. Id. at 97–98 (Finding 356).

242. *Conclusions 2000*, 87 F. Supp. 2d at 52.

243. Id. at 53. Compaq, for example, stopped distributing Netscape at all in return for “financial remuneration.” Id. at 53 (citing Findings 230–34). AOL made IE its “browser of choice” and sharply limited its promotion and distribution of Navigator. Id. (citing Findings 287–90). There were similar contracts with other OLSs. Id. (citing Findings 305–6). Microsoft’s Top Tier and Platinum agreements with leading ICPs and ISVs obliged them to distribute IE exclusively. Id. (citing Findings 317–22, 325–26, 332). Apple agreed not to actively promote browsers other than IE. Id. (citing Findings 335–52).

244. Id.

245. *D.C. Circuit 2001*, 253 F.3d at 70.

246. *Conclusions 2000*, 87 F. Supp. 2d at 53.

247. Id. at 42.

248. Id. (citing Findings 305–6).

249. Id. at 43 (citing Findings 334–35).

250. *D.C. Circuit 2001*, 253 F.3d at 71.

251. Id.

252. Id.

253. The agreement with Apple to make IE the default browser and to include Navigator less conveniently, secured by the threat to terminate support for Mac Office, was also anticompetitive because it substantially restricted distribution of Navigator. Id. at 73–74. And Microsoft offered no procompetitive justifications.

254. Id. at 71–72.

255. Id. at 72.

256. *Findings 1999*, 84 F. Supp. at 29 (Finding 73).

257. Id. (Findings 73–74).

258. *Conclusions 2000*, 87 F. Supp. 2d at 38.

259. *Findings 1999*, 84 F. Supp. at 30 (Finding 76).

260. Id. at 110 (Finding 407).

261. *Id.* at 105 (Finding 387).
262. *Id.* at 105–6 (Findings 388–90).
263. When Sun added a library called Remote Method Invocation, Microsoft refused to include it in the runtime environment in IE 4.0, instead including Windows-specific interfaces to provide similar functionality. As required by its license agreement, Microsoft offered RMI on its Web site, but in an obscure location where developers would be unlikely to find it. All of this was to make it more difficult for developers to write easily portable applications. *Id.* at 106–7 (Findings 391–94).
264. *Id.* at 104 (Finding 395).
265. *Id.* at 107–8 (Finding 397).
266. *Id.*
267. *Id.* at 107.
268. *Id.* at 108 (Findings 399–400).
269. *Id.* at 108–9 (Finding 401).
270. *Id.* at 108 (Finding 398). RealNetworks also agreed, as a condition of being included in Windows, that it would primarily use the Windows-specific Java technologies. Microsoft also sought to prevent Intel from developing Sun-compliant Java multimedia class libraries by threatening, among other things, to support one of Intel’s rivals’ technologies. *Id.* at 109 (Finding 403).
271. *Conclusions 2000*, 87 F. Supp. 2d at 43 (citing Findings 387–93).
272. *Id.* (citing Findings 394, 396–403).
273. *Id.* at 43–44 (citing Findings 384, 399–407).
274. *D.C. Circuit 2001*, 253 F.3d at 74–75 (citing Findings 389–90, 396–97).
275. *Id.* at 75.
276. *Id.*
277. *Id.* at 76.
278. *Id.* at 75.
279. *Id.* at 76.
280. *Id.*
281. *Id.* at 76–77.
282. *Id.* at 77.
283. *Findings 1999*, 84 F. Supp. at 98 (Finding 359).
284. *Id.* at 99 (Finding 361).
285. Judge Jackson found that usage share was accurately measured by the number of hits on Web pages using various browsers, pointing to data Microsoft and Netscape used internally, and on hit data for commercial Web pages compiled by AdKnowledge; he rejected objections that the figures do not reflect all browser usage and that the figures compiled by Market Decisions Corporation were more accurate. *Id.* at 99–101 (Findings 363–71).
286. *Id.* at 98–102 (Findings 360, 363–65, 372).
287. *Id.* at 99, 102 (Findings 362, 372).
288. *Id.* at 102 (Finding 373).
289. *Id.* at 99 (Finding 362).
290. *Id.* at 103 (Finding 377).
291. *Id.* at 104–5 (Finding 385).

292. *Id.* at 103 (Finding 378).
293. *Id.* at 104-5 (Findings 380-84).
294. *Id.* at 110-11 (Finding 408).
295. *Id.* at 111 (Finding 409).
296. *Id.* (Finding 410).
297. *Id.* at 111-12 (Finding 411).
298. *Id.*
299. *Id.* at 112 (Finding 412).
300. *D.C. Circuit 2001*, 253 F.3d at 60.
301. *Id.* at 79 (quoting 3 Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 651C, at 78 (1996)).
302. *Id.*
303. *Id.*
304. *Id.*
305. *Id.* at 80.
306. *D.C. Circuit 2001*, 253 F.3d at 108.
307. *Id.* at 108; Joel Brinkley & Steve Lohr, *U.S. v. Microsoft: Pursuing a Giant; Retracing the Missteps in the Microsoft Defense*, *N.Y. Times*, June 9, 2000, at A1.
308. *D.C. Circuit 2001*, 253 F.3d at 107-8.
309. Brinkley & Lohr, *supra* note 307.
310. *D.C. Circuit 2001*, 253 F.3d at 109.
311. *Id.* at 109-10.
312. John R. Wilke, *For Antitrust Judge, Trust, or Lack of It, Really Was the Issue*, *Wall St. J.*, June 8, 2000, at A1.
313. Ken Auletta, *What Kept Microsoft from Settling Its Case*, *New Yorker*, Jan. 15, 2001, at 41.
314. *D.C. Circuit 2001*, 253 F.3d at 110.
315. *Id.* (quoting Peter Spiegel, *Microsoft Judge Defends Post-trial Comments*, *Fin. Times (London)*, Oct. 7, 2000, at 4).
316. *Id.* at 111 (quoting Brinkley & Lohr, *supra* note 1, at 278).
317. *Id.* at 107.
318. Canon 3A(6) of the Code of Conduct of United States Judges.
319. *D.C. Circuit 2001*, 253 F.3d at 112.
320. *Id.*
321. *Id.* at 113.
322. *Id.* (quoting Canons 2 and 2A).
323. *Id.*
324. *Id.* at 107 (quoting 28 U.S.C. § 455(a)).
325. *Id.* at 117 (“[W]e . . . vacate the remedy order for the reasons given in Section V [of the opinion] and because of the appearance of partiality created by the District Judge’s misconduct.”).
326. *Id.* at 118, 117.
327. *Id.* at 118.
328. *Id.*
329. *Id.* at 117.
330. *Id.* at 110.

331. *Id.* at 113.
332. *See id.* at 49.
333. *See id.* at 116.
334. *Jackson Remedy 2000*, 97 F. Supp. 2d at 62–63.
335. *D.C. Circuit 2001*, 253 F.3d at 49.
336. *Id.*
337. *Id.* at 102.
338. *Id.* at 101–2.
339. *Id.* at 102.
340. *Id.* at 103.
341. *Jackson Remedy 2000*, 97 F. Supp. 2d at 62–63.
342. *D.C. Circuit 2001*, 253 F.3d at 104–5.
343. *Id.* at 105–6.
344. *Id.* at 106–7.
345. Illinois, Louisiana, Maryland, Michigan, New York, Ohio, and Wisconsin.
346. *United States v. Microsoft Corp.*, 215 F. Supp. 2d 1 (D.D.C. 2002).
347. California, Connecticut, Florida, Iowa, Kansas, Massachusetts, Minnesota, Utah, West Virginia, and the District of Columbia.
348. *New York v. Microsoft Corp.*, 209 F. Supp. 2d 132 (D.D.C. 2002).
349. *D.D.C. 2002 Consent Decree*, 231 F. Supp. 2d at 144. The court insisted that the decree provide that the court would “retain jurisdiction to take action *sua sponte* in conjunction with the enforcement of the decree.” *Id.* at 202. The final version of the decree appears as *United States v. Microsoft Corp.*, No. Civ.A. 98-1232(CKK), 2002 WL 31654530 (D.D.C. Nov, 12, 2002) (hereinafter *D.D.C. 2002 Consent Decree Final*).
350. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 266–77.
351. *D.D.C. 2002 Consent Decree*, 231 F. Supp. 2d at 164.
352. *Id.* at 149–51.
353. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1250. The court allowed the Computer and Communications Industry Association and the Software and Information Industry Association to intervene as amici curiae to appeal the approval of the consent decree under the Tunney Act. *Id.* at 1234–36.
354. *Id.* at 1234. Only Massachusetts, of the original group of nonsettling states, pursued the appeal.
355. In this section, we cite the relevant portions of the final judgments using the outline numbering system adopted in both of the judgments, noting differences where they are appropriate. *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16.
356. Consent Decree, § VI.M., *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16.
357. *Id.* § VI.N.
358. *Id.* § VI.K.
359. *Id.* § VI.J.
360. *Id.* § III.E.
361. *Id.* § III.C.1, except that it may restrict including icons and entries in lists Microsoft legitimately specifies as providing “particular types of functionality.”

362. *Id.* § III.C.2.

363. *Id.* § III.C.3.

364. *Id.* § III.C.4.

365. *Id.* § III.C.5.

366. *Id.* § III.H.1. The mechanisms must provide separate and unbiased choices in these actions.

367. The invocation must be in a “separate Top-Level Window” and display either the full interface or the MMP trademark.

368. Consent Decree, § III.H.2, *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16.

369. *Id.* § III.H.3.

370. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1210.

371. *Id.* at 1211–12.

372. Consent Decree, § III.F.2, *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16. These requirements do not prohibit Microsoft from enforcing an IP right that is consistent with the judgment.

373. *Id.* § III.G.1.

374. *Id.* § III.G.2.

375. *Id.* § III.G.

376. These included Microsoft’s threat to Intel that it would favor AMD (Advanced Micro Devices, Inc.) technologies if Intel aided Sun in developing Java, and its threat to Apple that it would drop Mac Office if Apple did not give preferential placement to IE in the Mac OS.

377. States’ Final Judgment, § III.A, *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 267.

378. Consent Decree, § III.A, *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16.

379. *Id.* § III.B.

380. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1226–27.

381. *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at § III.F.1.

382. *Id.* § III.D.

383. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 173–77.

384. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1244.

385. *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at § III.E.

386. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1222–25.

387. *Id.* at 1225–26.

388. *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at § III.I.

389. *Id.* § IV.B.8.c.

390. *Id.* § III.J.

391. *D.C. Circuit 2004 Remedy*, 373 F.3d at 1213–15.

392. *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at § IV.A.

The plaintiffs may seek remedial orders after giving Microsoft an opportunity to cure an identified problem. *Id.* § IV.A.3.

393. The United States and Microsoft are jointly to select an unbiased Technical Committee of software experts to assist in enforcement. *Id.* § IV.B. The TC will be housed in Redmond, Washington, and have access to support facilities, *id.* § IV.B.7, and may interview employees, inspect documents, and gain

access to facilities. It can take complaints from anyone, id. § IV.B.8.d, and must make semiannual reports to the plaintiffs on compliance, id. § IV.B.8.e, but must keep information confidential. Id. § IV.B.9. The TC has since been formed and has begun its work. Microsoft must designate an internal compliance officer to supervise efforts to comply with the decree, including by counseling Microsoft personnel. Both the TC and the compliance officer are to create means by which anyone can file complaints about compliance.

394. States' Final Judgment, § IV.B, *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 273-74.

395. The reports are available at http://www.usdoj.gov/atr/cases/ms_index.htm.

396. See generally Thomas E. Kauper & Edward A. Snyder, *An Inquiry into the Efficiency of Private Antitrust Enforcement: Follow-on and Independently Initiated Cases Compared*, 74 *Geo. L.J.* 1163 (1986).

397. *In re Microsoft Corp. Antitrust Litig.*, 355 F.3d 322, 326-28 (4th Cir. 2004) (reversing the district court's decision that Netscape, Sun, Burst.com, Be Inc., and a consumer class may rely on any of the findings that only "supported" the decision in the government case).

398. *Microsoft to Pay AOL \$750M; Tech Titans Settle Netscape Lawsuit, Set Seven-Year Licensing Pact for AOL to Use Internet Explorer*, May 30, 2003, available at <http://money.cnn.com/2003/05/29/technology/microsoft/> (\$750 million); *Microsoft and RealNetworks Resolve Antitrust Case and Announce Digital Music and Games Partnership*, Microsoft press release, Oct. 11, 2005, available at <http://www.microsoft.com/presspass/press/2005/oct05/10-11MSRealPR.mspx> (\$761 million); *Microsoft and IBM Resolve Antitrust Issues*, Microsoft press release, July 1, 2005, available at <http://www.microsoft.com/presspass/press/2005/jul05/07-01msibmsettlepr.mspx> (\$775 million); *Microsoft and Sun Microsystems Enter Broad Cooperation Agreement; Settle Outstanding Litigation*, Microsoft press release, Apr. 2, 2004, available at <http://www.microsoft.com/presspass/press/2004/apr04/04-02SunAgreementPR.asp> (\$700 million; antitrust) (\$900 million; patent); *Microsoft Corp. and Be Inc. Reach Agreement to Settle Litigation*, Be, Inc. press release, Sept. 5, 2003, available at http://www.beincorporated.com/press/pressreleases/03-09-05_msft_settlement.html (\$23.25 million).

399. *In re Microsoft Corp. Antitrust Litig.*, 237 F. Supp. 2d 639 (D. Md. 2002).

400. *In re Microsoft Corp. Antitrust Litig.*, 333 F.3d 517, 530 (4th Cir. 2003).

401. *In re Microsoft*, 237 F. Supp. 2d at 651.

402. *In re Microsoft*, 333 F.3d at 531.

403. *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977).

404. See, e.g., Edward D. Cavanagh, *Illinois Brick: A Look Back and a Look Ahead*, 17 *Loy. Consumer L. Rev.* 1, 2 n.4 (2004).

405. *In re Microsoft Corp. Antitrust Litig.*, 218 F.R.D. 449, 451 (D. Md. 2003) (denying certification of a class that included Large Account Resellers, and noting that "[n]o OEM or other member of the putative class presently in business has instituted an antitrust overcharge suit against Microsoft").

406. Microsoft and Gateway Lay Foundation for Future Cooperation, Resolve Antitrust Claims, Microsoft press release, Apr. 11, 2005, available at <http://www.microsoft.com/presspass/press/2005/apr05/04-11GatewayPR.asp>; Microsoft and IBM Resolve Antitrust Issues, Microsoft press release, July 1, 2005, available at <http://www.microsoft.com/presspass/press/2005/jul05/07-01msibmsettletpr.msp>. Under the settlements, Microsoft was to pay Gateway \$150 million over four years; it was to pay IBM \$775 million and provide \$75 million in “credit towards deployment of Microsoft software at IBM.” The press releases state that the agreements resolved suits arising out of *United States v. Microsoft*, in which Gateway and IBM were each “identified in U.S. District Judge Thomas Penfield Jackson’s findings of fact as having been impacted in [their] business[es]” by Microsoft’s practices. In addition, the IBM settlement resolved disputes relating to the OS/2 operating system.

407. *In re Microsoft Corp. Antitrust Litig.*, 127 F. Supp. 2d 702, 704 (D. Md. 2001), *aff’d sub nom. Kloth v. Microsoft Corp.*, 444 F.3d 312 (4th Cir. 2006).

408. *Id.* See also *In re Microsoft Corp. Antitrust Litig.*, 241 F. Supp. 2d 563 (D. Md. 2003) (dismissing indirect purchaser class actions based on the law of Connecticut, Kentucky, Maryland, and Oklahoma because state law did not provide remedies for indirect purchasers).

409. *In re Microsoft Corp. Antitrust Litig.*, 214 F.R.D. 371 (D. Md. 2003) (denying certification of classes of purchasers of Microsoft’s applications software, “Select and/or Enterprise” customers who purchased software from “Large Account Resellers,” and purchasers seeking injunctive relief).

410. *In re Microsoft Corp. Antitrust Litig.*, 214 F.R.D. 371, 377 (D. Md. 2003) (approving a class of “persons who acquired licenses for operating system software through the shop.microsoft.com program,” but excluding as atypical large “enterprise” customers who bought software directly from Microsoft after October 19, 2001); *In re Microsoft Corp. Antitrust Litigation-Consumer Track*, NO. MDL 1332, 2003 WL 21781969 (D. Md. July 28, 2003) (expanding the class to “to include persons who purchased Microsoft operating system software as ‘Full Packaged Product’ in direct marketing campaigns during the class period”). The exclusion of enterprise purchasers from the class was later affirmed. *Deiter v. Microsoft Corp.*, 436 F.3d 461 (4th Cir. 2006).

411. Microsoft, Multi District Litigation Plaintiffs Announce Settlement Agreement in Federal Class Action Antitrust Case, Microsoft press release, available at <http://www.microsoft.com/presspass/press/2003/sep03/09-30MDLpr.asp>.

412. *Dickson v. Microsoft Corp.*, 309 F.3d 193, 199–213 (4th Cir. 2002).

413. *Id.* at 213–15.

414. *Kloth v. Microsoft Corp.*, 444 F.3d 312, 323, 325 (4th Cir. 2006).

415. See *In re Microsoft Corp. Antitrust Litig.*, 401 F. Supp. 2d 461 (D. Md. 2005) (South Carolina law); *Pomerantz v. Microsoft Corp.*, 50 P.3d 929 (Colo. Ct. App. 2002); *Vacco v. Microsoft Corp.*, 793 A.2d 1048 (Conn. 2002); *Hindman v. Microsoft Corp.*, No. 00-1-0945 (Haw. Dist. Ct. Sept. 21, 2000); *Berghausen v. Microsoft Corp.*, 765 N.E.2d 592 (Ind. Ct. App. 2002), *transfer denied*, 783 N.E.2d 692 (2002); *Arnold v. Microsoft*, No. 2000-CA-002144-MR, 2001 WL 1835377 (Ky. Ct. App. Nov. 21, 2001); *Davidson v. Microsoft*

Corp., 792 A.2d 336 (Md. Ct. Special App. 2002); *O'Connell v. Microsoft Corp.*, No. CA 00-01743, 2001 WL 893525 (Mass. Super. Ct. June 14, 2001); *Ireland v. Microsoft Corp.*, No. 00CV-201515, 2000 WL 1868946 (Mo. Cir. Ct. Jan. 24, 2001); *Krotz v. Microsoft Corp.*, No. A416361 (Nev. Dist. Ct. June 23, 2000); *Minuteman, LLC v. Microsoft Corp.*, 795 A.2d 833 (N.H. 2002); *Johnson v. Microsoft Corp.*, 834 N.E.2d 791 (Ohio 2005); *Major v. Microsoft Corp.*, 60 P.3d 511 (Okla. Ct. App. 2002); *Daraee v. Microsoft Corp.*, No. 0004-03311, 2000 WL 33187306 (Or. Cir. Ct. June 27, 2000); *Siena v. Microsoft Corp.*, 796 A.2d 461 (R.I. 2002); *Weinberg v. Microsoft Corp.*, No. D-162, D-526, 2000 WL 33187304 (Tex. Dist. Ct. Aug. 18, 2000).

416. *Comes v. Microsoft Corp.*, 646 N.W.2d 440 (Iowa 2002); *In re Microsoft Antitrust Litig.*, Civ.A. CV-99-709, 2001 WL 1711517 (Me. Super. Mar. 26, 2001); *Arthur v. Microsoft Corp.*, 676 N.W.2d 29 (Neb. 2004) (holding indirect purchasers have standing under a consumer protection statute that predated the state's *Illinois Brick* repeal statute); *Sherwood v. Microsoft Corp.*, No. M2000-01850-COA-R9CV, 2003 WL 21780975 (Tenn. Ct. App. July 31, 2003).

417. See *Friedman v. Microsoft Corp.*, CV2000-000722 (Ariz. Super. Ct. Maricopa Co. Nov. 15, 2000); *Coordination Proceedings, Microsoft I-V Cases*, No. J.C.C.P. 4106 (Cal. Super. Ct. San Francisco Co. Aug. 29, 2000); *In re Florida Microsoft Antitrust Litig.*, No. 99-27340 CA 11, 2002 WL 31423620 (Fla. Cir. Ct. Miami-Dade Co. Aug. 26, 2002); *Comes v. Microsoft Corp.*, 696 N.W. 2d 318 (Iowa 2005); *Bellinder v. Microsoft Corp.*, No. 00-C-0855, 00-C-00092, 99CV17089, 2001 WL 1397995 (Kan. Dist. Ct. Johnson Co. Sept. 7, 2001); *Gordon v. Microsoft Corp.*, No. MC00-5994 (Minn. Dist. Ct. Hennepin Co. Dec. 15, 2003) (refusing to decertify); *Gordon v. Microsoft Corp.*, No. MC00-5994, 2003 WL 2310552 (Minn. Dist. Ct. Hennepin Co. Mar. 14, 2003) (applications software); *Gordon v. Microsoft Corp.*, No. 00-5994, 2001 WL 366432 (Minn. Dist. Ct. Hennepin Co. Mar. 30, 2001); *In re New Mexico Indirect Purchasers Microsoft Antitrust Litig.*, No. D-0101-CV-2000-1697 (N.M. Dist. Ct. Santa Fe Co. Oct. 2, 2002); *Howe v. Microsoft Corp.*, 656 N.W.2d 285 (N.D. 2003); *In re South Dakota Microsoft Antitrust Litig.*, 657 N.W.2d 668 (S.D. 2003); *Sherwood v. Microsoft Corp.*, No. 99C-3562 (Cir. Ct. Tenn. Davidson Co. Dec. 20, 2002); *Capp v. Microsoft Corp.*, No. 00-CV-0637 (Wis. Cir. Ct. Dane Co. Sept. 12, 2001). Final settlements have been approved in Arizona, California, Florida, Kansas, Montana, North Dakota, South Dakota, Tennessee, and West Virginia.

Only three courts denied certification. *Melnick v. Microsoft Corp.*, No. CV-99-709, 2001 WL 1012261 (Me. Super. Ct. Cumberland Co. Aug. 24, 2001); *A&M Supply Co. v. Microsoft Corp.*, 654 N.W.2d 572 (Mich. Ct. App. 2002); *Fish v. Microsoft Corp.*, No. 00-031126-NZ (Mich. Cir. Ct. Wayne Co. Apr. 8, 2004).

418. See Laurie J. Flynn, *Few Takers for Payments from Microsoft Settlements*, N.Y. Times, Jan. 5, 2005, at C4. Cf. the California case's settlement Web site, <http://www.microsoftcalsettlement.com/>. Attorneys' fees have added to the total payout. See, e.g., *Friedman v. Microsoft Corp.*, 141 P.3d 824 (Ariz. App. 2006) (affirming an award of attorneys' fees of more than \$19 million

based on a settlement of the Arizona indirect purchaser class actions for \$104.6 million).

419. Case COMP/C-3/37.792 Microsoft, Commission Decision of 24 Mar. 2004, available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf> (hereinafter *EC Decision*).

420. *Id.* ¶ 999.

421. *Id.* ¶ 1011.

422. *Id.* ¶ 185.

423. *Id.*

424. *Id.* ¶¶ 342–43.

425. *Id.* ¶ 491.

426. *Id.* ¶ 526.

427. *Id.* ¶ 541.

428. *Id.* ¶ 692.

429. *Id.* ¶ 783.

430. *Id.* ¶ 569.

431. *Id.* ¶¶ 1005–9.

432. Paul Meller & Steve Lohr, *Regulators Penalize Microsoft in Europe*, N.Y. Times, July 13, 2006, at C1.

433. *EC Decision*, ¶¶ 801–13.

434. *Id.* ¶¶ 420, 864, 879 ff.

435. The assistant attorney general for antitrust noted that a “code removal” remedy . . . was not at any time—including during the period when the U.S. was seeking a breakup of Microsoft prior to the rejection of that remedy by the court of appeals—part of the United States’ proposed remedy,” and warned that “imposing antitrust liability on the basis of product enhancements, even by ‘dominant’ companies, risks protecting competitors, not competition, in ways that may ultimately harm innovation and the consumers who benefit from it.” Remarks of R. Hewitt Pate, A.B.A. Section of Antitrust Law, Apr. 2, 2004, available at <http://www.usdoj.gov/atr/public/speeches/203088.htm>.

436. *Id.* ¶ 1019.

437. *Id.* ¶ 1044.

438. *Id.* ¶ 1013.

439. *Id.* ¶ 1012.

440. *Id.* ¶ 959.

441. Paul Thurrott, *Windows XP N Editions*, Sept. 9, 2005, available at http://www.winsupersite.com/showcase/windowsxp_n.asp.

442. Case T201/04, *Microsoft Corp. v. Commission of the European Communities*, 2004 WL 2951977, [2005] 4 C.M.L.R. 5 (Ct. of First Instance Dec. 22, 2004).

443. *The Findings of the Microsoft Case*, Dec. 7, 2005, available at http://ftc.go.kr/data/hwp/micorsoft_case.pdf.

444. Statement of Deputy Assistant Attorney General J. Bruce McDonald Regarding Korean Fair Trade Commission’s Decision in Its Microsoft Case, Dec. 7, 2005, available at http://www.usdoj.gov/atr/public/press_releases/2005/213562.htm.

445. *Dominance: Microsoft Asks Seoul Court to Review Korea Fair Trade Commission Decision*, 90 Antitrust & Trade Reg. Rep. (BNA) 369 (Mar. 31, 2006).

CHAPTER THREE

1. As one court observed, “There is no subject in antitrust law more confusing than market definition.” *U.S. Healthcare, Inc. v. Healthsource, Inc.*, 986 F.2d 589, 598 (1st Cir. 1993).

2. Ilya Segal & Michael D. Whinston, *Antitrust in Innovative Industries* (Stanford Law Sch., Working Paper No. 312, Oct. 2005), available at <http://ssrn.com/abstract=834904>. See generally *Dynamic Competition and Public Policy: Technology, Innovation, and Antitrust Issues* (Jerry Ellig ed., 2001).

3. *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 12 (D.D.C. 1999) (Finding 2) (hereinafter *Findings 1999*). The circuit court similarly recognized two distinct primary functions of an operating system: allocate computer memory and control peripherals, and serve as a platform for software applications. *United States v. Microsoft Corp.*, 253 F.3d 34, 53 (D.C. Cir. 2001) (hereinafter *D.C. Circuit 2001*).

4. See David A. Heiner, *Assessing Tying Claims in the Context of Software Integration: A Suggested Framework for Applying the Rule of Reason Analysis*, 72 U. Chi. L. Rev. 123, 128 (2005) (defining *platform software* as “software that provides functionality upon which other software developers can call in creating their own software programs”).

5. See generally *Findings 1999*, 84 F. Supp. 2d at 50 (Finding 162).

6. See generally Heiner, *supra* note 4, at 128.

7. See *Findings 1999*, 84 F. Supp. 2d at 17 (Finding 28).

8. Steve Lohr, *Due Processor: Hey! Computers Go Faster Than the Courts*, N.Y. Times, Apr. 26, 1998, available at <http://www.nytimes.com/library/tech/reference/index-microsoft-98.html>; Neil Randall, *So What’s an Operating System, Anyway?* PC Mag., May 5, 1998, at 299.

9. Gary Reback & Susan Creighton, *White Paper Regarding the Recent Anticompetitive Conduct of the Microsoft Corporation* (July 1996) (unpublished manuscript). For a detailed discussion of the guiding narrative, see chapter 1.

10. Michael A. Cusumano and David B. Yoffie, *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft* 40, 105 (1998).

11. See, e.g., Malcolm B. Coate & Jeffrey H. Fischer, *The Truth Is Out There: The Microsoft Case Meets Market Realities* 26 (Potomac Law & Econ., Working Paper No. 04-01, Dec. 2004), available at <http://ssrn.com/abstract=638243>.

12. See Peter Huber, *Reno Rewrites Your Operating System*, Forbes, Dec. 11, 1997, at 308.

13. See, for example, Tom Unger, *Windows Your Way*, PC Mag., Feb. 26, 1991, at 135.

14. See Coate & Fischer, *supra* note 11, at 39.

15. For a simplified account of the development of Windows, see History of Microsoft Windows, http://en.wikipedia.org/wiki/History_of_Microsoft

_Windows. For Microsoft's official history, see Windows Products and Technologies History, <http://www.microsoft.com/windows/WinHistoryIntro.msp>.

16. If bundling a complementary product with a primary product increases the value of the primary product, the producer might be able to charge a higher price for the primary product; similarly, the producer might be able to avoid lowering the price of the primary product as a result of otherwise declining demand. To this extent, the apparent consumer benefit of receiving a valuable complementary product for free would be illusory. See Richard L. Gilbert & Michael L. Katz, *An Economist's Guide to U.S. v. Microsoft*, 15 J. Econ. Persp. 25, 37 (2001). It would be all but impossible to prove that a price that remained constant would in fact have dropped had the producer not bundled a complementary product with the primary product. But Judge Jackson did find that Microsoft never charged an increment in the price of Windows for the inclusion of Internet Explorer. See *Findings 1999*, 84 F. Supp. 2d at 44 (Finding 137).

17. Lohr, *supra* note 8. Coate and Fischer define an operating system "as both a set of programs sufficient to support applications, plus programs of general interest to the bulk of consumers." Coate & Fischer, *supra* note 11, at 39.

18. See <http://www.apple.com/macosex/newfeatures/over200.html>.

19. Direct Testimony of James Allchin, ¶ 77, available at http://web.archive.org/web/20010211102308/www.microsoft.com/presspass/trial/mswitness/allchin/allchin_full.asp.

20. Reback & Creighton, *supra* note 9, at 51.

21. David S. Evans, Albert L. Nichols & Richard Schmalensee, *U.S. v. Microsoft: Did Consumers Win?* 1 J. Competition L. & Econ. 497, 527–30 (2005).

22. See, e.g., Oz Shy, *The Economics of Network Industries* 17 (2001). See also S. J. Liebowitz & Stephen E. Margolis, *Network Effects and Externalities*, in 2 *New Palgrave Dictionary of Economics and the Law* 671 (Peter Newman ed., 1998); William H. Page & John E. Lopatka, *Network Externalities*, in 1 *Encyclopedia of Law & Economics* 952, 966 (Boudwijn Bouckaert & Gerrit De Geest eds., 2000); Nicholas Economides, *The Economics of Networks*, 14 Int'l J. Ind. Org. 673, 678 (1996); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 Am. Econ. Rev. 424 (1985) (hereinafter *Competition and Compatibility*); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. Econ. Persp. 93 (1994) (hereinafter *Systems Competition*).

23. Katz & Shapiro, *Systems Competition*, *supra* note 22, at 96–98; Economides, *supra* note 22, at 679.

24. For economic analyses of durable goods, see Jeremy I. Bulow, *Durable Goods Monopolists*, 90 J. Pol. Econ. 314 (1982); Ronald H. Coase, *Durability and Monopoly*, 15 J.L. & Econ. 143 (1972); N. L. Stokey, *Rational Expectations and Durable Good Pricing*, 12 Bell J. Econ. 112 (1981).

25. Katz & Shapiro, *Systems Competition*, *supra* note 22, at 94.

26. See *Findings 1999*, 84 F. Supp. 2d at 20 (Finding 39). See generally W. Brian Arthur, *Increasing Returns and Path Dependence in the Economy* 1–12 (1994).

27. Katz & Shapiro, *Systems Competition*, *supra* note 22, at 96.

28. *Id.*

29. See Katz & Shapiro, *Competition and Compatibility*, supra note 22.
30. See, e.g., Coate & Fischer, supra note 11, at 10 n.33.
31. See, e.g., Katz & Shapiro, *Systems Competition*, supra note 22, at 107; Stanley M. Besen & Joseph Farrell, *Choosing How to Compete: Strategies and Tactics in Standardization*, 8 J. Econ. Persp. 117, 118 (Spring 1994).
32. Katz & Shapiro, *Systems Competition*, supra note 22, at 107.
33. Mark A. Lemley, *Antitrust and the Internet Standardization Problem*, 28 Conn. L. Rev. 1041, 1074–75 (1996).
34. See generally Stan J. Liebowitz & Stephen E. Margolis, *Path Dependence, Lock-In, and History*, 11 J.L. Econ. & Org. 205 (1995) (distinguishing among three “degrees” of path dependence). But see Paul A. David, *Path Dependence, Its Critics and the Quest for “Historical Economics,”* in *Evolution and Path Dependence in Economic Ideas: Past and Present* (Pierre Garrouste & Stavros Ioannides eds., 2001) (criticizing the Liebowitz and Margolis analysis of path dependence).
35. Katz & Shapiro, *Systems Competition*, supra note 22, at 106–7. See also Joseph Farrell & Garth Saloner, *Installed Base and Compatibility: Innovation, Product Preannouncements, and Predation*, 76 Am. Econ. Rev. 940 (1986).
36. See S. J. Liebowitz & Stephen Margolis, *The Fable of the Keys*, 33 J.L. & Econ. 1 (1990); Liebowitz & Margolis, supra note 34, at 208–9; S. J. Liebowitz & Stephen E. Margolis, *Should Technology Choice Be a Concern to Antitrust Policy?* 9 Harv. J.L. & Tech. 283, 314–16 (1996).
37. See generally Page & Lopatka, supra note 22, at 965–69.
38. See generally Paul Klempner, *Competition When Consumers Have Switching Costs: An Overview with Applications to Industrial Organization, Macroeconomics, and International Trade*, 62 Rev. Econ. Stud. 515, 517 (1995). Consumer switching costs can arise from other sources as well, such as the transaction costs of switching suppliers, uncertainty about the quality of untested brands, discount coupons and similar devices, and even the psychological costs of switching. See id. at 517–18.
39. Technically, the necessary condition for a natural monopoly is subadditivity of the cost function. See William J. Baumol, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, 67 Am. Econ. Rev. 809 (1977). In the single-product setting, scale economies are sufficient, though not necessary, to prove subadditivity. In multiproduct industries, scale economies are neither a necessary nor a sufficient condition. Id.
40. A concept that is closely related to scale economies in production and is a characteristic of intellectual property is instant scalability. The idea is that a firm’s output can be increased very rapidly without large product-specific and irreversible investments. See Stan J. Liebowitz & Stephen E. Margolis, *Winners, Losers, and Microsoft* 137 (1999).
41. David S. Evans, *The Antitrust Economics of Multi-sided Platform Markets*, 20 Yale J. Reg. 325 (2003); Evans et al., supra note 21; David S. Evans & Michael D. Noel, *Analyzing Market Definition and Power in Multi-sided Platform Markets*, Oct. 21, 2005, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=835504; Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. Eur. Econ. Ass’n 990 (2003).

42. Evans et al., *supra* note 21, at 528.

43. *Id.*

44. Judge Jackson referred to these computers as “personal computers,” accurately distinguishing them from “servers,” which are more powerful computer systems, more expensive, and “designed to provide data, services, and functionality through a digital network to multiple users.” *Findings 1999*, 84 F. Supp.2d at 12 (Finding 1). See generally Gregory J. Werden, *Network Effects and Conditions of Entry: Lessons from the Microsoft Case*, 69 Antitrust L.J. 87, 88–89 (2001). The distinction between personal computers and servers was critical in the European Commission case against Microsoft, which focused on server operating systems.

45. *Findings 1999*, 84 F. Supp. 2d at 29 (Finding 72).

46. *Id.* at 12 (Findings 3–4).

47. *Id.* at 20 (Finding 39).

48. *Id.* at 13 (Finding 4).

49. *Id.* at 18, 20 (Findings 30, 38).

50. More than one operating system can be loaded on a personal computer, however. For example, Judge Jackson noted that the Be operating system, BeOS, is specially suited to support multimedia functions, is marketed as a complement to Windows, “and is almost always loaded on a system along with Windows.” *Id.* at 23 (Finding 49). Apple, which made the transition from IBM to Intel processors in 2005–2006, has announced that it will provide software to allow users to install Windows on Apple computers. See John Markhoff, *Windows or Mac? Apple Says Both*, N.Y. Times, Apr. 6, 2006, at A1.

51. *Id.* at 18 (Finding 30).

52. *Id.* (Finding 31).

53. See *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1211–12 (D.C. Cir. 2004).

54. *Findings 1999*, 84 F. Supp.2d at 20 (Finding 40).

55. *Id.* at 22 (Finding 47).

56. *Id.* at 22 (Finding 46).

57. *Id.* at 23 (Finding 49).

58. *Id.*

59. *Id.*

60. *Id.* at 18, 20 (Findings 30, 38).

61. *Id.* at 25 (Finding 57).

62. The circuit court dismissed Microsoft’s objection to Judge Jackson’s exclusion of the Mac OS from the market as “conclusory”: Microsoft “fails to challenge the District Court’s factual findings, or to argue that these findings do not support the court’s conclusions.” *D.C. Circuit 2001*, 253 F.3d at 52.

63. *Findings 1999*, 84 F. Supp. 2d at 18, 22–23 (Findings 31, 48–49).

64. *Id.* at 22 (Finding 48).

65. *Id.* at 15 (Finding 21).

66. *Id.* (Finding 20).

67. *Id.*

68. *Id.* (Finding 23). Information appliances, such as handheld devices, can be used to send and receive e-mail. A network computer, which does not contain mass storage, can run applications residing on servers; the user thus can perform

whatever functions are provided by the server-based applications. The court was correct that no single non-PC-based device provides all of the functionality of a personal computer. The court implied that it would have included these devices if a set of them could perform enough of the functions provided by a personal computer at about the same cost as a personal computer to attract a substantial number of consumers, but that these conditions will not be satisfied for the foreseeable future.

69. *Findings 1999*, 84 F. Supp. 2d at 15 (Finding 21).

70. *D.C. Circuit 2001*, 253 F.3d at 97.

71. *Findings 1999*, 84 F. Supp. 2d at 19 (Finding 35).

72. The owner of a standard might instead give away the platform, but charge makers of complementary products for use of its APIs. Or the standard might be promulgated by a consortium that does not attempt to acquire or enforce any property rights, but instead allows free use. For an illuminating discussion, see Coate & Fischer, *supra* note 11.

73. *D.C. Circuit 2001*, 253 F.3d at 49.

74. *Id.* (quoting Harold Demsetz, *Why Regulate Utilities?* 11 J.L. & Econ. 55, 57 & n.7 (1968)).

75. *D.C. Circuit 2001*, 253 F.3d at 49–50.

76. Liebowitz & Margolis, *supra* note 40, at 15.

77. *D.C. Circuit 2001*, 253 F.3d at 57.

78. *Id.* (citing Finding 61).

79. *Id.* (citing Findings 65–66).

80. *Id.* 58 (citing Finding 37). Interestingly, the court did not mention Judge Jackson's important finding that Microsoft may have exploited its monopoly power by imposing costly restrictions on other firms.

81. See, e.g., W. Brian Arthur, *Competing Technologies, Increasing Returns, and Lock-In by Historical Events*, 99 *Econ. J.* 116 (1989); P. A. David, *Clio and the Economics of QWERTY*, 75 *Amer. Econ. Rev.* 332 (1985).

82. Katz & Shapiro, *Systems Competition*, *supra* note 22, at 106.

83. S. J. Liebowitz & Stephen E. Margolis, *Network Externalities: An Uncommon Tragedy*, 8 *J. Econ. Persp.* 133, 135–36 (1994).

84. *Id.* at 146.

85. David S. Evans & Richard Schmalensee, *A Guide to the Antitrust Economics of Networks*, Antitrust, Spring 1996, at 36.

86. *D.C. Circuit 2001*, 253 F.3d at 56.

87. *Id.*

88. See *Findings 1999*, 84 F. Supp. 2d at 17 (Findings 28–29); *D.C. Circuit 2001*, 253 F.3d at 53–54.

89. *D.C. Circuit 2001*, 253 F.3d at 54.

90. See *Findings 1999*, 84 F. Supp. 2d at 17 (Finding 28).

91. *Id.* at 30 (Finding 77).

92. *Id.* at 18 (Finding 29).

93. Direct Testimony of Kevin M. Murphy, ¶¶ 129–30, *New York v. Microsoft Corp.*, Civ. No. 98-1233 (CKK) (Apr. 12, 2002), available at <http://download.microsoft.com/download/5/3/2/53239546-efee-460c-a583-11c20cdea9ab/Murphy.pdf> (hereinafter *Murphy Direct*).

94. *Id.* ¶ 133.

95. See Timothy J. Brennan, *Do Easy Cases Make Bad Law? Antitrust Innovations or Missed Opportunities in United States v. Microsoft*, 69 *Geo. Wash. L. Rev.* 1042, 1072–75 (2001).

96. See *Findings 1999*, 84 F. Supp. 2d at 28 (Finding 69). For example, Navigator was at the time ported to more than fifteen operating systems.

97. *Id.* at 29 (Finding 74).

98. *D.C. Circuit 2001*, 253 F.3d at 82.

99. *Id.* at 81.

100. *Id.* at 82.

101. *Findings 1999*, 84 F. Supp. at 33 (Finding 89). The finding that consumers are reluctant to switch browsers was also insufficient. *Id.* at 46–47 (Finding 144).

102. *D.C. Circuit 2001*, 253 F.3d at 82.

103. The government's expert testimony was vague on this issue, and Judge Jackson did not adopt the government's proposed finding that the browser market exhibited network effects. He did say in his conclusions of law that Microsoft could add proprietary extensions to IE that would prevent other browsers from displaying certain sites well, and that these actions might create network effects in the browser market, but he failed to hold that such a barrier was probable, or that it would be sufficient to allow exploitation of monopoly power. *D.C. Circuit 2001*, 253 F.3d at 82.

104. See Timothy F. Bresnahan, *Network Effects and Microsoft* (Stanford Univ. Dept. Econ. mimeo, 2001).

105. *Id.* at 29.

106. Paul Festa, *A Standards Truce in the Browser War?* CNET News.com, Aug. 4, 2005, http://news.com.com/A+standards+truce+in+the+browser+war/2100-1013_3-5818382.html.

107. Coate & Fischer, *supra* note 11.

108. *Id.* at 6–7, 8 n.30, 69–70.

109. See *Findings 1999*, 84 F. Supp. 2d at 43 (Finding 135).

110. See generally Liebowitz & Margolis, *supra* note 40, at 217–23.

111. See *Findings 1999*, 84 F. Supp. 2d at 98 (Finding 360).

112. *Id.* at 104 (Finding 385).

113. *Id.* at 111 (Finding 411).

114. John Markoff, *Mozilla Plans Faster Growth for Its Browser*, N.Y. Times, Aug. 3, 2005, at C5.

115. Reback & Creighton, *supra* note 9, at 41–47.

116. Ken Auletta, *World War 3.0: Microsoft and Its Enemies* 358–60 (2001).

117. Consent Decree, § VI.K.1, *United States v. Microsoft Corp.*, NO.

CIV.A. 98-1232(CKK), 2002 WL 31654530 (D.D.C. Nov. 12, 2002).

118. *Id.* § III.H.1.

119. *Id.* § III.D.

120. *Id.* § III.E.

121. See, e.g., Case COMP/C-3/37.792 Microsoft, Commission Decision of 24 Mar. 2004, ¶ 53, available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf> (hereinafter *EC Decision*).

122. See id. ¶¶ 53, 348–52, 356.

123. Id. ¶¶ 30–36, 144–84, 383–86.

124. Id. ¶ 177.

125. Id. ¶ 516.

126. Id. ¶¶ 517–22.

127. Id. ¶¶ 518–22. The Commission determined that network effects are only one source of the entry barriers protecting Microsoft’s dominance in the market for workgroup server operating systems. In addition, its dominance is protected by its reputation—users want to select an operating system that has a record of quality and is expected to be supported and developed—and by Microsoft’s refusal to provide interoperation information to rival server operating system vendors. See id. ¶¶ 523–24. An “entry barrier” that results from reputation and expectations of continued quality is hardly anticompetitive, and any refusal to provide interoperation information is better analyzed as anticompetitive conduct, rather than as the kind of structural condition that underlies entry barriers.

128. Id. ¶ 69.

129. Id. ¶ 491.

130. Id. ¶ 60.

131. Id. ¶¶ 61–64.

132. Id. ¶ 424.

133. Id. ¶ 65.

134. Id. ¶¶ 108–10.

135. Id. ¶¶ 113–17.

136. Id. ¶ 856.

137. Randal C. Picker, *Unbundling Scope-of-Permission Goods: When Should We Invest in Reducing Entry Barriers?* 72 U. Chi. L. Rev. 189, 204–5 (2005).

138. *EC Decision*, supra note 122, ¶¶ 796–98.

139. Id. ¶¶ 113–16.

140. Id. ¶¶ 883–91.

141. Id. ¶¶ 892–904.

142. Id. ¶¶ 900–926.

CHAPTER FOUR

1. *United States v. Microsoft Corp.*, 253 F.3d 34, 84–85 (D.C. Cir. 2001) (hereinafter *D.C. Circuit 2001*). The reasons for these differences are not entirely clear. Judge Jackson may have thought simple bundling of the browser with the operating system, apart from any restrictions on removal of the browser, to be illegal tying under a per se rule, but to have offered too many benefits to consumers to constitute an act of monopolization. In contrast, he may have thought commingling code to be a means of preventing removal of software code, and thus a means of protecting the applications barrier to entry, but not a means of preventing removal of browsing functionality—apparently the definition of the browser he used in the tying analysis. Andrew Chin, *Decoding Microsoft: A First Principles Approach*, 40 Wake Forest L. Rev. 1, 113–14 (2005).

2. The terminology used by economists, lawyers, and judges in this area is far from uniform. Some authors distinguish among ties achieved through contract, product design, and pricing. See Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 *Rand J. Econ.* 194, 197 (2002). In this typology, what we call Level 1 integration is tying through contract, with the price of the complementary good (IE) set at zero. The hallmark of tying through product design is incompatibility between the primary product and an alternative producer's complementary product; Level 1 integration did not involve such tying because Windows was compatible with other browsers. Other authors distinguish among tying, pure and mixed bundling, joint distribution, and integration. See, e.g., Jean Tirole, *The Analysis of Tying Cases: A Primer*, 1 *Competition Pol'y Int'l* 1, 8 (Spring 2005). Level 1 integration would presumably constitute "pure bundling," or the offering for sale of two products only as a package. As we discuss later in the text, the form of tying can be relevant for a number of reasons. The capacity of a tie to reduce or to increase welfare may depend on its form. Further, the form of a tie can determine whether it can be undone, and the ability to undo a tie can affect the tie's capacity to reduce welfare. In general, anticompetitive models of tying arrangements usually require that the seller precommit to the tie, and the form of the tie can affect the credibility of the commitment.

3. *United States v. Microsoft Corp.*, No. 94-1564, 1995 WL 505998, at *3 (D.D.C. Aug. 21, 1995) (§ IV.E.i).

4. See *United States v. Microsoft Corp.*, 147 F.3d 935, 940 n.2 (D.C. Cir. 1998) (quoting government brief) (hereinafter *D.C. Circuit 1998*).

5. *Id.* at 940.

6. Ken Auletta, *World War 3.0: Microsoft and Its Enemies* 14 (2001).

7. *D.C. Circuit 1998*, 147 F.3d at 940–41.

8. Chin, *supra* note 1, at 4–12.

9. *D.C. Circuit 1998*, 147 F.3d at 950. Because of "the limited competence of courts to evaluate high-tech product designs and the high cost of errors," *id.* at 950 n.13, a "court's evaluation of a claim of integration must be narrow and deferential." *Id.* at 949–50.

10. *Id.* at 948. The combination "must be different from what the purchaser could create from the separate products on his own" and the combined form must "be better in some respect. . . . The concept of integration should exclude a case where the manufacturer has done nothing more than to metaphorically 'bolt' two products together." *Id.* at 949.

11. *Id.* at 949–50 & n.13.

12. *Id.* at 950 (quoting *ILC Peripherals Leasing Corp. v. IBM*, 458 F. Supp. 423, 439 (N.D. Cal. 1978), which in turn quotes *Response of Carolina, Inc. v. Leasco Response, Inc.*, 537 F.2d 1307, 1330 (5th Cir. 1976)).

13. *D.C. Circuit 1998*, 147 F.3d at 949.

14. *Id.* at 950–51.

15. *Id.* at 951–52.

16. *Id.* at 941 (citations omitted).

17. *Id.* at 941 n.3.

18. *Id.* at 952 n.17.

19. *Id.* at 964 (“The fact that, as the majority suggests . . . ‘Internet Explorer’ distributes certain code to the operating system may simply suggest that some or all of this code should not be considered part of ‘Internet Explorer’ at all but part of the operating system.”) (Wald, J., concurring).

20. *Id.* at 958 (Wald, J., concurring).

21. *Id.* at 949 n.12.

22. Direct Testimony of James Allchin, ¶ 77, available at http://web.archive.org/web/20010211102308/www.microsoft.com/presspass/trial/mswitness/allchin/allchin_full.asp (hereinafter Allchin Direct).

23. Allchin Direct, ¶¶ 87, 104. See also Transcript of Testimony of James Allchin, Feb. 2, 1999, P.M. Session, Westlaw MICROSOFT-TRANS library, 1999 WL 47198, at *27 (hereinafter Allchin Examination, Feb. 2, 1999, P.M. Session). (Throughout the book, we refer to the examination of a witness at trial by identifying the relevant portion of the trial transcript and using the word *Examination*, regardless of which party is conducting the examination of the witness.)

We went through a transition from IE 1 and IE 2 to IE 3. There is a big transition there where, in my simple terms, I might have called those applications before even included in the system, but the way they operated. In IE 3, the API's became much more entrenched in the system, and we exposed so many more API's at that time frame. And then what happened in IE 4 is the system itself started using those API's to produce the user interface. So, it went through a transition here over time from knowing that we needed the technology for end users to browse—that was our first conclusion—to saying, “oh, my, if we componentize this”—in other words, break it into different pieces of technology to be able to have OC [object control] API's on it, you could do a lot more. And we could evangelize this to developers to be able to use.

24. According to Microsoft, the most important IE technologies were included in six DLLs. Archie Tse, *IE 4.0: Under the Hood*, N.Y. Times, Mar. 2, 1998, available at <http://partners.nytimes.com/library/tech/98/03/biztech/articles/02explorer-side.html>; Allchin Direct, ¶ 100. These four primary DLLs were:

1. SHDOCVW.DLL, which creates the windows in which the browser displays Web information. These may be separate windows or embedded within other file-viewing windows. It also provides browser functions like Back or Forward buttons.
2. WININET.DLL, which supports basic Internet protocols like HTTP and allows users to retrieve data from Internet sites and on local networks.
3. MSHTML.DLL, which “parses and renders” (that is, reads and displays) documents written in HTML, the set of codes used for publishing Web pages.

4. URLMON.DLL, which allows Windows and applications software to recognize Internet addresses called Universal Resource Locators, or URLs.

In addition, SHLWAPI.DLL read Internet addresses and hyperlinks and COMCTL32.DLL created toolbars, menus, and dialog boxes not merely for IE, but for basic Windows functions. In addition to the DLLs, IE relied on IEXPLORE.EXE, a small file that starts IE by loading DLLs into the computer's memory, and EXPLORER.EXE, which relies on DLLs to create user interfaces for viewing files.

25. Allchin Direct, pt. III.C.

26. Id. ¶ 130. Even Netscape uses some of the Internet technologies in Windows 98. Id. ¶ 134.

27. Id.

28. Steven J. Davis et al., *Economic Perspectives on Software Design: PC Operating Systems and Platforms*, in *Microsoft, Antitrust, and the New Economy: Selected Essays* 361, 379 (David S. Evans ed., 2002).

29. Id. at 380.

30. Id. at 381.

31. Allchin Examination, Feb. 2, 1999, P.M. Session, 1999 WL 47198, at *11.

32. Allchin Direct, ¶ 117.

33. Id. Appendix A.

34. A transcript of the videotape appears in Transcript of Testimony of James Allchin, Feb. 1, 1999, A.M. Session, Westlaw MICROSOFT-TRANS library, 1999 WL 46578, at *16-*22 (hereinafter Allchin Examination, Feb. 1, 1999, A.M. Session). This demonstration was apparently inspired by the court of appeals' opinion in the consent decree case, which stated that benefits of integration could be evaluated by comparing the assertedly integrated product with a "combin[ation of] the functionalities in their stand-alone incarnations." *D.C. Circuit 1998*, 147 F.3d at 949. The asserted benefits described in the video are these:

- A. Using Windows Explore Functions to Manage Files and to Browse the Web
 1. The My Computer function in Windows 98 gives a more detailed view of the disk drives and allows easier navigation into and out of the hard drive using Web-inspired Forward and Back buttons.
 2. The Control Panel function includes links to a Microsoft Technical Support Web site that the user can access without leaving Control Panel. Again, the toolbar allows Web-like navigation. Control Panel also includes an address bar in which any URL can be typed to access a site on the Web. These functions require separate applications in the un-integrated machine.

3. It is possible to access, view, and manipulate data on disk drives from within Internet Explorer on Windows 98, to drag folders and files to the desktop, and to navigate between those drives and sites on the Web. In the Netscape machine, the browser can be used to view the hard drive, but not to manipulate files to view them within the same window.
4. Windows 98 allows the user to create a folder of saved “Cool Web Sites,” and to preview them in thumbnail views.

B. Integrated Desktop

1. Active Desktop allows the user to place (and size) a Web page (for example, displaying a stock ticker) on the Windows Desktop by dragging the address of the Web site to the desktop.
2. Similarly, Active Desktop allows the user to create a shortcut to a Web site and place it on the desktop by dragging and dropping a Favorites item to the desktop. Clicking on the shortcut launches Internet Explorer and accesses the site. Shortcuts can also be saved to floppy drives by dragging the shortcut to the floppy in My Computer. If that floppy disk were placed in a drive on a Windows 95 machine with only Netscape, it would not be possible to access the Web site by clicking the shortcut.

C. The Start Menu

1. The Windows 98 Start menu automatically lists Favorites Web sites chosen by the user and listed in a drop-down menu in Internet Explorer.
2. My Computer allows the user to view Web sites listed as Favorites in the Start menu.
3. The user can type a URL in the Run command’s dialog box and access a Web site on Internet Explorer.
4. The user can select create an Address area in the Windows 98 task bar that allows the user to type in any filename or URL and access information.

35. See Allchin Direct, Appendix A.

36. Id. ¶¶ 111–13.

37. Id. ¶ 39.

38. Id. ¶ 41.

39. Id. ¶ 43. See also Steve Lohr, *Due Processor: Hey! Computers Go Faster Than the Courts*, N.Y. Times, Apr. 26, 1998, § 4, at 3; Dylan Loeb McClain, *The Kitchen Sink Operating System*, N.Y. Times, May 21, 1998, at D5 (describing development of Microsoft’s operating systems from MS-DOS 1.0 to Windows 98); Neil Randal, *So What’s an Operating System, Anyway?* PC Mag. 299, May 5, 1998, at 299.

40. The government asserted that although “IE provides ‘a small number of Internet-oriented updates that are not available through the installation of Internet Explorer, as distributed separately from the operating system, . . . the browsing functionality in Windows 98 is almost entirely equivalent to that

provided when Internet Explorer 4.01 is installed on top of Windows 95.”
United States v. Microsoft Corp., No. 98-1232, 1998 WL 614485, at *10
 (D.D.C. Sept. 14, 1998) (citations omitted).

41. Allchin Examination, Feb. 1, 1999, P.M. Session, 1999 WL 46581, at *10–*19.

42. The court of appeals in the consent decree case appeared to endorse this characterization. *D.C. Circuit* 1998, 147 F.3d at 947 (“Distribution of software code on a separate CD-ROM shows nothing at all about whether the code is integrated into an operating system (software for an operating system that is clearly a single product may take up many disks).”).

43. Allchin Examination, Feb. 1, 1999, P.M. Session, 1999 WL 46581, at *12.

44. Answer, ¶¶ 10, 103.

45. Allchin Direct, ¶ 95. The court of appeals in the consent decree case appeared to reject the contention that the legality of a tie turns on whether the product is also offered separately, particularly when the goods at issue are used in fixed proportions. *United States v. Microsoft Corp.*, 147 F.3d 935, 948 (D.C. Cir. 1998).

46. *United States v. Microsoft Corp.*, No. 98-1232 (D.C. Cir. filed May 18, 1998), Expert Testimony of Professor David J. Farber ¶ 10, available at <http://www.usdoj.gov/atr/cases/f213400/213459.htm> (hereinafter Farber Direct).

47. *Id.* ¶¶ 11, 22.

48. *Id.* ¶ 11.

49. *Id.* ¶¶ 14–15.

50. *Id.* ¶ 24.

51. *Id.* ¶ 23.

52. *United States v. Microsoft Corp.*, No. 98 cv 1232 (D.C. Cir. filed May 18, 1998), Testimony of David J. Farber, Dec. 8, 1998, P.M. Session, available in Westlaw MICROSOFT-TRANS library, 1998 WL 850430, at *11 & passim (hereinafter Farber Examination, Dec. 8, 1998, P.M. Session).

53. Farber Direct, ¶ 26.

54. *United States v. Microsoft Corp.*, No. 98-1232 (D.C. Cir. filed May 18, 1998), Expert Testimony of Professor Edward W. Felten ¶ 67, available at <http://www.usdoj.gov/atr/cases/f213400/213460.htm> (hereinafter Felten Direct).

55. Felten Direct, ¶¶ 30–31.

56. Allchin Direct, ¶ 30.

57. *Id.*

58. *Id.* ¶ 36.

59. *Id.* ¶¶ 38–42.

60. Allchin Direct, part III.C.

61. *Id.* part III.B.

62. A complete technical specification of the program’s functions appears in *id.*, Appendix B.

63. *Id.* ¶ 54.

64. *Id.* ¶ 57.

65. *Id.* ¶¶ 55-56.

66. Testimony of Edward W. Felten, Dec. 14, 1998, A.M. Session, available in Westlaw MICROSOFT-TRANS library, 1998 WL 870699, at *13 (emphasis added) (hereinafter Felten Examination, Dec. 14, 1998, A.M. Session).

67. Allchin Direct, part IV.B.

68. *Id.* ¶ 167.

69. *Id.* ¶¶ 170-71 (describing changes in the Windows Registry made by the program).

70. *Id.* ¶¶ 161-62.

71. *Id.* part IV.A.

72. *Id.* ¶¶ 157-60.

73. *Id.* ¶ 169 & Appendix B.

74. Felten Direct, ¶¶ 67, 70-73; *United States v. Microsoft Corp.*, No. 98 cv 1232 (D.C. Cir. filed May 18, 1998), Felten Examination, Dec. 14, 1998, P.M. Session, 1998 WL 870700, at *10-*13.

75. Felten Examination, Dec. 14, 1998, A.M. Session, 1998 WL 870699, at *16.

76. Allchin Direct, ¶¶ 176-78. A transcript of the videotape demonstration of these means appears in Allchin Examination, Feb. 1, 1999, P.M. Session, 1999 WL 46581, at *1-*5.

77. Allchin Examination, Feb. 1, 1999, P.M. Session, 1999 WL 46578, at *5-*8 (videotape).

78. See, e.g., Allchin Examination, Feb. 2, 1999, A.M. Session, 1999 WL 47192, at *8-*9 (Allchin stated that, because of an apparent discrepancy in the Windows Title Bar shown in one of the demonstrations, "I believe . . . they filmed the wrong system.").

79. A transcript of this videotape appears in Allchin Examination, Feb. 4, 1999, P.M. Session, 1999 WL 51623, at *7-*18.

80. *D.C. Circuit 1998*, 147 F.3d at 950.

81. *Id.* at 948.

82. *D.C. Circuit 2001*, 253 F.3d at 58-59.

83. *Id.* at 59.

84. *Id.*

85. *Id.* at 68.

86. *Id.* at 75.

87. This approach resembles the test, proposed by one commentator, that a practice is monopolistic if it is "reasonably capable of creating, enlarging, or prolonging monopoly power by impairing the opportunities of rivals" and that (1) it "does not benefit consumers at all"; (2) it is "unnecessary for the particular consumer benefits that the acts produce"; or (3) it inflicts "harms disproportionate to the resulting benefits." 3 Phillip Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 651A, at 72 (2d ed. 2002).

88. *D.C. Circuit 2001*, 253 F.3d at 71.

89. *Id.* at 67.

90. *Id.* at 71-72.

91. *Id.* at 65.

92. *Id.*

93. *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984).

94. *Conclusions 2000*, 87 F. Supp. 2d at 50.

95. *Id.*

96. *D.C. Circuit 2001*, 253 F.3d at 88.

97. The proposition is debatable. The Supreme Court has suggested that tying justifications are cognizable and can be considered outside of the two-product inquiry. For instance, in *IBM Corp. v. United States*, 298 U.S. 131, 139 (1936), the defendant claimed that tying the lease of a tabulating machine to the purchase of tabulating cards, products the Court and parties viewed as separate, was justified by the need to ensure proper interoperability and thereby preserve good will. The Court rejected the defense, not because defenses are incognizable, but because the legitimate objective could be served in ways other than a tie. In *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451, 478–79 (1992), the defendant attempted to justify its tie of replacement parts and service. The Court did not reject the possibility of a justification, but held that the issue could not be resolved on summary judgment.

98. *D.C. Circuit 2001*, 253 F.3d at 93.

99. The court emphasized that in the tying inquiry the plaintiff must establish an anticompetitive effect in the market for the *tyed* product—browsers. *Id.* at 95 (proving a reduction in competition “involves an inquiry into the actual effect of Microsoft’s conduct on competition in the tied good market, . . . the putative market for browsers”) (internal citations and quotation omitted).

100. *Conclusions 2000*, 87 F. Supp. 2d at 50.

101. For a related argument, see Randal C. Picker, *Pursuing a Remedy in Microsoft: The Declining Need for Centralized Coordination in a Networked World*, 158 J. Institutional & Theoretical Econ. 113 (2002).

102. *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 21 (1984) (“The answer to the question whether petitioners have utilized a tying arrangement must be based on whether there is a possibility that the economic effect of the arrangement is that condemned by the rule against tying—that petitioners have foreclosed competition on the merits in a product market distinct from the market for the tying item.”).

103. *D.C. Circuit 2001*, 253 F.3d at 87.

104. But notice that this result assumes that the tied products are roughly comparable in quality. A rival film processor might nevertheless survive if its services are sufficiently better than Kodak’s services that consumers were willing to pay a price for them above the rival’s unit production costs.

105. In some cases, the design did override the user’s choice of a default browser, and the license terms that prevented OEMs from deleting IE were found to deter OEMs from installing a second browser. Because these characteristics of the design and distribution of IE went beyond simple bundling, we consider them later in this chapter as an aspect of Microsoft’s failure to permit unbundling of IE. For the present, we focus on the simple act of bundling itself.

106. See Tirole, *supra* note 2, at 13.

107. *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 44 (D.D.C. 1999) (hereinafter cited as *Findings 1999*) (Finding 136) (“Microsoft sought to

increase the product's share of browser usage by giving it away for free. In many cases, Microsoft also gave other firms things of value (at substantial cost to Microsoft) in exchange for their commitment to distribute and promote Internet Explorer, sometimes explicitly at Navigator's expense." See also *id.* (Finding 137) ("Microsoft decided not to charge an increment in price when it included Internet Explorer in Windows for the first time, and it has continued this policy ever since. In addition, Microsoft has never charged for an Internet Explorer license when it is distributed separately from Windows."); *id.* at 71 (Finding 250) ("Microsoft licensed the [IE Access Kit] including Internet Explorer, to IAPs at no charge."). But cf. *D.C. Circuit 2001*, 253 F.3d at 96.

108. *Findings 1999*, 84 F. Supp. 2d at 45 ("Not only was Microsoft willing to forego an opportunity to attract substantial revenue while enhancing (albeit temporarily) consumer demand for Windows 98, but the company also paid huge sums of money, and sacrificed many millions more in lost revenue every year, in order to induce firms to take actions that would help increase Internet Explorer's share of browser usage at Navigator's expense.").

109. See *id.* at 47 (Finding 145) (noting that Microsoft and Netscape offered "browsing software for free").

110. Judge Jackson dubiously suggested that having a second browser on a computer represented a significant opportunity cost by taking up "scarce and valuable space on a PC's hard drive." *Id.* at 50 (Finding 159).

111. *Conclusions 2000*, 87 F. Supp. 2d at 50.

112. *Findings 1999*, 84 F. Supp. 2d at 44 (Finding 137) ("Microsoft decided not to charge an increment in price when it included Internet Explorer in Windows for the first time, and it has continued this policy ever since. In addition, Microsoft has never charged for an Internet Explorer license when it is distributed separately from Windows.").

113. *Conclusions 2000*, 87 F. Supp. 2d at 50.

114. *Id.*

115. Judge Jackson reasoned that consumers will almost always use whichever browser can be acquired with least effort. Thus, OEM preinstallation and IAP bundling are by far the most efficient channels of browser distribution because they require the user to expend no extra effort to acquire browsing ability. Users will not pay retailers if they receive a free browser with their computers; they will not download a browser because the process is "intimidat[ing] to "neophyte[s]" and "takes a moderate degree of sophistication and substantial amount of time"; they will not even install a browser contained on a free CD-ROM received in the mail or as a magazine insert because "merely installing a browser takes time and can be confusing for novice users." *Findings 1999*, 84 F. Supp. 2d at 47 (Findings 144–47).

116. For example, the court specifically found that offering at no charge or even a negative price IE or the IE Access Kit (IEAK)—a software package that allows IAPs to create distinctive identities for their services—and creating the IEAK itself did not violate the Sherman Act, even though the conduct placed rival browser producers at a competitive disadvantage. See *D.C. Cir. 2001*, 253 F.3d at 68.

117. Complaint, ¶ 16, *United States v. Microsoft Corp.*, No. 98-1232 (D.D.C. May 18, 1998), available at <http://www.usdoj.gov/atr/cases/f1700/1763.htm>.

118. David S. Evans, Albert L. Nichols & Richard Schmalensee, U.S. v. Microsoft: *Did Consumers Win?* 1 J. Competition L. & Econ. 497, 529 (2005). See also David S. Evans & Michael Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 Yale J. on Reg. 37 (2005) (surveying the economic literature and describing the role of product-specific scale economies in the decisions of competitive firms to bundle).

119. Davis, *supra* note 28, at 392–95. See also James Farrell & Michael Katz, *Innovation, Rent Extraction, and Integration in System Markets*, 48 J. Indus. Econ. 413 (2000).

120. Annabelle C. Gawer & Michael A. Cusumano, *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation* (2003).

121. Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. Eur. Econ. Ass'n 990, 991 (2003) (observing that “platforms often treat one side as a profit center and the other as a loss leader, or, at best, as financially neutral”).

122. Davis, *supra* note 28, at 394.

123. *D.C. Circuit 2001*, 253 F.3d at 96.

124. *Findings 1999*, 84 F. Supp. 2d at 48 (Finding 150).

125. *Id.* (Finding 152).

126. *D.C. Circuit 2001*, 253 F.3d at 88, 93.

127. *Conclusions 2000*, 87 F. Supp. 2d at 51.

128. *D.C. Circuit 2001*, 253 F.3d at 93.

129. *Id.*

130. *Findings 1999*, 84 F. Supp. 2d at 55 (Finding 186).

131. *Id.*

132. *Id.* at 48 (Finding 153) & 68 (Finding 229).

133. *D.C. Circuit 2001*, 253 F.3d at 93.

134. Judge Jackson observed that although many, if not most, consumers benefited by the inclusion of IE in Windows, “[n]o consumer benefit can be ascribed . . . to Microsoft’s refusal to offer a version of Windows . . . without Internet Explorer. . . .” *Findings 1999*, 84 F. Supp. 2d at 55 (Finding 186). But the assertion is deceptive. A product may be offered only in the form most consumers prefer because the marginal cost of offering it in a second form is greater than the marginal revenue it would generate. For example, some consumers might prefer Coca-Cola made with cane sugar, but the company may sell it made only with corn syrup. Collectively, consumers benefit when products are supplied efficiently, even if some consumers are made worse off. The antitrust laws do not define consumer welfare so narrowly that all consumers have a right to purchase the precise form of the product they want, albeit at a price reflecting the productive inefficiency.

135. *Findings 1999*, 84 F. Supp. 2d at 49 (Findings 155, 157–58).

136. The government contended, however, that Navigator was not on the desktop on many of these computers.

137. *Findings 1999*, 84 F. Supp. 2d at 49 (Finding 159) & 63 (Finding 217). He also emphasized that Microsoft threatened OEMs who sought to delete IE, and offered incentives to those who promoted IE. All of these actions, he reasoned, foreclosed Netscape from the OEM channel to boost IE’s usage share. *Id.* at 68–69 (Findings 236–38, 241).

138. *Id.* at 53–55 (Findings 175–85).

139. *D.C. Circuit 2001*, 253 F.3d at 61. The court confirmed this interpretation by stating “because an OEM’s altering the appearance of the desktop or promoting programs in the boot sequence *does not affect the code already in the product*, the practice does not self-evidently affect either the ‘stability’ or the ‘consistency’ of the platform.” *Id.* at 63–64.

140. *Id.* at 62–64. Some OEMs included programs that would automatically substitute another user interface for Windows at the conclusion of a PC system’s first boot sequence. The court of appeals found that the programs caused a “drastic alteration of Microsoft’s copyrighted work” and that Microsoft’s interest in the value of its work outweighed the marginal anticompetitive impact of the restriction.

141. *Id.* at 63–64.

142. *Findings 1999*, 84 F. Supp. 2d at 24 (Finding 54). See also *id.* at 56–57 (Finding 193) (“OEMs operate in a competitive market and thus have ample incentive to include APIs (including non-Microsoft APIs) required by the applications that their customers demand”); *id.* at 64 (Finding 222) (“OEMs are loathe [*sic*] to do anything that will lead to consumer questions and complaints”).

143. *Id.* at 65 (Finding 225).

144. *D.C. Circuit 2001*, 253 F.3d at 63.

145. See Ben Charny, *Netscape Lands Browser Distribution Deal with HP*, eweek.com, Oct. 3, 2005, available at <http://www.eweek.com/article2/0,1895,1866506,00.asp>; Joris Evers, *HP to Ship Netscape Browser on New PCs*, CNET News.com, Oct. 3, 2005, available at http://news.com.com/2100-1032_3-5887648.html.

146. Evans et al., *Did Consumers Win?* supra note 118, at 532 n.124 (describing the results of 2004 study of new systems).

147. Transcript of Oral Argument, Feb. 26, 2001, *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (No. 00-5212), available at <http://cyber.law.harvard.edu/msdoj/transcript02-26.html>.

148. *D.C. Circuit 2001*, 253 F.3d at 65.

149. For example, the “removal” program developed by Edward Felten removed only some of the means of access to the browser.

150. *D.C. Circuit 2001*, 253 F.3d at 65.

151. *Id.*

152. *Id.* at 67.

153. *Id.* at 65–66.

154. *Id.* at 66.

155. *Id.*

156. *Id.*

157. Evans et al., *Did Consumers Win?* supra note 118, at 526.

158. *D.C. Circuit 1998*, 147 F.3d at 950–51.

159. *D.C. Circuit 2001*, 253 F.3d at 87.

160. *Id.* at 79.

161. *Id.*

162. *Id.* at 79 (citing 3 Areeda & Hovenkamp, *Antitrust Law* ¶ 651c, at 78).

163. In reversing the remedial order, the court noted that it had found a causal connection between Microsoft's acts and its monopoly "only by inference." *D.C. Circuit 2001*, 253 F.3d at 106–7.

164. See Alan J. Meese, *Monopolization, Exclusion, and the Theory of the Firm*, 89 *Minn. L. Rev.* 743, 770 (2004).

165. Direct Testimony of Kevin M. Murphy, ¶¶ 105–39, *New York v. Microsoft Corp.*, Civ. No. 98-1233 (CKK) (Apr. 12, 2002), available at <http://download.microsoft.com/download/5/3/2/53239546-efee-460c-a583-11c20cdea9ab/Murphy.pdf>.

166. *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 151 (D.D.C. 2002) (hereinafter *D.D.C. 2002 States Remedy*).

167. For other criticisms of the courts' refusal to require evidence of causation, see David McGowan, *Between Logic and Experience: Error Costs and United States v. Microsoft Corp.*, 20 *Berkeley Tech. L.J.* 1185, 1220–23 (2005).

168. Transcript of Oral Argument, Feb. 26, 2001, *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (No. 00-5212), available at <http://cyber.law.harvard.edu/msdoj/transcript02-26.html>.

169. William H. Page & John E. Lopatka, *Network Externalities*, in 1 *Encyclopedia of Law & Economics* 952, 966 (Boudwijn Bouckaert & Gerrit De Geest eds., 2000).

170. See Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 *RAND J. Econ.* 194 (2002).

171. For a formal proof of the Chicago School insight, see Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 *Am. Econ. Rev.* 837 (1990). For a helpful informal summary of the idea, see Dennis W. Carlton & Michael Waldman, *Tying, Upgrades, and Switching Costs in Durable-Goods Markets* (U. Chi. Grad. Bus. School mimeo, Mar. 2005).

172. See Whinston, *supra* note 171.

173. See Michael D. Whinston, *Exclusivity and Tying in U.S. v. Microsoft: What We Know, and Don't Know*, 15 *J. Econ. Persp.* 63 (2001).

174. See, e.g., Timothy F. Bresnahan, *Network Effects and Microsoft* (Stanford Univ. Econ. Dept. mimeo, 2001); Richard J. Gilbert & Michael L. Katz, *An Economist's Guide to U.S. v. Microsoft*, 15 *J. Econ. Persp.* 25, 39 (2001); see also Dennis W. Carlton & Michael Waldman, *How Economics Can Improve Antitrust Doctrine towards Tie-in Sales*, 1 *Competition Pol'y Int'l* 27 (Spring 2005) (arguing that evidence on motivation can assist in exceptional cases in determining the reason for a tie).

175. But not too much larger. See Stan J. Liebowitz & Stephen E. Margolis, *Winners, Losers, and Microsoft* 250–51 (1999) (describing the underlying model as "the Goldilocks theory of monopoly extension—everything has to be just the right size").

176. Chicago School scholars now recognize that preserving monopoly power, an inherently dynamic concept, may explain some exclusionary conduct. See, e.g., Richard A. Posner, *Antitrust Law* 253 (2d ed. 2001).

177. The results would not change if consumers are indifferent between the monopolist's and the alternative producer's versions of the complementary product, but the alternative producer has a lower marginal cost of production. See Carlton & Waldman, *supra* note 170, at 198 n.5.

178. Interestingly, Carlton and Waldman show that excluding the alternative producer from the primary good market may not reduce social welfare because its entry may be "excessive." *Id.* at 209.

179. See Carlton & Waldman, *supra* note 170, at 210. Notice, however, that much of what we have described as Microsoft's efforts to integrate Windows and IE can be characterized as increasing the cost of undoing the tie, and thus making it more closely resemble a physical tie. For example, licensing restrictions prevented OEMs from discarding the tied product. If the dubious finding that OEMs resisted installing a second browser because of customer support costs were accurate, the restrictions would have increased the costs of using an alternative browser with Windows, even though the products were compatible. Similarly, omitting IE from the list of programs subject to the Add/Remove Programs utility made it more difficult for the end user to discard IE. If one accepted the even more dubious proposition that consumers did not want to use limited computer memory on a second browser, omitting IE from the Add/Remove Programs utility would have increased the costs of undoing the tie, though again, not to infinity.

180. See Carlton & Waldman, *supra* note 170, at 209–11.

181. The implication is particularly important to the issue of remedies. Even if a firm were effectively prevented from engaging in any kind of physical or contractual tie, that firm might be able to achieve the same strategic effect through pricing.

182. Interestingly, under this model, it does not matter whether Microsoft increased the price of Windows when IE was bundled with the operating system. Whether or not the price is increased, when Windows is compatible with alternative browsers, the effective price of IE is zero, and the appropriate analytical paradigm is that of a virtual tie.

183. See Carlton & Waldman, *supra* note 170, at 210. In addition, as Professor Carlton recognized in correspondence with the authors, the model assumes that there is only one operating system in period one. In *Microsoft*, there were in fact fringe operating systems. To the extent that network effects allow a first-period tie to prevent second-period entry, one would have to explain how fringe primary products were able to exist in period one. If they can exist in period one, then the tie might be ineffective in preventing entry. The model does not address this point.

184. See Carlton & Waldman, *supra* note 170, at 210.

185. *Id.* at 211. See also Mark Jenkins et al., "The Browser War—Econometric Analysis of Markov Perfect Equilibrium in Markets with Network Effects," Dec. 31, 2004 (in a model estimating damages from Microsoft's "bad acts," the authors assume the "browser market is characterized by "strong

network effects”), available at <http://emlab.berkeley.edu/wp/mcfadden0204/browser120104.pdf>.

186. See Bresnahan, *supra* note 174.

187. See Malcolm B. Coate & Jeffrey H. Fischer, *The Truth Is Out There: The Microsoft Case Meets Market Realities* (Potomac Law & Econ., Working Paper No. 04-01, Dec. 2004), available at <http://ssrn.com/abstract=638243>.

188. *D.C. Circuit 2001*, 253 F.3d at 95 (citation omitted). The court’s reference to “the tying arrangement itself,” apparently as implicit evidence of a browser market and entry barriers, is obscure. It is reminiscent of the proposition that a tying arrangement itself may prove market power in the tying product market.

189. *Brokerage Concepts, Inc. v. U.S. Healthcare, Inc.*, 140 F.3d 494, 519 (3d Cir. 1998) (“Before we can determine whether there was harm to competition in the tied market, that market must be defined.”); *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 11 F.3d 660, 664 (6th Cir. 1993) (holding that plaintiff failed to establish a threat to competition in “most narrowly defined tied product market”); *Town Sound & Custom Tops, Inc. v. Chrysler Motors Corp.*, 959 F.2d 468, 493 (3d Cir. 1992) (finding that plaintiff improperly defined the tied product market too narrowly).

190. Edmund H. Mantell, *Antinomies in Antitrust Law: Tying and Vertical Integration*, 7 J.L. & Com. 23, 58 (1987).

191. *Collins v. Associated Pathologists, Ltd.*, 844 F.2d 473, 480 (7th Cir. 1988).

192. Joint Status Report, at 2, *United States v. Microsoft Corp.*, No. 98-1232 (CKK) (filed Sept. 20, 2001), available at <http://www.usdoj.gov/atr/cases/f9000/9085.htm>.

193. See, e.g., *D.C. Circuit 2001*, 253 F.3d at 60 (“The reason market share in the browser market affects market power in the operating system market is complex, and warrants some explanation.”); *id.* (“Microsoft’s efforts to gain market share in one market (browsers) served to meet the threat to Microsoft’s monopoly in another market (operating systems)”); *id.* at 69 (“Following *Tampa Electric*, courts considering antitrust challenges to exclusive contracts have taken care to identify the share of the market foreclosed.”); *id.* at 72 (“Microsoft’s exclusive deals with the ISVs had a substantial effect in further foreclosing rival browsers from the market.”).

194. *Id.* at 60 (“The restrictions Microsoft places upon Original Equipment Manufacturers are of particular importance in determining browser usage share”); *id.* at 62 (“Microsoft reduced rival browsers’ usage share not by improving its own product but, rather, by preventing OEMs from taking actions that could increase rivals’ share of usage.”); *id.* at 65 (“Because Microsoft’s [commingling code,] through something other than competition on the merits, has the effect of significantly reducing usage of rivals’ products and hence protecting its own operating system monopoly, it is anticompetitive.”); *id.* (“Because the [default] override [of users’ choice of browsers] reduces rivals’ usage share and protects Microsoft’s monopoly, it too is anticompetitive.”); *id.* at 67 (“Plaintiffs plainly made out a prima facie case of harm to competition in the operating system market by demonstrating that Microsoft’s [commingling

code] increased its browser usage share and thus protected its operating system monopoly from a middleware threat.”); id. at 71 (“By ensuring that the ‘majority’ of all IAP subscribers are offered IE either as the default browser or as the only browser, Microsoft’s deals with the IAPs clearly have a significant effect in preserving its monopoly; they help keep usage of Navigator below the critical level necessary for Navigator or any other rival to pose a real threat to Microsoft’s monopoly.”); id. at 73–74 (“Because Microsoft’s exclusive contract with Apple has a substantial effect in restricting distribution of rival browsers, and because . . . reducing usage share of rival browsers serves to protect Microsoft’s monopoly, its deal with Apple must be regarded as anticompetitive.”).

195. Id. at 63. The court did not explain why the relevant measure of the browser market is *usage*, rather than *installation*. The court’s analysis focused on the reluctance of OEMs to install a rival browser. See, e.g., id. at 61. But we put this point aside.

196. Id. at 70.

197. Complaint, ¶ 68, Microsoft (No. 98-1232), available at <http://www.usdoj.gov/atr/cases/f1700/1763.htm>.

198. *D.C. Circuit 2001*, 253 F.3d at 75.

199. Transcript of Oral Argument, Feb. 26, 2001, *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (No. 00-5212), available at <http://cyber.law.harvard.edu/msdoj/transcript02-26.html>.

200. Donald Turner, *Antitrust Policy and the Cellophane Case*, 70 Harv. L. Rev. 281, 294–95 & n.44 (1956).

201. Id. at 305.

202. 506 U.S. 447 (1993).

203. Id. at 459.

204. Id. at 457.

205. Id. at 459 (quoting *Copperweld Corp. v. Independence Tube Corp.*, 467 U.S. 752, 767–69 (1984)).

206. *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 225 (1993) (discussing *Spectrum Sports*).

207. Id.

208. For further discussion of the risks of error in Microsoft, see McGowan, *supra* note 167.

209. Direct Testimony of Franklin M. Fisher, ¶ 47, available at <http://www.usdoj.gov/atr/cases/f213400/213457.htm>.

210. See *Verizon Commc’ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 414 (2004) (“The cost of false positives counsels against an undue expansion of § 2 liability.”). In *Trinko*, the Court cited the court of appeals’ 2001 opinion in *Microsoft* for the proposition that “[u]nder the best of circumstances, applying the requirements of § 2 ‘can be difficult’ because ‘the means of illicit exclusion, like the means of legitimate competition, are myriad.’” The Court continued: “Mistaken inferences and the resulting false condemnations ‘are especially costly, because they chill the very conduct the antitrust laws are designed to protect.’” Id. (quoting *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 594 (1986)).

211. Carlton & Waldman, *supra* note 174, at 38.

212. *D.C. Circuit 2001*, 253 F.3d at 80 (quoting 3 Areeda & Hovenkamp, *Antitrust Law* ¶ 653b).

CHAPTER FIVE

1. Gary Reback & Susan Creighton, White Paper Regarding the Recent Anticompetitive Conduct of the Microsoft Corporation (July 1996) (unpublished manuscript). For a detailed discussion of the guiding narrative, see chapter 1.

2. Complaint, ¶¶ 14, 70–74, *United States v. Microsoft Corp.*, No. 98-1232 (D.D.C. filed May 18, 1998), available at <http://www.usdoj.gov/atr/cases/f1700/1763.htm>.

3. Direct Testimony of Daniel Rosen, ¶ 13, available at http://web.archive.org/web/20010413132812/www.microsoft.com/presspass/trial/mswitness/rosen/rosen_full.asp (hereinafter Rosen Direct).

4. Rosen Direct, ¶ 22.

5. *Id.* ¶¶ 13, 22; Direct Testimony of Jim Barksdale, ¶ 96, available at <http://www.usdoj.gov/atr/cases/f1900/1999.htm> (hereinafter Barksdale Direct); Transcript of Testimony of James Barksdale, Oct. 21, 1998, A.M. Session, available in Westlaw MICROSOFT-TRANS library, 1998 WL 735841, at *10 (“It was an offer to buy a one-time paid-up license fee and with no royalties. And that was—we just didn’t like the deal.”) (hereinafter Barksdale Examination, Oct. 21, 1998, A.M. Session).

6. Rosen Direct, ¶¶ 15, 20; Barksdale Direct, ¶ 97.

7. Rosen Direct, ¶ 7.

8. *Id.* ¶ 16.

9. *Id.* ¶¶ 16–19.

10. *Id.* ¶ 25 (quoting e-mail from Jim Clark).

11. Rosen Direct, ¶ 27.

12. *Id.* ¶ 29.

13. *Id.*

14. Barksdale Examination, Oct. 22, 1998, A.M. Session, 1998 WL 740115, at *22.

15. Barksdale Direct, ¶ 97.

16. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *17.

17. Barksdale Direct, ¶ 97.

18. *Id.* ¶ 97.

19. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *18.

20. Barksdale Direct, ¶ 97.

21. Barksdale Examination, Oct. 22, 1998, A.M. Session, 1998 WL 740115, at *22.

22. *Id.*

23. Rosen Direct, ¶¶ 29, 31.

24. Barksdale Direct, ¶ 98.

25. Transcript of Testimony of Daniel Rosen, Feb. 22, 1999, A.M. Session, available in Westlaw MICROSOFT-TRANS library, 1999 WL 89753, at *3–6 (hereinafter Rosen Examination, Feb. 22, 1999, A.M. Session).

26. Rosen Direct, ¶ 38.

27. Id. ¶ 50 (quoting Thomas Reardon).

28. Id. ¶¶ 38, 43–44.

29. Rosen Direct, ¶¶ 22–24. James Allchin, a Microsoft senior vice president, testified that at least since December 1993, Microsoft was planning to incorporate Internet technologies in Windows 95. Direct Testimony of James Allchin, ¶ 216, available at http://web.archive.org/web/20010211102308/www.microsoft.com/presspass/trial/mswitness/allchin/allchin_full.asp (hereinafter Allchin Direct).

30. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *14 (recounting testimony from Clark’s deposition). Barksdale testified that Clark never told him about Gates’s assertion. Id.

31. Rosen Direct ¶¶ 39–41; Barksdale Direct ¶ 95.

32. Rosen Direct ¶¶ 33, 42; Barksdale Direct ¶ 94.

33. Barksdale Direct ¶ 93; Rosen Direct ¶ 34.

34. Rosen Direct ¶¶ 34, 8–9.

35. Id. ¶ 38.

36. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *13.

37. Barksdale Examination, Oct. 27, 1998, P.M. Session, 1998 WL 751071, at *14.

38. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *13.

39. Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *22.

40. Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *17.

41. Rosen Examination, Feb. 22, 1999, A.M. Session, 1999 WL 89753, at *18 (“In May and June of ’95, I am sure there were many people [in Microsoft] who believed Netscape was a potential competitive threat.”).

42. Rosen Examination, Feb. 22, 1999, A.M. Session, 1999 WL 89753 at *20. Rosen acknowledged that Gates at this time “viewed Netscape as a competitor to Microsoft.”

43. Rosen Examination, Feb. 22, 1999, A.M. Session, 1999 WL 89753, at *11–*14. Rosen also wrote in that memorandum, “The threat of another company (Netscape has been mentioned by many) to use their Internet world wide web browser as an evolution base could threaten a considerable portion of Microsoft’s future revenue.” Id. at *10. Rosen testified that he did not believe that assertion when he wrote it, that he was summarizing what he heard others say, and that the entire memorandum was a personally embarrassing first draft that he never sent. Id. at *9. Rosen also prepared a summary of the meeting that took place on June 21, 1995, in which he wrote that the highest priority going into the meeting was to “establish Microsoft ownership of the Internet client platform for Windows 95.” Rosen Examination, Feb. 22, 1999, P.M. Session, 1999 WL 90128, at *23. Though the reference to “ownership” could be read to imply

seizing control of the platform from a competitor, Rosen contended that “the word ‘ownership’ in Microsoft terms means that you are going to deliver on something you say you will. It’s akin to responsibility for.” *Id.*

44. Rosen Examination, Feb. 22, 1999, A.M. Session, 1999 WL 89753, at *19. Rosen said that he began to view Netscape as a platform competitor only in late 1995, when Netscape adopted Java and Javascript and implemented a number of other exposed APIs. Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *21. Rosen explained that Netscape had taken the lead by default in providing Internet technologies for use with Windows 3.1, because Windows 3.1 did not contain those technologies. Netscape, however, did not want to take the lead for providing these technologies for Windows 95, and so Microsoft should “wrest,” or “take,” that responsibility, which Netscape was glad to cede. Thus, he claimed that he did not mean to imply that Microsoft was in a competitive struggle with Netscape for control over basic Internet technologies associated with Windows 95. Rosen Examination, Feb. 22, 1999, A.M. Session, 1999 WL 89753, at *14–*16.

45. Barksdale Direct, ¶ 98.

46. *Id.* ¶ 98.

47. Rosen Direct, ¶ 47.

48. *Id.* ¶ 63. Rosen, for example, claimed that Microsoft in early April 1995 had sent Software Developers’ Kits (SDKs) for two sets of Internet-related APIs in Windows 95 and that Netscape was one of only three ISVs to receive early access to the SDKs. *Id.* ¶¶ 40–41, 80.

49. *Id.* ¶ 77.

50. Rosen Examination, Feb. 22, 1999, P.M. Session, 1999 WL 90128, at *3.

51. Rosen Direct, ¶¶ 48–49; Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *21. Rosen testified that he could recall no communication with Gates between the brief hallway conversation and Gates’s e-mail. Rosen Examination, Feb. 22, 1999, P.M. Session, 1999 WL 90128, at *17.

52. Rosen Examination, Feb. 22, 1999, P.M. Session, 1999 WL 90128, at *17.

53. Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *21.

54. Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *19, *22.

55. Rosen Direct, ¶ 55; Barksdale Direct, ¶ 101.

56. Barksdale Direct, ¶ 101. Rosen characterized this meeting, as opposed to the later one on June 21, as “the significant meeting—it was the ‘relationship’ discussion between Jim Barksdale, CEO of Netscape[,] and two of the most senior officers of Microsoft, Group Vice Presidents Nathan Myhrvold and Paul Maritz.” Rosen Direct, ¶ 55. He also described the meeting as “cordial” (*id.* ¶ 64), and he agreed with a statement written by Barksdale in a subsequent e-mail that Microsoft’s “attitude” was “very friendly, nonthreatening.” *Id.* ¶ 67. Although Barksdale testified that he wanted to meet with Microsoft in part to address the difficulty Netscape was having in procuring technical information and Rosen understood Barksdale’s testimony to be that the topic was in fact

discussed at the meeting (id. ¶ 63), Barksdale did not actually assert in his direct testimony that the topic was discussed.

57. Barksdale Direct, ¶ 101.

58. Id.

59. Id. ¶ 104.

60. Rosen Direct, ¶ 55.

61. The testimony of Barksdale and Rosen contains another instructive example of conflicting interpretations of comments made at the meeting. Barksdale indisputably remarked that Netscape viewed Lotus Notes, not Microsoft, as its most direct competitor. Rosen Direct, ¶ 55; Barksdale Direct, ¶ 103. Lotus Notes is “an enterprise-based groupware program,” and Rosen at trial said that he took Barksdale’s reference to reinforce his understanding that “Netscape’s focus was on the enterprise server market and not the client or consumer market.” Rosen Direct, ¶ 56. By contrast, Barksdale testified in effect that he made the statement because he did not then believe that Microsoft would compete in the browser market by integrating its browser in Windows 95 and foreclosing distribution channels. He explained that his comment “was an accurate statement at the time, because Microsoft had not yet announced its intention to displace Netscape from the marketplace by creating its own browser, bundling it with the operating system, and shutting us out of numerous browser distribution channels.” Barksdale Direct, ¶ 103.

62. Rosen Direct, ¶¶ 58–59.

63. Id. ¶ 59.

64. Id. ¶ 64.

65. Id. ¶ 66.

66. Id. ¶¶ 54, 68.

67. Barksdale Direct, ¶ 105. Barksdale testified that Netscape needed, for example, “the Remote Network Access (‘RNA’) phonebook API from Microsoft[,] . . . a scripting engine in beta, and the most recent version of Windows 95.” Id. ¶ 106.

68. Barksdale Examination, Oct. 22, 1998, A.M. Session, 1998 WL 740115, at *24.

69. Rosen Direct, ¶¶ 63, 130.

70. Barksdale Direct, ¶¶ 108–9.

71. Id. ¶ 106.

72. Barksdale testified, referring to Microsoft, “I objected to them saying they were going to build a WIN 95 browser and we weren’t. The way they discussed it was a line. They did not say between the browser and the operating system. A clear implication of the notes [taken at the meeting] is it was [a] Windows 95 browser, and we would get everything else.” Barksdale Examination, Oct. 26, 1998, A.M. Session, 1998 WL 747418, at *3–4.

73. According to Barksdale, Rosen wanted to assure him that Gates approved of the investment and that it would have the “Bill effect”—because Microsoft made the investment, Netscape’s stock price would be higher in its upcoming public offering, as investors would interpret Gates’s investment as “a good thing.” Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *19.

74. Barksdale Direct, ¶ 110.
75. *Id.* ¶ 111.
76. Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *17–*18.
77. *Id.* ¶ 112.
78. *Id.* ¶ 114.
79. *Id.* ¶¶ 110–11.
80. Barksdale Examination, Oct. 27, 1998, P.M. Session, 1998 WL 751071, at *27.
81. Rosen Direct, ¶¶ 91–95. Rosen explained that Windows 95 was going to contain four specific Internet-related technologies: (1) TCP/IP support, (2) HTTP support, (3) Internet Shortcuts, and (4) HTML rendering. These technologies were to be exposed to ISVs, including Netscape, through APIs. (Some of the APIs for these technologies were referred to collectively as the “WININET API set.”) Microsoft wanted Netscape to rely on these technologies as contained in Windows and therefore not to embed comparable technologies in Navigator itself. Ultimately, Netscape agreed to use one of the four, Internet Shortcuts. Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *3–*5.
82. Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *10.
83. Rosen Direct, ¶ 85.
84. *Id.* ¶ 88.
85. *Id.* ¶ 117.
86. *Id.* ¶ 95.
87. *Id.* ¶¶ 119–22.
88. *Id.* ¶ 122.
89. Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *16 (quoting from deposition of Microsoft representative Chris Jones).
90. *Id.*
91. Rosen Examination, Feb. 22, 1999, P.M. Session, 1999 WL 90128, at *17.
92. Rosen Direct, ¶ 99.
93. *Id.* ¶ 100.
94. *Id.* ¶ 114.
95. *Id.* ¶¶ 101, 138.
96. *Id.* ¶ 138.
97. *Id.* ¶ 137. Rosen testified that following the June 21 meeting, Microsoft provided technical support to Netscape that “was greater than that given to any Internet ISV that existed at the time.” Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *17.
98. Rosen Direct, ¶¶ 131–51.
99. Rosen Direct, ¶ 104.
100. *Id.* ¶ 106.
101. Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *22.
102. For example, in October 1995, Andreessen recommended Rosen for the position of CEO of a start-up company of which Andreessen was a director, an

act that was unlikely if Andreessen really believed that Rosen had proposed an unlawful conspiracy four months earlier. Rosen Direct, ¶ 156; Rosen Examination, Feb. 23, 1999, A.M. Session, 1999 WL 105109, at *28.

103. John R. Wilke, *In New Twist, Microsoft Says It Was 'Set Up,'* Wall St. J., Oct. 27, 1998, at A3. Netscape received a civil investigative demand (CID) from the Antitrust Division on June 22, 1995, the day after the June 21 meeting. A Netscape lawyer was given notes of the meeting the night before the CID was issued. Microsoft's counsel tried to show at trial that Netscape had communicated with the Antitrust Division perhaps before the meeting, that Netscape lawyers suggested that Andreessen take notes of the meeting to create a record, and that Netscape urged the Department of Justice to issue the CID. John Warden, Microsoft's attorney, asked Barksdale, "Isn't it a fact, Mr. Barksdale, that the June 21, 1995 meeting was held for the purpose of creating something that could be called a record and delivered to the Department of Justice to spur them on to action against Microsoft?" Barksdale replied, "That's absurd." Barksdale Examination, Oct. 26, 1998, A.M. Session, 1998 WL 747418, at *10.

104. Maritz Examination, Jan. 26, 1999, P.M. Session, 1999 WL 33378, at *16.

105. *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 45 (D.D.C. 2000) (hereinafter *Conclusions 2000*).

106. 15 U.S.C. § 1 (2000).

107. *United States v. American Airlines, Inc.*, 570 F. Supp. 654, 657 (N.D. Tex. 1983), *rev'd on other grounds*, 743 F.2d 1114 (5th Cir. 1984).

108. *American Academic Suppliers, Inc. v. Beckley-Cardy, Inc.*, 922 F.2d 1317, 1320 (7th Cir. 1991) (Posner, J.).

109. Annabelle C. Gawer & Michael A. Cusumano, *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation* (2003).

110. *Id.* at 257.

111. Barksdale testified that Microsoft's proposal included "adding value on the back end in the form of vertical applications," but that it "was never clear to me what that was." Barksdale Examination, Oct. 21, 1998, A.M. Session, 1998 WL 735841, at *16.

112. See, e.g., *Texaco Inc. v. Dagher*, 126 S. Ct. 1276, 1280 (2006); *Polk Bros., Inc. v. Forest City Enters., Inc.*, 776 F.2d 185, 188 (7th Cir. 1985) (noting that joint ventures are assessed under the rule of reason).

113. Barksdale suggested that the idea that Netscape would leave the Windows 95 browser market segment after a year or two was the import of the e-mail in which Gates wrote, "[T]he concept is that for 24 months Netscape agrees to do certain things in the client and we agree to help make their server business successful." Barksdale Examination, Oct. 27, 1998, P.M. Session, 1998 WL 751071, at *27. But that is not the most obvious interpretation of the passage. Rather, Gates would seem to be saying that the parties would do whatever they agreed to do for the next 24 months, and then the deal would terminate. Such an interpretation would imply an immediate effect of the agreement, thus strengthening the government's case of attempted monopolization, but then the claim that Microsoft would supply the needed technical information as part of

the deal makes no sense, because that would facilitate competition in the Windows 95 browser market. Moreover, that was not Barksdale's understanding of the offer. And agreements to divide markets typically do not have sunset provisions. The fact is that Gates's "concept" statement does not clarify but rather adds to the uncertainty surrounding both the content and timing of Microsoft's proposal.

114. Barksdale Examination, Oct. 21, 1998, P.M. Session, 1998 WL 735841, at *18. Depending on its structure, the joint venture might have been subject to the premerger notification requirements of the Hart Scott Rodino Antitrust Improvements Act of 1976, 15 U.S.C. § 18a (2000); 16 C.F.R. § 801.40 (2001).

115. See generally *Broadcast Music, Inc. v. Columbia Broadcasting Sys., Inc.*, 441 U.S. 1, 23 (1979).

116. But cf. *United States v. American Airlines, Inc.*, 743 F.2d 1114, 1122 n.15 (5th Cir. 1984).

117. At trial, the government introduced a document memorializing a proposal made by a Microsoft representative to Intuit in March 1990. Transcript of Testimony of Brad Chase, Feb. 16, 1999, P.M. Session, available in Westlaw MICROSOFT-TRANS library, 1999 WL 74080, at *1–*4 (referring to Government Exhibit 1814). The government characterized the proposal as one to divide the market for personal finance software. The proposal apparently contemplated that Intuit would make its Quicken program for DOS and Macintosh operating systems, and Microsoft would make its Works program for its yet to be released Windows 3.0 operating system. The government argued that the proposal, in light of the later proposal to Netscape, showed "a pattern of anticompetitive behavior." *Id.* at *2. The court seemed to believe that the Intuit proposal was too remote in time to be relevant. *Id.* Though a pattern of anticompetitive behavior may help clarify an ambiguous incident, too little is known about the Intuit proposal to justify any inference about the Netscape proposal.

118. *American Airlines*, 743 F.2d at 1114.

119. *Id.* at 1116.

120. *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 605 (1985) (quoting Robert H. Bork, *The Antitrust Paradox* 138 (1978)).

121. Barksdale Direct, ¶ 111.

122. See, e.g., *Olympia Equip. Leasing Co. v. Western Union Tel. Co.*, 797 F.2d 370, 375 (7th Cir. 1986) (Posner, J.) ("Today it is clear that a firm with lawful monopoly power has no general duty to help its competitors. . . ."); *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263, 281 (2d Cir. 1979) (noting that even a monopolist has the right to innovate and enjoy the lead time over its competitors that follows from its success).

123. Barksdale Examination, Oct. 22, 1998, A.M. Session, 1998 WL 740115, at *24.

124. See, e.g., *USM Corp. v. SPS Techs., Inc.*, 694 F.2d 505, 513 (7th Cir. 1982).

125. Barksdale Examination, Oct. 26, 1998, A.M. Session, 1998 WL 747418, at *5.

126. In November 1998, AOL agreed to acquire Netscape in a \$4.28 billion stock swap. See Thomas E. Weber, *AOL Sets Accord to Purchase Netscape in a*

Stock Transaction for \$4.3 Billion, Wall St. J., Nov. 25, 1998, at A3. By the time the acquisition occurred in March 1999, the deal was valued at \$10.2 billion. See Thomas E. Weber & Joann S. Lublin, *AOL Likely to Make More Job Cuts at Netscape*, Wall St. J., Mar. 22, 1999, available in Westlaw, Wall St. J. library, at 1999 WL-WSJ 5445248. The value of Netscape hardly suggests that the firm had been seriously impaired.

127. *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951).

128. *United States v. Microsoft Corp.*, 253 F.3d 34, 68 (D.C. Cir. 2001) (hereinafter *D.C. Circuit 2001*); *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 72-73 (Findings 256-58), 81 (Finding 289) (D.D.C. 1999) (hereinafter *Findings 1999*).

129. See *Findings 1999*, 84 F. Supp. 2d at 81 (Finding 289).

130. *Id.* at 80-81 (Findings 287-89). For discussion of AOL's decision, see James K. Sebenius, *Negotiating Lessons from the Browser Wars*, 43 MIT Sloan Mgmt. Rev. 43 (Summer 2002).

131. *Findings 1999*, 84 F. Supp. 2d at 79 (Findings 280-81).

132. *Id.* at 81 (Finding 289).

133. *Id.* at 79 (Findings 281-82).

134. *Id.* at 93 (Finding 339).

135. *Id.*

136. *Id.* at 96 (Finding 351).

137. *Id.*

138. *Id.* at 96 (Finding 352).

139. *Id.* at 95 (Finding 350).

140. *Id.* at 94 (Finding 344).

141. See, e.g., Phillippe Aghion & Patrick Bolton, *Contracts as a Barrier to Entry*, 77 Am. Econ. Rev. 388 (1987); B. Douglass Bernheim & Michael D. Whinston, *Exclusive Dealing*, 106 J. Pol. Econ. 64 (1998); Eric B. Rasmusen et al., *Naked Exclusion*, 81 Am. Econ. Rev. 1137 (1991); Steven C. Salop & David T. Scheffman, *Cost-Raising Strategies*, 36 J. Indus. Econ. 19 (1987); Ilya R. Segal & Michael D. Whinston, *Naked Exclusion: Comment*, 90 Am. Econ. Rev. 296 (2000). For an excellent survey of economic models of vertical restrictions, see James C. Cooper et al., *Vertical Antitrust Policy as a Problem of Inference*, 23 Int'l J. Indus. Org. 639 (2005).

142. See, e.g., Robert H. Bork, *The Antitrust Paradox* 304 (1978).

143. See, e.g., Einer Elhauge, *Defining Better Monopolization Standards*, 56 Stan. L. Rev. 253, 284 (2003); Rasmusen et al., *supra* note 141.

144. See *D.C. Circuit 2001*, 253 F.3d at 64.

145. See *Findings 1999*, 84 F. Supp. 2d at 47 (Finding 147).

146. *Conclusions 2000*, 87 F. Supp. 2d at 53.

147. *Id.*

148. See *D.C. Circuit 2001*, 253 F.3d at 70.

149. *Findings 1999*, 84 F. Supp. 2d at 94 (Finding 341).

150. *Id.* at 83 (Finding 296).

151. *Id.* at 82 (Finding 295).

152. *Id.* at 75 (Finding 267).

153. *Id.* at 82 (Finding 291).

154. See generally Roger D. Blair & David L. Kaserman, *Law and Economics of Vertical Integration and Control* (1983).
155. *D.C. Circuit 2001*, 253 F.3d at 71.
156. *Id.*
157. *Findings 1999*, 84 F. Supp. 2d at 69 (Finding 242).
158. *Id.* at 29 (Finding 74).
159. *Id.* at 30 (Finding 76).
160. *Conclusions 2000*, 87 F. Supp. 2d at 43.
161. *Id.*
162. *Findings 1999*, 84 F. Supp. 2d at 105–10 (Findings 386–406).
163. *Conclusions 2000*, 87 F. Supp. 2d at 43–44.
164. *Findings 1999*, 84 F. Supp. 2d at 105 (Finding 389).
165. *Id.* at 105–6 (Findings 389–90).
166. *Id.* at 106–7 (Finding 394).
167. *Conclusions 2000*, 87 F. Supp. 2d at 43.
168. See David McGowan, *Has Java Changed Anything? The Sound and Fury of Innovation Litigation*, 87 Minn. L. Rev. 2039, 2045 (2003).
169. *Findings 1999*, 84 F. Supp. 2d at 109 (Finding 402).
170. *Id.* at 107 (Finding 396).
171. *Id.* at 109–10 (Findings 404–6).
172. *D.C. Circuit 2001*, 253 F.3d at 75.
173. *Id.*
174. *Findings 1999*, 84 F. Supp. 2d at 106 (Finding 390).
175. *D.C. Circuit 2001*, 253 F.3d at 75 (noting that to be unlawful an “incompatible product must have an anticompetitive effect that outweighs any procompetitive justification”).
176. *Id.* at 75.
177. See generally David McGowan, *Between Logic and Experience: Error Costs and United States v. Microsoft Corp.*, 20 Berkeley Tech. L.J. 1186, 1217 (2005).
178. *D.C. Circuit 2001*, 253 F.3d at 58.
179. *Id.* at 59. The logic of the analysis is that a plaintiff could prevail by rebutting the defendant’s proffered justification, perhaps by demonstrating that the conduct involved does not in fact generate consumer benefits or, if it cannot rebut the justification, by proving that anticompetitive effects are greater than consumer benefits. But in applying the test to Microsoft’s action in causing Windows to override the user’s choice of a default browser in some circumstances, the court appeared to suggest that the plaintiff must both rebut the justification and prove net anticompetitive harm. *Id.* at 67.
180. *Id.* at 65.
181. *Id.*
182. *Id.*
183. *Id.* at 66.
184. *Id.* at 92.
185. *Id.* at 76.
186. *Id.* at 76, 77.
187. *Id.* at 76.

188. *Id.* at 75–76.

189. Direct Testimony of Kevin M. Murphy, ¶ 98, *New York v. Microsoft Corp.*, Civ. No. 98-1233 (CKK) (Apr. 12, 2002), available at <http://download.microsoft.com/download/5/3/2/53239546-efee-460c-a583-11c20cdea9ab/Murphy.pdf>.

190. *Findings 1999*, 84 F. Supp. 2d at 106 (Finding 394).

191. *Conclusions 2000*, 87 F. Supp. 2d at 43.

192. *D.C. Circuit 2001*, 253 F.3d at 76 (emphasis added).

193. *Id.* at 76.

194. *Id.* at 77.

195. *Findings 1999*, 84 F. Supp. 2d at 107 (Finding 394).

196. *D.C. Circuit 2001*, 253 F.3d at 77–78.

197. *Id.* at 77.

198. *Findings 1999*, 84 F. Supp. 2d at 107 (Finding 396).

199. *Id.* at 110 (Finding 406).

200. *D.C. Circuit 2001*, 253 F.3d at 77.

201. See Andrew Shuman, *Weak Java*, Sept. 27, 1997, available at <http://www.slate.com/id/2549/>.

CHAPTER SIX

1. See Robert W. Crandall, *The Failure of Structural Remedies in Sherman Act Monopolization Cases*, 80 Or. L. Rev. 109 (2001); Robert W. Crandall & Kenneth G. Elzinga, *Injunctive Relief in Sherman Act Monopolization Cases*, 21 Res. L. & Econ. 277 (2004).

2. *United States v. American Can Co.*, 230 F. 859, 903 (D. Md. 1916), *appeal dismissed*, 256 U.S. 706 (1921).

3. Mark Cooper, *Antitrust as Consumer Protection in the New Economy*, 52 Hastings L.J. 813, 867 (2001); R. Craig Romaine & Steven C. Salop, *Slap Their Wrists? Tie Their Hands? Slice Them into Pieces? Alternative Remedies for Monopolization in the Microsoft Case*, *Antitrust*, Summer 1999, at 15.

4. Romaine & Salop, *supra* note 3, at 15.

5. Frank H. Easterbrook, *Workable Antitrust Policy*, 84 Mich. L. Rev. 1696, 1700–1702 (1986).

6. See Roger D. Blair & William H. Page, “*Speculative*” *Antitrust Damages*, 70 Wash. L. Rev. 423, 436–38 (1995).

7. *Id.* at 448 n.82. See generally A.B.A., Section of Antitrust Law, *Proving Antitrust Damages* 41–42 (William H. Page ed., 1996); James R. McCall, *The Disaggregation of Damages Requirement in Private Monopolization Actions*, 62 Notre Dame L. Rev. 643 (1987); M. Sean Royall, *Disaggregation of Antitrust Damages*, 65 *Antitrust L.J.* 311 (1997).

8. See, e.g., *Concord Boat Corp. v. Brunswick Corp.*, 21 F. Supp. 2d 923, 935 (E.D. Ark. 1998).

9. *United States v. E. I. duPont de Nemours & Co.*, 366 U.S. 316, 326 (1961). See also *United States v. American Tobacco Co.*, 221 U.S. 106, 185 (1911) (noting that an antitrust court has a “duty of giving complete and efficacious effect to the prohibitions of the statute”).

10. *DuPont*, 366 U.S. at 326. Accord *United States v. National Lead Co.*, 332 U.S. 319, 338 (1947).

11. *United States v. Crescent Amusement Co.*, 323 U.S. 173, 189 (1944).

12. We use the term *efficiencies of product configuration* to denote efficiencies in both production and consumption. As to consumption, it includes, for instance, benefits consumers might derive in the form of reduced search costs or convenience in acquisition or operation flowing from a particular product design, as well as economies of scale in consumption, or network effects, incident to a common standard.

13. In this calculus, the expected cost of reduced incentives to innovate refers to incentives dampened by the remedy itself. Any loss in innovation caused by the defendant's wrongful conduct is taken into account as an anticompetitive effect.

14. See, e.g., Joel Brinkley, *A Microsoft Remedy: Antitrust Experts Offer Prescriptions*, N.Y. Times, Nov. 15, 1999, at C1. According to one report, Judge Jackson "called restructuring the company 'less regulatory' because it would ultimately require less continuing oversight by the court. 'The less supervision by this court, the better,' he said." John R. Wilke, *For Antitrust Judge, Trust, or Lack of It, Really Was the Issue*, Wall St. J., June 8, 2000, at A1.

15. *United States v. Microsoft Corp.*, 253 F.3d 34, 107 (D.C. Cir. 2001) (hereinafter *D.C. Circuit 2001*).

16. See *California v. American Sugar Ref. Co.*, 7 Ry. & Corp. L.J. 83 (Cal. App. Dep't Super. Ct. 1890); *People v. Chicago Gas Trust Co.*, 22 N.E. 798 (Ill. 1889); *Louisiana v. American Cotton-Oil Trust*, 1 Ry. & Corp. L.J. 509 (La. 1887); *State v. Nebraska Distilling Co.*, 29 Neb. 700 (1890); *People v. North River Sugar Ref. Co.*, 24 N.E. 834 (N.Y. 1890), *aff'g* 7 N.Y.S. 406 (1889). See generally William Letwin, *Law and Economic Policy in America* 82 (1965).

17. *DuPont*, 366 U.S. at 326.

18. *Timken Roller Bearing Co. v. United States*, 341 U.S. 593, 603 (1951) (Reed, J., concurring); *DuPont*, 366 U.S. at 327 (holding structural remedies should be used only when "other measures [would] not be effective").

19. Richard A. Posner, *Antitrust Law* 106 (2d ed. 2001). Only seven of these involved a national market; only two of the seven brought between 1940 and 1999 involved a national market. *Id.* When divestiture was the result of a consent decree rather than a contested order, the implication may be that the defendant was able to negotiate a breakup that did minimal or no damage to the fundamental efficiencies inherent in the firm. Such reassurance of the effect of the decree is lacking when, as in *Microsoft*, the defendant vigorously opposes the remedy. But the inference is not conclusive. The defendant may have agreed to a seriously disruptive reorganization only because it believed that the remedy or a worse one would be the inevitable result of continued litigation. One cannot assume, therefore, that the divestitures made pursuant to consent decrees in exclusionary-practice cases reflect no serious efficiency losses. In any event, the results of divestiture, however brought about, are disappointing.

20. See Crandall, *supra* note 1, at 115–22. Four cases between 1940 and 1996 that did not involve mergers or coordinated pricing resulted in immediate or subsequent divestiture.

21. *D.C. Circuit 2001*, 253 F.3d at 105.

22. As the court of appeals observed in *Microsoft*, “A corporation that has expanded by acquiring its competitors often has preexisting internal lines of division along which it may more easily be split than a corporation that has expanded from natural growth. Although time and corporate modifications and developments may eventually fade those lines, at least the identifiable entities preexisted to create a template for such division as the court might later decree.” *D.C. Circuit 2001*, 253 F.3d at 106. See also *Ford Motor Co. v. United States*, 405 U.S. 562, 573 (1972) (noting that “divestiture is particularly appropriate where asset or stock acquisitions violate the antitrust laws” because it “is a start toward restoring the pre-acquisition situation”); *United States v. Alcoa*, 91 F. Supp. 333, 416 (S.D.N.Y. 1950) (noting that a “corporation, designed to operate effectively as a single entity, cannot readily be dismembered of parts of its various operations without a marked loss of efficiency”). Posner similarly observes, “[D]ivestiture is simpler to effectuate where the firm to be broken up is itself the product of mergers: the mergers suggest the lines along which the firm can be broken up with minimal disruption.” Posner, *supra* note 19, at 105.

23. Kenneth G. Elzinga, David S. Evans & Albert L. Nichols, *United States v. Microsoft: Remedy or Malady?* 9 *Geo. Mason L. Rev.* 633, 650 (2001).

24. See, e.g., *United States v. AT & T*, 552 F. Supp. 131 (D.D.C. 1982), *aff’d sub nom. Maryland v. United States*, 460 U.S. 1001 (1983). Though the divestiture was not imposed by the court on an unwilling defendant, the opinion suggests that the court would have ordered divestiture in any event. See *id.* at 160–65. The court emphasized that a conduct remedy would not work because the Federal Communications Commission had proven itself incapable of controlling AT&T. *Id.* at 168. More dubiously, the court wrote “the antitrust laws seek to diffuse economic power in order to promote the proper functioning of both our economic and political systems.” *Id.* at 164–65. No court would rely on such an avowedly noneconomic rationale today.

25. See Crandall, *supra* note 1, at 179–86.

26. Of course, the two kinds of divestiture could be combined, for instance, by ordering the separation of the operating system component from the applications component and breaking the operating system component into multiple firms. See *United States v. Microsoft Corp.*, Civ. No. 98-1232 (Remedies Brief of Amici Curiae Robert E. Litan et al., Apr. 27, 2000) (hereinafter Litan Brief). That kind of remedy simply combines the advantages and disadvantages discussed in the text.

27. See, e.g., Litan Brief, *supra* note 26, at 49–66.

28. Stan Liebowitz estimated that the porting costs for software developers associated with a breakup of Windows into three competing operating systems would be at least \$30 billion during a three-year period, and he did not attempt to quantify the other costs. Stan J. Liebowitz, *Breaking Windows: Estimating the Cost of Breaking up Microsoft Windows* (Apr. 30, 1999) (unpublished manuscript, presented by the Ass’n for Competitive Tech. and the ASCII Group, Inc.).

29. See generally Annabelle C. Gawer & Michael A. Cusumano, *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation* (2003).

30. See, e.g., Thomas M. Lenard, *Creating Competition in the Market for Operating Systems: A Structural Remedy for Microsoft* (Jan. 2000) (unpublished manuscript, The Progress & Freedom Found.); Robert J. Levinson, R. Craig Romaine & Steven C. Salop, *The Flawed Fragmentation Critique of Structural Remedies in the Microsoft Case* (Jan. 20, 2000) (unpublished manuscript).

31. See Stan J. Liebowitz, *A Fool's Paradise: The Windows World after a Forced Breakup of Microsoft* 5–6, 8–11 (Feb. 25, 2000) (unpublished manuscript, presented by Ass'n for Competitive Tech.).

32. *Id.* at 11–14.

33. States' Final Judgment, § III.D, *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 268, (D.D.C. 2002) (hereinafter *D.D.C. 2002 States Remedy*).

34. States' Final Judgment, § III.E, *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 269.

35. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 176. See *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1219 (D.C. Cir. 2004) (noting that “§ 4 of the SPR would require Microsoft to disclose ‘all APIs’ that enable any ‘Microsoft Middleware Product,’ Microsoft application, or Microsoft software program to interoperate with ‘Microsoft Platform Software’” and would define these categories “so broadly that, when required to ‘interoperate’ with one another, they include essentially any two pieces of Microsoft software on a PC”) (hereinafter *D.C. Circuit 2004*).

36. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 176–77.

37. *Id.* The court of appeals endorsed this point. *D.C. Circuit 2004*, 373 F.3d at 1219.

38. See Gary Reback & Susan Creighton, *White Paper Regarding the Recent Anticompetitive Conduct of the Microsoft Corporation* 40 (July 1996) (unpublished manuscript) (“There is no doubt that the preferential access of Microsoft’s own software developers to information about operating system hooks has played a significant role in Microsoft’s ability to dominate desktop applications.”).

39. *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59, 64 (D.D.C. 2000) (hereinafter *Jackson Remedy 2000*).

40. *Id.* at 66, 70–71. Assets related to the production and licensing of operating systems, narrowly defined, would have been assigned to the OS Co.; everything else, including assets related to IE, the Office applications suite, and other client and server applications, would have been assigned to the Apps. Co. *Id.* at 64, 71–72. Intellectual property rights related both to operating systems and other products would have been assigned to the Apps. Co., but the OS Co. would have received a perpetual, royalty-free license to use them. The OS Co. also would have received the right to develop, license, and distribute modified or derivative versions of the joint intellectual property that were unrelated to the browser; it would not have received the right to develop derivative browsers. Transactions between the two companies would have been restricted. *Id.* at 64–65. These restrictions were to “remain in effect until the earlier of three years after the Implementation of the Plan or the expiration of the term of this Final Judgment,” which was ten years. *Id.* at 66. After the restrictions took effect and

before the structural reorganization occurred, the restrictions would have applied to the single Microsoft Corporation; after reorganization and during at least the next three years, the restrictions would have applied only to the operating systems business. *Id.* at 65, 66, 69. Though all of these restrictions were intended to take effect ninety days after entry of the order regardless of any appeal, the court subsequently stayed the final judgment “in its entirety until the appeal therefrom is heard and decided, unless the stay is earlier vacated by an appellate court.” *United States v. Microsoft Corp.*, Civ. No. 98-1232 (order entered June 20, 2000). Other restrictions, designed to implement the divestiture, would have become effective only on reorganization, continued for the ten-year duration of the final judgment, and applied to both businesses. *Jackson Remedy 2000*, 97 F. Supp. 2d at 65.

41. Gawer & Cusumano, *supra* note 29, at 246–51.

42. Shareholders who owned 5 percent or more of the voting stock of Microsoft and who were present or former employees, officers, or directors of the company would not have been permitted to own stock in both the OS Co. and the Apps. Co. *Jackson Remedy 2000*, 97 F. Supp. 2d 64–65 (decree §§ 1(c)(iii), 2(a)), 71–72 (decree § 7(h), defining “covered shareholder”). The intent of this provision was apparently to prevent Bill Gates and Steve Ballmer from having influence over both firms. But Lucian Bebchuk and David Walker show that any method of distributing the securities in the resultant firms that complied with the order would unavoidably have imposed a significant financial penalty on the large shareholders or created a risk of a substantial transfer of value among shareholders. Lucian Arye Bebchuk & David I. Walker, *The Overlooked Corporate Finance Problems of a Microsoft Breakup*, 56 *Bus. Law.* 459 (2001).

43. See generally Roger D. Blair & David L. Kaserman, *Law and Economics of Vertical Integration and Control* 31–35 (1983).

44. See *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 27 (Finding 65) (D.D.C. 1999) (hereinafter *Findings 1999*).

45. See Stan J. Liebowitz, *An Expensive Pig in a Poke: Estimating the Cost of the District Court’s Proposed Breakup of Microsoft* 4–16 (Sept. 21, 2000) (unpublished manuscript, presented by the Ass’n for Competitive Tech.) (estimating an increase of \$38 billion in the cost of operating systems and \$14 billion in the cost of applications to U.S. consumers over a three-year period, based on stipulated assumptions).

46. *Jackson Remedy 2000*, 97 F. Supp. 2d 65 (decree § 2(b)).

47. Declaration of Carl Shapiro, Apr. 28, 2000, at 3, *United States v. Microsoft Corp.*, No. 98-1232 (D.D.C. filed May 18, 1998), available at <http://www.usdoj.gov/atr/cases/f4600/4642.htm>.

48. David McGowan, *Between Logic and Experience: Error Costs and United States v. Microsoft Corp.*, 20 *Berkeley Tech. L.J.* 1185, 1237–39 (2005).

49. See Liebowitz, *supra* note 45, at 18.

50. See *id.* at 16–18.

51. Office can run on Linux using third-party emulation software.

52. Corel has ported WordPerfect to Linux, but WordPerfect, unlike Office, is not a dominant application. Consequently, it likely faced different incentives in deciding whether porting was profitable. See Rebecca Buckman & Joel

Baglolo, *Microsoft to Invest \$135 Million in Corel*, Wall St. J., Oct. 3, 2000, at B10.

53. *Findings 1999*, 84 F. Supp. 2d 9 at 15 (Finding 21).
54. *D.C. Circuit 2001*, 253 F.3d at 101.
55. *Id.* at 101–3.
56. *Id.* at 102.
57. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 185.
58. *D.C. Circuit 2004*, 373 F.3d at 1227–31.
59. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 186.
60. *Id.* at 185 n.81.

61. David McGowan criticizes this rationale for rejecting the open-source proposal on the ground that the ultimate issue in the case was platform competition generally rather than simply middleware competition. McGowan, *supra* note 48, at 1240. But he argues that the proposal was weak in any event because of the tendency of open-source software standards to fragment. The nonsettling states' expert, Carl Shapiro, speculated that Microsoft might act as the coordinator of an open-source IE project. Trial Transcript, at 3539–40, *Massachusetts v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C. 2002) (testimony of Carl Shapiro on Apr. 15, 2002), quoted in McGowan, *supra* note 48, at 1240. As McGowan suggests, however, this proposal concedes the value of the consistent IE standard, but tries to “calibrate” the operation of the standard to limit Microsoft’s ability to exploit it, a task courts are ill equipped to accomplish. *Id.* at 1240.

62. *Jackson Remedy 2000*, 97 F. Supp. 2d at 62. According to one newspaper report, Judge Jackson “decided on a break because he thought Microsoft had been responsible for the failure of out-of-court settlement talks. ‘Judicial intervention—forcible application of law—became a last resort,’ Jackson said. ‘And in my judgment, Microsoft’s intransigence was the reason.’” James V. Grimaldi, *Microsoft Judge Says Ruling at Risk*, Wash. Post, Sept. 29, 2000, at E01. Judge Jackson later remarked “that the ‘Microsoft persona I had been shown throughout the trial was one of militant defiance, unapologetic for its past behavior and determined to continue as before.’” Anne Broache & Declan McCullagh, *Former Judge Defends His Bid to Break Up Microsoft*, CNET News.com, June 21, 2005, available at http://news.com.com/Former+judge+defends+his+bid+to+break+up+Microsoft/2100-1014_3-5755593.html. These accounts suggest that the court was not as much concerned with future defiance of an order as with punishing Microsoft for its temerity and refusal to agree to a settlement.

63. *Jackson Remedy 2000*, 97 F. Supp. 2d at 62. Judge Jackson observed, “When the reversal of my consent-decree case rulings on the contempt petition finally came down, it became apparent to me that I faced a very real prospect of reliving the ‘trench warfare’ experiences of my colleagues who had handled the AT&T and the IBM antitrust cases.” Broache & McCullagh, *supra* note 62, at 2.

64. Judge Jackson “expressed skepticism that Microsoft would willingly comply with behavioral restrictions,” reportedly supporting his view with the comment, “‘Even the very mild conduct remedies they proposed, they said they might appeal those, too.’” Wilke, *supra* note 14, at A1. He specifically noted

that Microsoft “has announced its intention to appeal even the imposition of the modest conduct remedies it has itself proposed. . . .” *Jackson Remedy* 2000, 97 F. Supp. 2d at 62.

65. Posner has observed, “When the defendant’s misconduct consists of exclusionary practices rather than of acquisitions, an award of damages for the harm caused by the practices or an injunction against their continuation will normally be an adequate remedy.” Posner, *supra* note 19, at 107. Even Judge Jackson professed a preference for a conduct remedy that would allow the market to extirpate the anticompetitive effects. According to one report, Jackson stated, “The structural remedy was never my remedy of choice, and it is not even so today.” Grimaldi, *supra* note 62. He continued, “It was always my preference that the market itself be allowed to rectify the dysfunction disclosed to me by the evidence, failing which a negotiated settlement was next-best.” *Id.*

66. See Stanley J. Liebowitz & Stephen E. Margolis, *Winners, Losers, and Microsoft* 80–82 (1999).

67. *Findings* 1999, 84 F. Supp. 2d at 13 (Finding 6). The court attributed Microsoft’s early dominance to IBM’s decision to select MS-DOS for preinstallation on its first generation of PCs. Indeed, in supporting the consent decree resolving earlier litigation against Microsoft, the United States introduced the testimony of Nobel laureate Kenneth Arrow, who opined that Microsoft’s monopoly was obtained innocently. See John E. Lopatka & William H. Page, *Microsoft, Monopolization, and Network Externalities: Some Uses and Abuses of Economic Theory in Antitrust Decision Making*, 40 *Antitrust Bull.* 317, 333 (1995).

68. *Findings* 1999, 84 F. Supp. 2d at 111–12 (Finding 411) (emphasis added). Similarly, the court concluded, “Microsoft’s campaign succeeded in preventing—for several years, and perhaps permanently—Navigator and Java from fulfilling their potential to open up the market for Intel-compatible PC operating systems to competition on the merits.” *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 39 (D.C.C. 2000) (hereinafter cited as *Conclusions* 2000).

69. Broache & McCullagh, *supra* note 62, at 1.

70. Liebowitz & Margolis, *supra* note 66, at 135.

71. Complaint, Prayer for Relief, ¶ 2.a, *United States v. Microsoft Corp.*, No. 98-1272 (D.D.C. filed May 18, 1998), available at <http://www.usdoj.gov/atr/cases/f1700/1763.htm>.

72. *Id.* ¶ 2.b.

73. *Id.* ¶ 2.c.

74. *Id.* ¶ 2.d.

75. *Id.* ¶ 2.e.

76. *Id.* ¶ 2.f.

77. *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 97 (quoting *D.C. Circuit* 2001, 253 F.3d at 107).

78. *United States v. Microsoft Corp.*, NO. CIV.A. 98-1232 (CKK), 2002 WL 31654530, at *1–*16 (D.D.C. Nov. 12, 2002) (hereinafter *D.D.C. 2002 Consent Decree Final*); *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 266–77. We cite the relevant sections of the final judgments using the outline numbering

system adopted in both of the judgments, noting differences where they are appropriate.

79. Consent Decree, § III.A, *D.D.C. 2002 Consent Decree Final*, 2002 WL 31654530, at *1–*16 (hereinafter Consent Decree); States’ Final Judgment, III.A, *D.D.C. 2002 States Remedy*, 224 F. Supp. 2d at 267.

80. Consent Decree, § III.B.

81. *Id.* §§ III.F & III.G.

82. *Id.* §§ III.C & III.H.

83. *Id.* § III.H.

84. *Id.* § VI.K.

85. The mechanisms must provide separate and unbiased choices in these actions.

86. Complaint § VIII, ¶ 2.e.

87. Consent Decree, § III.H.1, *D.D.C. 2002 Consent Decree Final*, 2002 WL [need rest of WL cite here]. The invocation must be in a “separate Top-Level Window” and display either the full interface or the Microsoft Middleware Program trademark.

88. *Id.* § III.H.2.

89. *D.D.C. States Remedy 2002*, 224 F. Supp. 2d at 118–19.

90. Adamson Rust, *Dell Trialling Mozilla Firefox on PCs, Claim*, Inquirer, Dec. 15, 2005, available at <http://www.theinquirer.net/?article=28380>.

91. See http://www.w3schools.com/browsers/browsers_stats.asp.

92. See <http://www.spreadfirefox.com>.

93. *Jackson Remedy 2000*, 97 F. Supp. 2d at 68 (§ 3(g)).

94. Case COMP/C-3/37.792 Microsoft, Commission Decision of 24 Mar. 2004, at ¶¶ 1012–13, available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf> (hereinafter *EC Decision*). The relevant provision states: “Microsoft must not give OEMs or users a discount conditional on their obtaining Windows together with WMP (Windows Media Player), or *de facto*, financially or otherwise, remove or restrict OEMs’ or users’ freedom to choose the version of Windows without WMP. . . .” *Id.* ¶ 1013(iii). Theoretically, one might interpret the provision to require Microsoft to offer the unbundled version at a discount on the ground that charging the same price for a product with less functionality “*de facto*[] financially . . . restrict[s] OEMs’ . . . freedom to choose the” unbundled version. But this interpretation is far from clear.

95. *D.C. Circuit 2004*, 373 F.3d at 1214.

96. See *EC Decision*, ¶¶ 1043–48.

97. *D.D.C. States Remedy 2002*, 224 F. Supp. 2d at 157.

98. *Id.* at 158.

99. *D.C. Circuit 2004*, 373 F.3d at 1210.

100. *Id.* at 1211.

101. *EC Decision*, ¶ 893.

102. *Id.* ¶ 1011.

103. Ian Ayres & Barry Nalebuff, *Going Soft on Microsoft? The EU’s Antitrust Case and Remedy*, *Economists’ Voice*, vol. 2., issue 2, art. 4, 2005, available at <http://www.bepress.com/ev/vol2/iss2/art4/>.

104. *Id.* at 4.

105. Randal C. Picker, *Unbundling Scope-of-Permission Goods: When Should We Invest in Reducing Entry Barriers?* 72 *U. Chi. L. Rev.* 189, 206–7 (2005), argues that a must-carry remedy would have been preferable because it would have assured rivals the same distribution as WMP while avoiding the fragmentation problem.

106. See Malcolm B. Coate & Jeffrey Fisher, *Microsoft's Market Realities*, *Economists' Voice*, vol. 2, issue 2, art. 10, 2005 (arguing that Microsoft cannot exclude either rival players or encoding formats), available at <http://www.bepress.com/ev/vol2/iss2/art10>.

107. *Findings* 1999, 84 F. Supp. 2d at 31 (Finding 82).

108. *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 144–47.

109. *Id.* at 145 (“Just as ‘a monopolist does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals,’ . . . little, if anything, in the liability findings of this case could be construed to indicate that, as a general rule, a monopolist’s decision to alter industry standards or implement a proprietary version of such standards in its own product or technology, without more, violates the antitrust laws.”).

110. *Id.* at 166.

111. *Id.* at 164.

112. *Id.* at 164 n.70.

113. *Id.* at 164 (citing *D.C. Circuit* 2001, 253 F.3d at 67–68).

114. *Id.*

115. *D.C. Circuit* 2004, 373 F.3d at 1227.

116. Judge Kollar-Kotelly rejected the suggestion that Microsoft should be required to include a copy of Sun-compliant Java in every copy of Windows. The decree removed the illegal obstruction to distribution of Java; to impose a must-carry provision violated the court of appeals’ sharp distinction between benefiting competition and benefiting a specific competitor. *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 188–90.

117. *Id.*, 224 F. Supp. 2d at 193.

118. It rejected, however, the nonsettling states’ proposal to extend the definition to include any software that exposes even a single API.

119. See also *Microsoft*, 97 F. Supp. 2d at 67 (§ 3(b)) (requiring Microsoft to disclose to ISVs, IHVs, and OEMs all APIs, technical information, and communications interfaces that Microsoft uses to enable its own applications and middleware to interoperate with other platform software).

120. *EC Decision*, ¶ 999.

121. States’ Final Judgment, § III.C.3, *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 155–56.

122. *Id.* § III.C.5, *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 154–55.

123. *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 163–68.

124. *Jackson Remedy* 2000, 97 F. Supp. 2d at 67 (§ 3(b)).

125. Consent Decree, § IV.B. The TC has set up its own Web site to facilitate the complaint process. See <http://www.thetc.org/>.

126. States’ Final Judgment, § IV.A, *D.D.C. States Remedy* 2002, 224 F. Supp. 2d at 272–74.

127. The two groups of states have set up a joint Web site to coordinate complaints. See <http://www.microsoft-antitrust.gov/>.

128. *United States v. Microsoft Corp.*, Civ. No. 98-1232 (CKK), Joint Status Report on Microsoft's Compliance with the Final Judgments, Oct. 26, 2005 (hereinafter *October 2005 Status Report*), available at <http://www.usdoj.gov/atr/cases/f213100/213109.pdf>.

129. See <http://members.microsoft.com/consent/info/default.aspx>.

130. *United States v. Microsoft Corp.*, Civ. No. 98-1232 (CKK), Supplemental Joint Status Report on Microsoft's Compliance with the Final Judgments, at 2, Nov. 18, 2005 (hereinafter *November 2005 Supplemental Status Report*), available at http://www.usdoj.gov/atr/cases/f213100/213109.htm#N_1..

131. David S. Evans, Albert L. Nichols & Richard Schmalensee, U.S. v. Microsoft: *Did Consumers Win?* 1 J. Competition L. & Econ. 497, 537 (2005).

132. Plaintiffs' Response to Microsoft's Supplemental Status Report on Microsoft's Compliance with the Final Judgments, Jan. 23, 2006 ("Microsoft needs to dramatically increase the resources devoted to responding to technical documentation issues in order to get its performance under the SLGs back on track."), available at <http://www.usdoj.gov/atr/cases/f214200/214204.htm>; *October 2005 Status Report*, supra note 128, at 3–7.

133. *United States v. Microsoft Corp.*, Civ. No. 98-1232 (CKK), Joint Status Report on Microsoft's Compliance with the Final Judgments, at 6, May 12, 2006 (hereinafter *May 2006 Status Report*), available at <http://www.usdoj.gov/atr/cases/f216100/216127.htm>.

134. *May 2006 Status Report*, supra note 133, at 10, 19; Anne Broache, *Judge Adds Two Years to Microsoft Antitrust Deal*, May 17, 2006, available at <http://www.zdnet.com>.

135. *May 2006 Status Report*, supra note 133, at 9.

136. *Id.* at 9–10.

137. Evans et al., supra note 131, at 536–37.

138. *October 2005 Status Report*, supra note 128, at 12–13; *November 2005 Supplemental Status Report*, supra note 130, at 12.

139. *November 2005 Supplemental Status Report*, supra note 130, at 12–21. In July 2006, Microsoft went further in eschewing any desire to exclude rivals, publishing a statement of three principles and twelve tenets to guide its conduct in an effort to promote competitive opportunities related to Windows. See *Windows Principles*, <http://www.microsoft.com/presspass/newsroom/winxp/windowsprinciples.mspx>.

140. *Id.* at 21.

141. *Jackson Remedy 2000*, 97 F. Supp. 2d at 62.

142. John Gould, *The Economics of Legal Conflicts*, 2 J. Legal Stud. 279 (1973); William M. Landes, *An Economic Analysis of the Courts*, 14 J.L. & Econ. 61 (1971).

143. Cf. Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 Yale L.J. 950 (1979).

144. Thomas E. Kauper & Edward A. Snyder, *An Inquiry into the Efficiency of Private Antitrust Enforcement: Follow-on and Independently Initiated Cases Compared*, 74 Geo. L.J. 1163, 1165 (1986).

145. Section 5 of the Clayton Act provides that a final judgment in favor of the government in an antitrust case brought by the United States is “prima facie evidence against [the] defendant in any action or proceeding brought by any other party against such defendant under [the antitrust] laws as to all matters respecting which said judgment or decree would be an estoppel as between the parties thereto.” 15 U.S.C. § 16(a) (2000).

146. *Indiana Grocery Co. v. Super Valu Stores*, 864 F.2d 1409, 1419 (7th Cir. 1989) (holding that a per se violation “does not by itself bestow on any plaintiff a private right of action for damages”).

147. See D.C. Circuit 2001, 253 F.3d at 80.

148. Herbert Hovenkamp, *State Antitrust in the Federal Scheme*, 58 Ind. L.J. 375, 429 (1983). Plaintiffs may also apparently invoke 15 U.S.C. § 16(a) (2000) to use the federal judgment as prima facie evidence against the defendant in an action under state antitrust law. See 11 Joseph P. Bauer, *Kintner Federal Antitrust Law* 207 (1998); Kauper & Snyder, *supra* note 144, at 1169.

149. *In re Microsoft Corp. Antitrust Litig.*, 355 F.3d 322, 326–28 (4th Cir. 2004) (reversing Judge Motz’s decision that Netscape, Sun, Burst.com, Be Inc., and a consumer class may rely on any of the findings that only “supported” the decision in the government case).

150. *Comes v. Microsoft Corp.*, 709 N.W.2d 118, 120–21 (Iowa 2006); *Gordon v. Microsoft Corp.*, No. MC 00-5994, 2003 WL 22281574, at *6 (Minn. Dist. Ct. Hennepin Co. Aug. 20, 2003).

151. *In re Microsoft*, 355 F.3d at 327 (limiting offensive collateral estoppel to the facts that were “critical and necessary” in the limited sense of “essential” to the liability holdings upheld by the D.C. Circuit); *Gordon*, 2003 WL 22281574, at *9 (holding that indirect purchaser plaintiffs were entitled only to collateral estoppel on “central facts that were necessary and essential” to the finding of monopolization).

152. *Gordon*, 2003 WL 22281574, at *10–*11.

153. See generally Roger D. Blair, Jill B. Herndon & John E. Lopatka, *Resale Price Maintenance and the Private Antitrust Plaintiff*, 83 Wash. U. L.Q. 671 (2005); Roger D. Blair & William H. Page, “Speculative” Antitrust Damages, 70 Wash. L. Rev. 423, 432–35 (1995).

154. *Atlantic Richfield Co. v. USA Petroleum Co.*, 495 U.S. 328, 344 (1990) (“The antitrust injury requirement ensures that a plaintiff can recover only if the loss stems from a competition-reducing aspect or effect of the defendant’s behavior.”). See also *Brunswick, Inc. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 489 n.14 (1977). See generally William H. Page, *The Scope of Liability for Antitrust Violations*, 37 Stan. L. Rev. 1445, 1483–85 (1985).

155. *Associated Gen. Contractors of Cal., Inc. v. California State Council of Carpenters*, 459 U.S. 519, 543–45 (1983).

156. *Atlantic Richfield*, 495 U.S. at 334.

157. *Id.* at 342. The Court added that “procompetitive or efficiency-enhancing aspects of practices that nominally violate the antitrust laws may

cause serious harm to individuals, but this kind of harm is the essence of competition and should play no role in the definition of antitrust damages.” *Id.* at 344 (citation omitted).

158. *NCAA v. Board of Regents of Univ. of Okla.*, 468 U.S. 85, 104–7 (1984) (“Restrictions on price and output are the paradigmatic examples of restraints of trade.”).

159. Of course, an undercharge by a buyers’ cartel would impose the same sort of antitrust injury. See *Knevelbaard Dairies v. Kraft Foods, Inc.*, 232 F.3d 979, 988–89 (9th Cir. 2000).

160. See generally William H. Page, *Optimal Antitrust Penalties and Competitors’ Injury*, 88 Mich. L. Rev. 2151, 2162–64 (1990).

161. *Atlantic Richfield*, 495 U.S. at 328, 337–38; *Brunswick*, 429 U.S. at 488.

162. See, e.g., *MCI v. AT&T*, 708 F.2d 1081, 1162 (7th Cir. 1983). See also *City of Vernon v. Southern Cal. Edison Co.*, 955 F.2d 1361, 1371–72 (9th Cir. 1992); *USFL v. NFL*, 842 F.2d 1335, 1378–79 (2d Cir. 1988); McCall, *supra* note 7; Royall, *supra* note 7, at 323.

163. See *Sullivan v. NFL*, 34 F.3d 1091, 1101 (1st Cir. 1994) (“[O]verall consumer preferences in setting output and prices is more important than higher prices and lower output, per se, in determining whether there has been an injury to competition.”).

164. *D.C. Circuit 2001*, 253 F.3d at 78–79.

165. *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1995).

166. *Id.* at 224.

167. *Rebel Oil Co. v. Atlantic Richfield Co.*, 51 F.3d 1421, 1444 (9th Cir. 1995). But see Roger D. Blair & Jeffrey Harrison, *Rethinking Antitrust Injury*, 42 Vand. L. Rev. 1539, 1561–65 (1989) (arguing that unsuccessful predatory efforts cause “antitrust injury,” even though consumers have not suffered).

168. *Associated Gen. Contractors*, 459 U.S. at 543–45.

169. *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977).

170. *California v. ARC Am. Corp.*, 490 U.S. 93 (1989).

171. *Kloth v. Microsoft Corp.*, 444 F.3d 312, 322 (4th Cir. 2006).

172. Jerry Ellig & Daniel Lin, *A Taxonomy of Dynamic Competition Theories*, in *Dynamic Competition and Public Policy* 16 (2001).

173. John E. Lopatka & William H. Page, *Monopolization, Innovation, and Consumer Welfare*, 69 Geo. Wash. L. Rev. 367, 370–71 (2001).

174. *Findings 1999*, 84 F. Supp. 2d at 98 (Finding 358) (finding Netscape’s “reversal of fortune might not have occurred had Microsoft not improved the quality of Internet Explorer, and some part of the reversal is undoubtedly attributable to Microsoft’s decision to distribute Internet Explorer with Windows at no additional charge,” but that the “relative shares would not have changed nearly as much as they did” without illegal conduct). Judge Jackson recognized that (1) Netscape’s share may not have declined at all if IE had remained an inferior product, *id.* at 102 (Finding 375); (2) Netscape’s share would have declined to some extent if Microsoft had attacked Netscape only by improving its browser and offering it at no separate charge, *id.* at 102–3 (Finding 376); and (3)

the actual decline in usage share was the combined effect of both illegal and legal competitive actions, *id.* at 103–4 (Finding 379) (finding that competition from Microsoft led Netscape to improve its browser, but that the zero pricing and the denial of access to the most efficient means of distribution “inflicted considerable harm on Netscape’s business” and “deterred Netscape from undertaking technical innovations that it might otherwise have implemented in Navigator”).

175. *Id.* at 111–12 (Finding 411).

176. See *Brunswick Corp. v. Riegel Textile Corp.*, 752 F.2d 261 (7th Cir. 1985).

177. *D.C. Circuit 2001*, 253 F.3d at 78–80.

178. Transcript of Testimony of James Barksdale, Oct. 20, 1998, P.M. Session, in Westlaw MICROSOFT-TRANS library, 1998 WL 735829, at *25–*26. He characterized Netscape founder Marc Andreessen’s statements to the contrary as “a joke.” *Id.* at *25.

179. Jonathan T. Tomlin, *Distinguishing the Illegal from the Legal in Antitrust Damages Calculations: Lessons from Netscape v. Microsoft*, 17 *J. Forensic Econ.* 223 (2004).

180. *Id.* at 235–36.

181. *Id.* at 236–37, quoting Direct Testimony of Kevin M. Murphy, ¶ 60, *New York v. Microsoft Corp.*, Civ. No. 98-1233 (CKK) (Apr. 12, 2002), available at <http://download.microsoft.com/download/5/3/2/53239546-efee-460c-a583-11c20cdea9ab/Murphy.pdf>.

182. *Id.*

183. Microsoft and IBM Resolve Antitrust Issues, Microsoft press release, July 1, 2005 (disclosing that Microsoft will pay IBM \$75 million and extend \$75 million in credit towards deployment of Microsoft software to settle, among others, claims arising from *United States v. Microsoft*, in which “IBM was identified in U.S. District Judge Thomas Penfield Jackson’s findings of fact as having been impacted in its business by certain Microsoft practices”), available at <http://www.microsoft.com/presspass/press/2005/jul05/07-01msibmsettlepr.mspx>; Microsoft and Gateway Lay Foundation for Future Cooperation, Resolve Antitrust Claims, Microsoft press release, Apr. 11, 2005 (disclosing that Microsoft would pay Gateway \$150 million over four years to settle a suit arising out of *United States v. Microsoft*, in which “Gateway was specifically identified in U.S. District Judge Thomas Penfield Jackson’s findings of fact as having been impacted in its business by practices on which he ruled against Microsoft”), available at <http://www.microsoft.com/presspass/press/2005/apr05/04-11GatewayPR.mspx>.

184. *Berkey Photo v. Eastman Kodak Co.*, 603 F.2d 263, 297 (2d Cir. 1979) (“[A] purchaser may recover only for the price increment that ‘flows from’ the distortion of the market caused by the monopolist’s anticompetitive conduct.”). For criticism of the *Berkey* standard, see McCall, *supra* note 7. For further discussion of proof of overcharges in monopolization cases, see A.B.A. Section of Antitrust Law, *Proving Antitrust Damages: Legal and Economic Issues* 202–3 (William H. Page ed., 1996).

185. *Conclusions 2000*, 87 F. Supp. 2d at 36–37, *aff’d in part*, *D.C. Circuit 2001*, 253 F.3d at 51–58.

186. *Conclusions 2000*, 87 F. Supp. 2d at 37–46, *aff'd in part*, D.C. Circuit 2001, 253 F.3d at 57–78.
187. *Findings 1999*, 84 F. Supp. 2d at 13 (Finding 8) (finding that “Windows 95 enjoyed unprecedented popularity with consumers”).
188. *United States v. Microsoft Corp.*, 56 F.3d 1448, 1452 (D.C. Cir. 1995). See also Lopatka & Page, *supra* note 67, at 354.
189. *Findings 1999*, 84 F. Supp. 2d at 27 (Finding 65).
190. *Id.* at 19 (Finding 33).
191. *Id.* at 27 (Finding 65). It added that “[b]y pricing low relative to the short-run profit-maximizing price, thereby focusing on attracting new users to the Windows platform, Microsoft would also intensify the positive network effects that add to the impenetrability of the applications barrier to entry.” *Id.*
192. *Id.* at 27 (Finding 66).
193. *Conclusions 2000*, 87 F. Supp. 2d at 37.
194. *Findings 1999*, 84 F. Supp. 2d at 27 (Finding 62).
195. *Id.* (Finding 63).
196. *Id.* (Finding 64).
197. Transcript of Testimony of Franklin Fisher, Jan. 12, 1999, A.M. Session, in Westlaw MICROSOFT-TRANS library, 1999 WL 11491, at *11 (emphasis added).
198. *Findings 1999*, 84 F. Supp. 2d at 111–12 (Finding 410).
199. *Caldera, Inc. v. Microsoft Corp.*, 72 F. Supp. 2d 1295, 1299–1301 (D. Utah 1999) (denying Microsoft’s motion for summary judgment).
200. *Findings 1999*, 84 F. Supp. 2d at 27 (Finding 65).
201. See, e.g., *id.* at 111–12 (Finding 411).
202. *Id.*
203. *Id.* at 30.
204. *Microsoft*, 253 F.3d at 79.
205. *In re Microsoft Corp. Antitrust Litig.*, 127 F. Supp. 2d 702, 711 (D. Md. 2001).
206. *Findings 1999*, 84 F. Supp. 2d at 18 (Finding 66).
207. Judge Jackson’s remedial order prohibited many competitive discounts to OEMs, but excepted from the prohibition allowances for legitimate costs of distribution services, such as volume discounts. See *Jackson Remedy 2000*, 97 F. Supp. 2d at 66.
208. *Findings 1999*, 84 F. Supp. 2d at 67 (Finding 231).
209. *Id.* at 27–28 (Finding 66).
210. See Christodoulos Stefanadis, *Selective Contracts, Foreclosure, and the Chicago School View*, 41 J.L. & Econ. 429, 430 (1998) (arguing that anticompetitive foreclosure is possible where an “upstream incumbent convinces a sufficient number of downstream firms to sign exclusive supply contracts by offering them low prices”). Stefanadis discusses Philippe Aghion & Patrick Bolton, *Contracts as a Barrier to Entry*, 77 Am. Econ. Rev. 388 (1987); Eric B. Rasmusen et al., *Naked Exclusion*, 81 Am. Econ. Rev. 1137 (1991); Steven C. Salop & David T. Scheffman, *Cost-Raising Strategies*, 36 J. Ind. Econ. 19 (1987); Steven C. Salop & David T. Scheffman, *Raising Rivals’ Costs*, 73 Am. Econ. Rev. 267 (1983).

211. Analogously, courts have recognized that buyers who are subject to a tying arrangement can recover damages only if they prove that the sum of the prices of the tied and tying products was increased. *Midwestern Waffles, Inc. v. Waffle House, Inc.*, 734 F.2d 705, 719 (11th Cir. 1984); *Kypta v. McDonald's Corp.*, 671 F.2d 1282, 1285 (11th Cir. 1982). Unless this condition is met, the buyer is compensated for any restriction it accepts.

212. *Findings* 1999, 84 F. Supp. 2d at 27–28 (Finding 66). The court found that Compaq paid lower prices because it favored IE, id. at 68 (Finding 234), and Gateway paid higher prices because it favored Navigator, id. (Finding 236). See also id. at 45–46 (Finding 141) (noting “the considerable additional costs associated with enlisting other firms in its campaign to increase Internet Explorer’s usage share at Navigator’s expense”).

213. Id. at 67 (Finding 233).

214. Id. at 67–68 (Finding 234).

215. Id. at 68 (Findings 235–38). Judge Jackson explicitly found that Gateway “refused . . . to stop shipping Navigator with its PCs” and “has consistently paid higher prices for Windows than its competitors.” Id. (Finding 236). He found that IBM refused Microsoft’s entreaties to promote and distribute IE exclusively, and though he found that the treatment IBM received from Microsoft was in “stark contrast” to the treatment received by Compaq, he did not explicitly find that IBM paid a higher royalty than Compaq. Id. (Finding 238).

216. Id. (Finding 234).

217. This aspect of the findings suggests the possible argument that Microsoft was engaging in selective contracting as a means of exclusion. See Stefanadis, *supra* note 210. The argument would be that Microsoft persuaded a number of OEMs to accept restrictive terms in return for a guaranteed low price. If enough dealers were thus locked up, Microsoft could deter entry by preventing competitors from achieving minimum efficient scale. Microsoft could then charge a monopoly price to the remaining dealers. It is unclear whether the Stefanadis model would apply to Microsoft’s contracts. One condition is that the contracts be offered selectively; if they are offered to all dealers, then it is unclear that the prediction of anticompetitive exclusion holds. In *Microsoft*, apparently all dealers were offered the exclusive arrangements, but not all accepted.

218. See generally John E. Lopatka & William H. Page, *Indirect Purchaser Suits and the Consumer Interest*, 48 Antitrust Bull. 531, 543–51 (2003) (hereinafter *Consumer Interest*); William H. Page, *The Limits of State Indirect Purchaser Suits: Class Certification in the Shadow of Illinois Brick*, 67 Antitrust L.J. 1, 13–16 (1999) (hereinafter *Limits*).

219. See, e.g., Edward D. Cavanagh, *Illinois Brick: A Look Back and a Look Ahead*, 17 Loy. Consumer L. Rev. 1, 2 n.4 (2004) (citing “[t]wenty-five states and the District of Columbia [that] have enacted *Illinois Brick* repealer statutes,” six of which require that the suit be brought by the attorney general on behalf of consumers).

220. Id. (citing four such states).

221. See Lopatka & Page, *Consumer Interest*, *supra* note 218, at 561 n.114.

222. Page, *Limits*, *supra* note 218, at 9.

223. Id. at 23–27.

224. *Id.* at 21-23.

225. *Melnick v. Microsoft Corp.*, No. CV-99-709, 2001 WL 1012261 (Me. Super. Ct. Cumberland Co. Aug. 24, 2001); *A & M Supply Co. v. Microsoft Corp.*, 654 N.W.2d 572 (Mich. Ct. App. 2002); *Fish v. Microsoft Corp.*, No. 00-031126-NZ (Mich. Cir. Ct. Wayne Co. Apr. 8, 2004).

226. See *Friedman v. Microsoft Corp.*, No. CV2000-000722 (Ariz. Super. Ct. Maricopa Co. Nov. 15, 2000); Coordination Proceedings, *Microsoft I-V Cases*, No. J.C.C.P. 4106 (Cal. Super. Ct. San Francisco Co. Aug. 29, 2000); *In re Florida Microsoft Antitrust Litig.*, No. 99-27340 CA 11, 2002 WL 31423620 (Fla. Cir. Ct. Miami-Dade Co. Aug. 26, 2002); *Comes v. Microsoft Corp.*, 696 N.W.2d 318 (Iowa 2005), *aff'g* No. CL82311 (Iowa Dist. Ct. Polk Co. Sept. 16, 2003); *Bellinder v. Microsoft Corp.*, No. 00-C-0855, 00-C-00092, 99CV17089, 2001 WL 1397995 (Kan. Dist. Ct. Johnson Co. Sept. 7, 2001); *Cox v. Microsoft Corp.*, 2005 N.Y. Slip Op. 51968 (U), 2005 WL 3288130 (N.Y. Sup. July 29, 2005); *Gordon v. Microsoft Corp.*, No. MC 00-5994, 2003 WL 23105550 (Minn. Dist. Ct. Hennepin Co. Dec. 15, 2003) (refusing to decertify) (*Gordon III*); *Gordon v. Microsoft Corp.*, No. MC 00-5994, 2003 WL 23105552 (Minn. Dist. Ct. Hennepin Co. Mar. 14, 2003) (applications software); *Gordon v. Microsoft Corp.*, No. 00-5994, 2001 WL 366432 (Minn. Dist. Ct. Hennepin Co. Mar. 30, 2001) (*Gordon I*); *In re New Mexico Indirect Purchasers Microsoft Antitrust Litig.*, No. D-0101-CV-2000-1697 (N.M. Dist. Ct. Santa Fe Co. Oct. 2, 2002); *Howe v. Microsoft Corp.*, 656 N.W.2d 285 (N.D. 2003); *In re South Dakota Microsoft Antitrust Litig.*, 657 N.W.2d 668 (S.D. 2003); *Sherwood v. Microsoft Corp.*, No. 99C-3562 (Cir. Ct. Tenn. Davidson Co. Dec. 20, 2002); *Capp v. Microsoft Corp.*, No. 00-CV-0637 (Wis. Cir. Ct. Dane Co. Sept. 12, 2001). Final settlements have been approved in Arizona, California, Florida, Kansas, Montana, North Dakota, South Dakota, Tennessee, and West Virginia.

227. The expert was Dr. Keith Leffler. In at least two cases, the plaintiffs relied on Jeffery K. MacKie-Mason. See *Gordon III*, 2003 WL 23105550; Coordination Proceedings Special Title (Rule 1550(b)), *Microsoft I-V Cases*, No. J.C.C.P.NO. 4106 (Cal. Super. Ct. San Francisco Co., Aug. 29, 2000). In one, the plaintiffs relied on Dr. James Levinsohn. *Fish v. Microsoft Corp.*, No. 00-031126-NZ (Mich. Cir. Ct. Wayne Co. Apr. 8, 2004).

228. *In re Florida Microsoft Antitrust Litig.*, No. 99-27340 CA 11, 2002 WL 31423620, at *7 (Fla. Cir. Ct. Miami-Dade Co. Aug. 26, 2002) (noting that Dr. Leffler had offered affidavits in Kansas, Maine, Michigan, Minnesota, New Mexico, North Dakota, South Dakota, Tennessee, and Wisconsin).

229. *Id.* at *7.

230. See, e.g., *Bellinder*, 2001 WL 1397995, at *6; *Melnick*, 2001 WL 1012261, at *13; *A & M Supply*, 654 N.W.2d at 584-85.

231. See, e.g., *A & M Supply*, 654 N.W.2d at 585-86.

232. *Id.* at 586.

233. *Id.* at 588.

234. *Id.* at 590.

235. *Bellinder*, 2001 WL 1397995, at *6.

236. Page, *Limits*, *supra* note 218, at 33.

237. See, e.g., *Piggly Wiggly Clarksville, Inc. v. Interstate Brands Corp.*, 215 F.R.D. 523, 530 (E.D. Tex. 2003).

238. See, e.g., *Comes*, slip op. at 6 (holding that “[i]n this instance, the Plaintiffs’ burden [on class certification] is slight because the facts are not speculative” in that “many of the facts have been established in a government action against Microsoft in which the Iowa Attorney General participated”), *aff’d*, 696 N.W.2d 318 (Iowa 2005). An exception is *Melnick*, which recognized that Judge Jackson’s findings do not support a finding of an overcharge. *Melnick*, 2001 WL 1012261, at *11–*12.

239. *Gordon I*, 2001 WL 366432, at *9.

240. See *Gordon v. Microsoft Corp.*, No. MC 00-5994, 2003 WL 22281574, at *4 (Minn. Dist. Ct. Hennepin Co. Aug. 20, 2003) (*Gordon II*) (recognizing that “the government alleged and proved only that Microsoft illegally *maintained* a monopoly [while] the plaintiffs contend that Microsoft *acquired* a monopoly in operating systems and applications software through anticompetitive conduct”).

241. Leffler suggested as a possible measure of damages comparing the margin for Windows with the margins for “anti-virus software, fax software, and internet portal markets.” *Bellinder*, 2001 WL 1397995, at *6. None of these products are platform software and thus would not be characterized by network effects.

In the Minnesota case, when Microsoft moved to decertify the class, it became apparent that the plaintiffs’ expert did not propose to offer any evidence of overcharges before 1994; nevertheless, the court denied the motion on the theory that the plaintiffs might offer sufficient evidence of Microsoft’s illegal conduct before 1994 to justify an inference of an “embedded” overcharge. See *Gordon III*, 2003 WL 23105550, at *2. It is not clear from the opinion how one might infer the magnitude of such an overcharge.

242. *Florida Microsoft*, 2002 WL 31423620, at *11; *Gordon I*, 2001 WL 366432, at *11. See also Coordination Proceedings, *Microsoft I-V Cases*, No. J.C.C.P. 4106, slip op. at 13; *Comes*, No. CL82311, slip op. at 16.

243. See *Gordon II*, 2003 WL 22281574, at *11, which gave collateral estoppel effect only to the court of appeals’ statement that Microsoft harmed the competitive process and thereby harmed consumers.

244. The Minnesota court ultimately refused to give collateral estoppel effect to Judge Jackson’s findings of harm on the ground that they were unnecessary to the finding of liability. *Id.* at *11.

245. The *Melnick* court cited this portion of Judge Jackson’s findings. *Melnick*, 2001 WL 1012261, at *3, *11–*12. See also Coordination Proceedings, *Microsoft I-V Cases*, No. J.C.C.P. 4106, slip op. at 15–16, n.8.

246. *Florida Microsoft*, 2002 WL 31423620, at *17.

247. *Melnick*, 2001 WL 1012261; *A&M Supply*, 654 N.W.2d 572; *Fish v. Microsoft Corp.*, No. 00-031126-NZ (Mich. Cir. Ct. Wayne Co. Apr. 8, 2004).

248. *A&M Supply*, 654 N.W. 2d at 603.

249. *Id.* at 598–600. The court rejected the proposed use of tax incidence theory to prove passing on because it had not taken account of the complexities of the market identified by Microsoft’s experts. The court characterized

as “slogans” the expert’s proposal to use “relatively simple statistical estimations” and “basic economic principles.” *Id.* The court noted that the class was enormous and covered six products over several years. Moreover, Microsoft’s expert’s study had shown that computer distributors were not perfectly competitive, and charged different prices and relied on price points, and so would likely have had different rates of passing on at different times. *Id.* at 603. A more recent Michigan trial court decision “reluctantly” followed *A&M Supply* in refusing to certify a class of indirect purchasers of Windows 98. *Fish v. Microsoft Corp.*, Case No. 00-031126-NZ (Mich. Cir. Ct. Wayne Co. Apr. 8, 2004).

250. Coordination Proceedings, *Microsoft I-V Cases*, No. J.C.C.P. 4106, slip op. at 17–19; *Comes*, No. CL82311, slip. op. at 18 (requiring only proposed methods for a reasonable estimate of the amount of damages), *aff’d*, 696 N.W.2d 318 (Iowa 2005); *In re New Mexico Indirect Purchasers Microsoft Corp. Antitrust Litig.*, No. D-0101-CV-2000-1697, slip. op. at 2 (N.M. Dist. Ct. Santa Fe Co. Oct 2, 2002); *Howe v. Microsoft Corp.*, 656 N.W.2d 285, 288–89 (N.D. 2003).

251. Coordination Proceedings, *Microsoft I-V Cases*, No. J.C.C.P. 4106, slip op. at 15; *Bellinder*, 2001 WL 1397995, at *7; *N.M. Microsoft*, slip. op. at 4; *Howe*, 656 N.W.2d. at 291; *S.D. Microsoft*, 657 N.W.2d at 675–77. But cf. *Blades v. Monsanto Co.*, 400 F.3d 562, 575 (8th Cir. 2005) (“[I]n ruling on class certification, a court may be required to resolve disputes concerning the factual setting of the case [including] expert disputes concerning the import of evidence concerning the factual setting—such as economic evidence as to business operations or market transactions.”).

252. *Comes*, No. CL82311, slip op. at 17, *aff’d*, 696 N.W.2d 318 (Iowa 2005); *Bellinder*, 2001 WL 1397995, at *7. The phrase is drawn from federal law. *In re Potash Antitrust Litig.*, 159 F.R.D. 682, 687 (D. Minn. 1995).

253. *N.M. Microsoft*, slip. op. at 4.

254. *Comes*, No. CL82311, slip. op. at 26; *S.D. Microsoft*, 657 N.W.2d at 678–80.

255. *Gordon I*, 2001 WL 366432, at *4–*6. The Minnesota Supreme Court later affirmed the intermediate appellate court’s refusal to review the certification decision on procedural grounds. *Gordon v. Microsoft Corp.*, 645 N.W.2d 393 (Minn. 2002).

256. *Gordon I*, 2001 WL 366432, at *6.

257. *Id.* at *11.

258. *Gordon III*, 2003 WL 23105550.

259. But see *In re Microsoft Corp. Antitrust Litig.*, 185 F. Supp. 2d 519, 523 n.2 (D. Md. 2002) (finding it economically unfeasible to distribute proceeds of settlement to consumers in part because “many individual consumers will not have retained proof of purchase documents”).

260. Robert G. Bone & David S. Evans, *Class Certification and the Substantive Merits*, 51 Duke L.J. 1251, 1287 (2002).

261. *Id.* at 1291–1302.

262. *Id.* at 1302 n.188.

263. *Id.* at 1303.

264. *Id.* at 1305–11.

265. *Id.* at 1313.

266. *Id.* at 1315. Bone and Evans argue courts should assess at the certification stage the likelihood of success on the merits. Geoffrey C. Hazard Jr., *Review of the Merits in Class Action Certification*, 33 Hofstra. L. Rev. 51 (2004), rejects this proposal in favor of “weak-form rules” allowing courts to conduct “reasonable inquiries into the merits as relevant to certification.” *Id.* at 51. Hazard’s description of weak form rules, *id.* at 59–61, is consistent with the skeptical approach.

267. Laurie J. Flynn, *Few Takers for Payments from Microsoft Settlements*, N.Y. Times, Jan. 5, 2005, at C4. See also *In re Microsoft Corp. Antitrust Litig.*, 185 F. Supp. 2d 519, 523 n.2 (D. Md. 2002) (finding the likely cost of processing individual consumer claims would outweigh the payment).

268. Dawn Peake, *Time Still Left to File Claims from Microsoft Suit*, St. Cloud Times, Feb. 18, 2005, at 1B. See also Leslie Brooks Suzukamo, *Few Claim Money from Class-Action Lawsuit Against Microsoft* (2005) (“What if a large corporation gave away millions of dollars and nobody bothered to claim it?”).

269. See, e.g., Donald I. Baker, *Hitting the Potholes on the Illinois Brick Road*, Antitrust, Fall 2002, at 14, 17.

270. An often-cited theoretical measure is the net harm to persons other than the offender, discounted by a factor that reflects the likelihood of detection. See William M. Landes, *Optimal Damages for Antitrust Violations*, 50 U. Chi. L. Rev. 652 (1983). The federal doctrines of antitrust injury and standing should be interpreted to shape private damages to approximate this amount. See Page, *Scope of Liability*, supra note 154. In practice, because of a multitude of complicating factors, the aggregate awards in multijurisdictional, multiparty antitrust litigations vary so widely they can fairly be described as random. See Spencer Weber Waller, *The Incoherence of Antitrust Punishment*, 78 Chi.-Kent L. Rev. 207 (2003).

271. *Comes v. Microsoft Corp.*, 646 N.W.2d 440, 450 (Iowa 2002).

272. For discussion of optimal penalties in such cases, see Roger Blair & William H. Page, *Controlling the Competitor Plaintiff in Antitrust Litigation*, 91 Mich. L. Rev. 111 (1992); William H. Page, *Optimal Antitrust Penalties and Competitors’ Injury*, 88 Mich. L. Rev. 2151 (1990).

AFTERMATH

1. John E. Lopatka & William H. Page, *Posner’s Program for the Antitrust Division: A Twenty-Five Year Perspective*, 48 SMU L. Rev. 1713 (1995).

2. The initials AG are said by some to stand for “aspiring governor.” Christopher Georges, *Politics Play a Role in States’ Status in Antitrust Action Against Microsoft*, Wall St. J. Interactive Ed., May 28, 1998.

3. *Id.*

4. Richard A. Posner, *Federalism and the Enforcement of Antitrust Laws by State Attorneys’ General*, in *Competition Laws in Conflict* 265 n.7 (Richard A. Epstein & Michael S. Greve eds., 2004).

5. *New York v. Microsoft Corp.*, Civ. No. 98-1233 (CKK), Executive Summary (Nov. 1, 2002).

6. Richard A. Posner, *Antitrust Law* 281 (2d ed. 2001); Robert W. Hahn & Anne Layne-Farrar, *Federalism in Antitrust*, 26 Harv. J.L. & Pub. Pol'y 877 (2003). But see Stephen Calkins, *Perspectives on State and Federal Antitrust Enforcement*, 53 Duke L.J. 673 (2003); Jay L. Himes, *Exploring the Antitrust Operating System: State Enforcement of Federal Antitrust Law in the Remedies Phase of the Microsoft Case*, 11 Geo. Mason L. Rev. 37 (2002).

7. Pub. L. No. 109-2, § 9, 119 Stat. 4 (2005).

8. Markus Muller, *The European Commission's Decision Against Microsoft: A Violation of the Antitrust Agreements between the United States and the European Union?*, 26 European Comp. L. Rev. 309 (2005).

9. William J. Kolasky, Speech before BIICL Second Annual International and Comparative Law Conference, London, North Atlantic Competition Policy: Converging Toward What? May 17, 2002, available at www.usdoj.gov/atr/public/speeches/11153.pdf (criticizing the use of monopoly leveraging theory).

10. Remarks of R. Hewitt Pate, Roundtable Conference with Enforcement Officials, Apr. 2, 2004, available at <http://www.usdoj.gov/atr/public/speeches/203088.htm> (criticizing the “code removal” remedy, and noting that “imposing antitrust liability on the basis of product enhancements, even by ‘dominant’ companies, risks protecting competitors, not competition, in ways that may ultimately harm innovation and the consumers who benefit from it).

11. One such threat may be advertising-supported Internet services like those provided by Google. Microsoft's internal memos have suggested that the Internet services model poses a challenge to Microsoft's business strategy similar to the challenge of the graphical user interface in 1990, the Web in 1995, and Internet-based programming in 2000. Ray Ozzie, *The Internet Services Disruption*, Oct. 28, 2005, available at <http://www.scripting.com/disruption/ozzie/TheInternetServicesDisruptio.htm>. When a reporter recently asked Bill Gates if Microsoft would do to Google what it did to Netscape, Gates “paused, looked down at his folded hands and smiled broadly, as if enjoying a private joke. ‘Nah,’ he replied, ‘we’ll do something different.’” Steve Lohr, *Can This Man Reprogram Microsoft?* N.Y. Times, Dec. 11, 2005, at C1.

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