Microsoft on Trial
Legal and Economic Analysis of a Transatlantic Antitrust Case

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1. INTRODUCTION

If there is a twentieth century icon, if there is a symbol for the information economy in the United States, it is Bill Gates and his Microsoft Corporation—a symbol for the best and worst of that century's economic transformation into a networked domain of knowledge bases and communication protocols. At best Bill Gates symbolized the possibility of success beyond the wildest dreams of a software geek, a college drop-out who left Harvard and went home to the buzz culture of Seattle with its coffee bars, its software garages, and its grunge rock cellars. Everyone, it seemed, wanted to be like Bill. Again, in its best light, Microsoft developed a software platform that helped lift personal computing into a worldwide technology for the information economy. But there was the dark side: At its worst, Microsoft abused the power of its Windows monopoly in a succession of predatory excesses not seen since the heyday of John D. Rockefeller and his Standard Oil Company. Both Rockefeller and Gates created networks for national distribution, one the first physical network for nationwide petroleum transport and the other the first virtual network of worldwide software standards for PCs. And, according to the Justice Departments and federal courts of their eras, both violated the antitrust laws to gain and maintain the dominance of those networks.

But similar means did not lead to similar ends. Standard Oil was broken up into 33 companies; Microsoft remains intact. Why was Microsoft not broken up into two firms, one with the intellectual property rights (IPRs) to Windows and the other to the applications software, as the Justice Department and 20 states demanded? Or three firms, each with all of Microsoft's IPRs—three Baby Bills—as called for by laissez-faire advocate turned Netscape counsel Robert Bork?

Adherents of réal politique would respond that the 2001 installation of George W. Bush as President seated a new administration whose corporatist ideology hid behind the rhetoric of laissez-faire. In this view, Microsoft was left intact as the national champion to maintain US global dominance
of the information technology sector. That is an easy answer and, it can be forcefully argued, the right one.

Nonetheless, that answer proves too much because it does not take into account the Justice Department Antitrust Division's approach to the Microsoft case and the implications of its limitations. Those limitations took a strong case on the facts and made it a hard case on the law and, finally, a disappointing one on the remedy. The European Commission case against Microsoft provides a useful contrast to the US approach and its limitations, although it must be kept in mind that the US case struck at the core of Microsoft's business—the Windows operating system and web-browser—while the EC case focused on closely tied but ancillary lines of business—media players and low-end network servers. The chapter is divided into three major sections.

The first section takes a close look at the fully litigated US case, the findings of fact regarding Microsoft’s course of predatory conduct as well as the legal arguments that framed them. The section focuses on the opinions of trial court Judge Thomas Penfield Jackson.

The second section continues with the US case by exploring the issues of technological bundling and its antitrust corollary, technological tying. After close attention to the Court of Appeals’ opinions, the section analyses the reasons for current US rejection of the leverage theory that underlies traditional antitrust treatment of tying, a rejection expressed in most US court opinions following two decades of questionable economic criticism. The underlying conduct at issue is Microsoft’s integration of

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1 The European Commission has recently launched an investigation into Microsoft’s bundling of Internet Explorer with its operating system, according to EC spokesman Jonathon Todd. Report available from Dow Jones Newswire at www.borsaitaliana.it/borsa/area-news/news/mf-dow-jones/internazionali-dettaglio.html?newsId=563524&lang=en.

applications software into the Windows operating system, both Internet Explorer and Windows Media Player.

The third section contrasts US and European Commission approaches to determining the obligations of dominant firms to provide information for software interoperability. On both sides of the Atlantic, the liability issues and to some extent the remedies reflect differing attitudes toward Microsoft's obligations to license and to provide information to competitors who produce software that must work efficiently within the industry technical standards defined by Microsoft Windows. Here, both antitrust and intellectual property policies about compulsory cooperation and compulsory licensing come into play. The context for this section is Microsoft's strategic conduct in the operating system market for low-end network servers.

The US court opinions address an array of liability issues that emerge from Microsoft's long-standing strategy of software integration, issues including its purposes and its effects, particularly its effects on software developers. The integration strategy was crucial to Microsoft's attaining dominance as early as the integration of DOS and Windows 3.11 to form Windows 95, and more recently in the integration of Internet Explorer and Windows Media Player into later versions of Windows. At the core of Microsoft's commercial strategies at least since Windows 95 have been software integration and the control over the industry-standard information that resulted.

In 2007, three years after the European Commission published its findings, the European Court of First Instance (CFI) affirmed in an opinion that gave surprising deference to Commission findings. The CFI decision was quickly followed by trans-Atlantic sabre-rattling in an exchange of public statements from the directors of the US Department of Justice Antitrust Division and the European Commission. The CFI judgment together with the rhetorical encounter present an opportunity to investigate, first of all, contrasting approaches taken to the relationship between antitrust and IPRs, and secondly, a largely ignored competition policy situated within the US patent regime.

The chapter concludes with some observations about the innovation and competition policies expressed in the bundle of opinions in the Microsoft case.

2. FACTUAL CONTEXT AND BACKGROUND

Antitrust scrutiny of Microsoft in the United States began with an extensive but inconsequential Federal Trade Commission (FTC) investigation
in 1990, proceeded to the Justice Department’s monopolization suits in 1994 and 1998, and continued in private suits until settlement of the RealNetworks case in 2004. Most attention has been paid to the fully litigated 1998 case, which 20 state Attorneys General joined as plaintiffs. In that litigation, the trial court phase concluded with Judge Thomas Penfield Jackson’s holding that Microsoft had violated the Sherman Anti-Trust Act by monopolizing the market for Intel-compatible operating systems, by attempting to monopolize the market for web-browsers, and by tying Internet Explorer to the Windows operating system. Judge Jackson adopted the plaintiffs’ proffered remedy and decreed that, thenceforth, there would be two Microsofts, one of them with ownership rights to Windows and the other with the rights to Microsoft applications software, including Internet Explorer. The decree also imposed restrictions and mandates regarding Microsoft’s business practices and required external oversight as well as public reporting. The United States Circuit Court for the District of Columbia (Circuit) Court of Appeals reversed Judge Jackson’s decision in significant part, affirmed only the monopolization holding, and remanded to another trial court judge for further proceedings, including reconsideration of remedies. The structural remedies fell and Microsoft remained intact.3

In the beginning, which was 1975, Bill Gates and friends created Microsoft. But it was five years later that IBM put Microsoft into the new economy’s catbird seat. Not only did IBM choose Microsoft’s version of DOS (Disc Operating System) as the only operating system distributed with its PCs, but in one of the great commercial blunders of the twentieth century, IBM disdained any equity interest in Microsoft and any rights

3 See n. 2 above for listing and designation of Microsoft opinions. It is useful to note that the Windows software systems, and DOS before it, were written for PCs designed around processor chips once produced only by Intel and later by several additional companies. IBM chose Intel for its PC processor chips just as it chose Microsoft for its PC operating system. The PC market would split into two sub-markets based on two incompatible processor chip technologies, one consisting of IBM and its clones, and the other of Apple Computer systems, which used an incompatible processor chip. Although the Apple technology was considered to be more efficient and stable, and easier to use, its market share eventually fell to single digit percentages because, it is generally believed, Apple refused to license its technology. In consequence, no Apple clones developed and prices did not fall as they did in the IBM clone market because Apple was unable to match the economies of scale and the network effects resulting from the massive numbers of PCs produced and distributed in the IBM-compatible market. By the 1990s, Windows had monopolized the much larger IBM clone sub-market, which had come to be known as the Intel-compatible PC operating system market, a change no doubt resulting from IBM’s decline and Intel’s continued dominance.
in the software. Microsoft's MS-DOS would soon become the dominant operating system in the exploding market for IBM and IBM-compatible PCs. In the mid-1980s, Microsoft introduced the first Windows operating system and was promptly sued by Apple for infringing its copyrights for mouse-and-icon, point-and-click operating system design. Microsoft prevailed in what can best be understood as decisions reflecting the old economy mindset of unfamiliarity with computer software and narrow conceptions of their intellectual property protection. With both MS-DOS and Windows, Microsoft adapted others' innovation and, by both fortune and design, found itself in a position to dominate an industry driven by the lemming logic of network economics. The question of whether Microsoft engaged in predatory practices to tip and maintain the market in its favour by reinforcing network market propensities toward all-or-nothing equilibria would occupy the antitrust enforcement agencies for the next decade.

On 20 August 1993, the FTC informed Microsoft that it was closing its three-year investigation after the Commissioners twice deadlocked on staff recommendations to issue an administrative complaint and consider

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4 Apple Computer, Inc. v Microsoft Corp., 35 F.3d 1435 (9th Cir. 1994).

Strictly speaking, Windows 3.1, introduced in 1986, was not an operating system. Rather it was a platform designed to run on DOS software, allowing users to issue the equivalent to DOS commands by pointing-and-clicking screen icons instead of typing arcane codes. Windows 3.1 was GUI (graphical user interface) software to simplify communication between the user and DOS. Windows 95 would combine Microsoft's MS-DOS and the Windows 3.1 layer into an integrated platform almost ten years later.

Perhaps the clearest sight-line into the earlier architecture comes from the US$155,000,000 settlement of Caldera's antitrust case against Microsoft. As reported by the Associated Press, Caldera charged that Microsoft included false error messages in Windows 3.1 that appeared whenever it detected Caldera's DOS, in order to deceive and unnerve users into switching to Microsoft DOS. Caldera charged further that Microsoft later built needless incompatibilities into Windows 3.1 simply to assure that it would run properly only with Microsoft's MS-DOS. 'Caldera, Microsoft settle suit', 10 January 2000, available at http://wire.ap.org/APnews/center_story.html; 'Microsoft and Caldera settle antitrust suit', New York Times, 11 January 2000, C2; Caldera, Inc. v Microsoft Corp., 72 F. Supp.2d. 1295 (D. Utah 1999). See also Aldridge v Microsoft Corp., 995 F.Sup. 728 (S.D.Tex. 1998) (antitrust and common law claims based on claims of misleading error messages).
a cease and desist order, the agency's equivalent to an injunction. On the same day, the Justice Department confirmed that it would initiate its own investigation of Microsoft and make use of the FTC materials. Less than a year later, Microsoft signed a consent judgment with the Justice Department, agreeing to eliminate certain contract restrictions on PC manufacturers, including a provision that conditioned the licensing of Windows on installation of Internet Explorer. Those manufacturers included Compaq, Gateway, and IBM. Microsoft intended, according to findings of fact in the Justice Department's subsequent 1998 case, to block access to distribution channels for products perceived as threats to Windows' continuing dominance—that is, to raise entry barriers to stop web-browsers and other competing products from reaching end-users.

By 1995, Microsoft had shifted corporate strategy to take account of the Internet's growing importance by shipping Internet Explorer (IE) as an applications program to run on the Windows 95 platform. Microsoft soon began to give away rather than sell IE. Netscape was forced to follow suit with its Navigator software, then the leading web-browser. Users would presumably have a choice between two strong browsers, both available at no direct cost. In 1996, Microsoft changed IE's software architecture from a stand-alone applications program to a group of modules that was shipped as part of Windows 95. The change benefited applications software programmers to the extent the change would ease compliance with interoperability protocols to IE. The harm was that the new software architecture in effect did the work of earlier contractual provisions, in apparent violation of the 1994 consent decree, provisions that required IBM, Gateway, Compaq and other PC manufacturers to install IE but not Netscape Navigator—still the industry leader. PC manufacturers were left with little choice but to accede, in practical terms denying Navigator the main access channel to new users. Indeed, Microsoft was aware of market

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6 'In July 1994, officials at the Department of Justice (DOJ), on behalf of the U.S., filed suit against Microsoft, charging the company with, among other things, unlawfully maintaining a monopoly in the operating system market through anti-competitive terms in its licensing and software developer agreements. The parties subsequently entered into a consent decree, thus avoiding a trial on the merits.' See United States v Microsoft Corp., 56 F.3d 1448 (D.C.Cir.1995), rev'ing, 159 F.R.D. 318 (D.D.C. 1995) (Tunney Act appeal of 1994 consent decree). Three years later, the Justice Department filed a civil contempt action against Microsoft for allegedly violating one of the decree's provisions. On appeal from a grant of a preliminary injunction, this court held that Microsoft's technological bundling of IE 3.0 and 4.0 with Windows 95 did not violate the relevant provision of the consent decree. See Microsoft II.
studies showing that few users would have the technical knowledge to uninstall IE, find a copy of Navigator and install it.

Moreover, Microsoft's revised licensing agreement also required PC manufacturers to pay royalties for Windows OS whenever a PC was shipped, whether or not it was shipped with Windows. The intent, of course, was to coerce PC manufacturers into shipping all PCs with Windows. When IBM refused to accede to all conditions, particularly because it did not want to abandon its billion dollar investment in its own OS/2 operating system, Microsoft withheld pre-release access to necessary information about the new Windows 95, costing IBM millions of dollars in PC sales. As a general matter, Microsoft charged lower royalties to PC manufacturers who cooperated more whole-heartedly, giving them a competitive advantage in a market where price competition was fierce. 7

The effects of Microsoft's strategies were three: in the operating systems market for PCs, Microsoft was maintaining its monopoly. In the browser market, Microsoft was denying access to IE's only significant rival, Netscape Navigator. In a more expansive definition of the operating systems market for PCs, Microsoft was denying access to Java, the potential 'middleware' software that was shipped with Navigator and threatened to commodify Windows and all operating systems as fungible substitutes, not unlike disk drives, RAM and other PC components.

In late 1997, the Justice Department and the European Commission filed a civil contempt action, alleging that Microsoft's architectural bundling of IE with Windows 95 violated the 1994 consent decree. While Microsoft agreed to eliminate some of the challenged practices, the suit proved to be an embarrassment to the enforcement agencies. It was an embarrassment because the agencies had intended to keep Microsoft from tying Windows 95 to IE, and argued that the architectural change was functionally a tie-in that violated the consent decree. Microsoft argued that Windows 95 and IE were not two separate products tied together but part of one integrated operating system, and that, according to the consent decree section IV(E)(i), their agreement not to tie-in 'shall not be construed to prohibit Microsoft from developing integrated products'. Judge Thomas Penfield Jackson rejected the argument and issued a temporary injunction requiring Microsoft to offer Windows 95 and IE separately. The District of Columbia Circuit Court of Appeals reversed, however, holding that Judge Jackson had misconstrued the consent decree. Further, in a sweeping opinion that went beyond the consent decree, the Court of Appeals afforded enormous discretion to Microsoft and to others when they

7 Microsoft IVb, Conclusions of Law.
engaged in what it called 'technological tying'. As a result, even if IE's new architecture did amount to tying under the antitrust laws, it was apparently legal, at least according to two judges in the Court of Appeals.  

Adding to the embarrassment, the entire proceeding was irrelevant in practical effect because, a month earlier, the Court of Appeals had already ruled that the consent decree did not apply to Windows 98 and, thus, that Microsoft could ship the new software, which extended the architectural integration of IE into Windows even more deeply. In consequence, by the time the Court of Appeals dissolved the temporary injunction in the Windows 95 matter, Windows 98 was already on retailers' shelves and in PCs awaiting shipment. Windows 95 was obsolete.

Two events, one of them public and the other behind closed doors, added new twists to the saga. First, without public announcement, Microsoft had again changed the IE software architecture. In later releases of Windows 95 and in Windows 98, Microsoft disingenuously redefined as IE components some modules used by both Windows and IE. In short, some Windows functions were treated as 'outsourced' to IE. The feigned outsourcing was designed in such a way that disabling IE would also disable the outsourced modules and, with them, Windows itself. Moreover, although there was some benefit to applications software programmers in the deeper integration, the harms were multiple. Users could not delete IE because of the architecture and, in some applications, Windows forced users to employ IE as the web-browser. Finally, evidence at trial would include studies finding that the new architecture resulted in a less stable, less efficient operating system. That is, with the newest architecture, Windows 98 was slower and crashed more frequently than its predecessors.

The second event, with great public fanfare, was the Justice Department's second antitrust suit, filed on precisely the day Windows 98 was shipped for sale. Twenty state Attorneys General joined the case, which was assigned to the same Judge Jackson because he was already deeply knowledgeable in the case. The government plaintiffs alleged that Microsoft used predatory tactics to maintain its Windows monopoly, attempted

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8. Microsoft II, 147 F.3d at 945–52 (three-judge panel splitting 2–1), reversing Microsoft I ("the Final Judgment").

9. "A Government expert, 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." Microsoft V, 253 F.3d at 66; see, generally, Brief of Prof. Lawrence Lessig as Amicus Curiae (1 February 2000) available at http://www.lessig.org/content/testimony/ab/ab.pdf."
to monopolize the web-browser market, and engaged in sundry conduct in restraint of competition. The governments’ approach promised a case study of exclusionary conduct in the new economy.

Through the lens of network economics, Microsoft’s dominance can be explained as resulting from factors other than the quality and price of its Windows products. To begin, its early success resulted directly from IBM’s fortuitous choice of MS-DOS as the operating system for its PCs, giving Microsoft the enormous first-mover advantage of a large customer base in an expanding market. Further, because IBM was the industry leader in PC manufacturing, its choice set the industry standard and others followed even though there were not significant technological incompatibilities among the various versions of DOS available. With IBM’s success, the market quickly moved toward Microsoft DOS as the standard operating system. Still, other versions of DOS were compatible and, as a result, Microsoft’s dominance was not secure. Even the introduction of Windows as a user-friendly layer of software did not tip the entire market inexorably toward Microsoft because Windows 3.1 was not itself an operating system but a graphical user interface that worked with rivals’ DOS software. Indeed, Microsoft apparently sought to exclude DOS rivals by engaging in various anti-competitive practices, including the screen posting of false error messages when Windows detected a competing DOS program.¹⁰

What shifted the dynamics of network economics into high gear were Microsoft’s introduction, marketing and distribution of Windows 95, which integrated DOS operating system functions and the Windows 3.1 point-and-click layer into one software package, eliminating the need for separate DOS software. The entire market for separate DOS software would disappear. As part of an apparent strategy to hasten DOS’s demise, Microsoft Windows 95 was designed to be incompatible with earlier versions of DOS-plus-Windows 3.1. In consequence, applications programs (for example, word-processing or spreadsheet software) running on the old DOS-plus-Windows 3.1 platform either did not run well on Windows 95, or caused intermittent system crashes, or simply did not run at all. At the same time, Microsoft gave PC manufacturers strong financial incentives to ship Windows 95 to new customers, despite inventories of DOS and Windows 3.1, and increased the price of the older software. At retail, new users paid less for Windows 95 than for its predecessor.

Microsoft’s business strategy effected a perfect understanding of network economics insofar as it was designed to increase the pressures of technological compatibility that were driving the market’s inclination

¹⁰ See Caldera, n. 5 above.
toward tipping to Windows as the industry standard. PC manufacturers shipped only Windows 95 because Microsoft not only gave them financial incentives but also threatened sanctions including higher royalties and withholding of crucial technical information about new software. Actual substitutes were not shipped and potential ones not developed. New PC users had little choice but to accept Windows 95. After some initial concern about available applications software for Windows 95, which was not backward-compatible with prior versions of Windows, PC users saw that the entire industry of applications software was shifting. It was shifting because applications software companies realized they would have to revise their software to meet Windows 95 protocols or face a disappearing customer base. At the same time, Microsoft was giving financial incentives to applications software companies to turn their resources toward (re)writing software for Windows 95. Old PC users felt compelled to switch to Windows 95 because their current applications would no longer be supported and new versions would run only on Windows 95. New applications were being written for Windows 95, not its 3.1 predecessor. At each phase in this positive feedback cycle, each switch to Windows 95 by a user or a software provider increased the incentives of others in the cycle to switch for fear of abandonment to unsupported technical standards and a declining user base. Soon Windows 95 pushed Microsoft’s market share of PC operating systems past 90 per cent and DOS was eliminated entirely as a separate market. Would Microsoft have locked-in the market to Windows 95 as global standard for PC operating systems absent the sticks-and-carrots strategy of reinforcing the positive feedback mechanism’s tendency to produce a winner-take-all outcome in this network market?\textsuperscript{11}

Although opinions differed on how much of Microsoft’s success resulted from its predatory course of conduct and how much from the winner-take-all dynamics of new economy markets, the Justice Department and 20 state Attorneys General were convinced that it was Microsoft’s illegal conduct that assured continued dominance in the market for PC operating system software and threatened monopolization of the browser market. In particular, they asserted that Microsoft acted with the singular purpose of protecting its Windows monopoly. Microsoft’s campaign to coerce IBM into dropping its Windows-compatible OS/2 Warp operating system was obviously predatory. Potential developers of new operating systems channelled their innovation energies elsewhere because they became more and more convinced it would remain the industry standard, even if more

\textsuperscript{11} Microsoft IVa, Findings of Fact, available at www.usdoj.gov/atr/cases/f3800/msjudgex.htm.
expensive and less efficient than its competitors old and new, because users were locked into applications programs that ran only on the Windows 95 platform. And everyone understood that it made economic sense for applications software developers to write new programs or revise old ones for the massive Windows 95 customer base rather than for older Windows or marginal operating systems with few customers and thus with dim prospects for displacing Windows 95. Microsoft recognized its monopoly depended on maintaining this applications barrier to entry. That much was straightforward.

But what was surprising to many outside the software industry and the venture capital markets serving it was the government’s assertion that the same motivation – to maintain the operating systems market’s applications barrier to entry – drove Microsoft to develop IE and to pursue its relentless campaign against Netscape Navigator and Sun Microsystems’s Java platform. The plaintiffs would ultimately persuade Judge Jackson that Microsoft was responding to another kind of threat to the Windows monopoly. It was the threat of ‘middleware’, of software that stood between Windows and the user. Middleware threatened to make Windows 95 invisible to the user, just as Windows 3.1 had lowered the curtain on DOS. No one would care about the underlying operating system, just as no-one cared about the brand of RAM or disk drive running under the skin of the PC.

Middleware is yet another layer of software, one that sits atop the operating system (whether Windows, Apple’s Mac OS, IBM’s OS/2, Linux or others) and thus is ‘multi-platform’. That is, applications program developers could write their software to run on the top layer of Java (the multi-platform middleware) and ignore the particular operating system below. As a result, an applications software package written to run on Java would be compatible with any underlying operating system. Users and software developers would no longer be locked-in to Windows. Indeed, they would be locked into Java. The positive feedback loop benefiting Windows would be broken and, even worse, Java middleware would provoke a new feedback loop. Windows would become just another operating system.

Judge Jackson determined that Microsoft saw Netscape Navigator as the most dangerous middleware threat to Windows. The Navigator threat was so great, it turns out, because it was distributed with the Java package. The Java package included a programming language and associated programs that generated middleware allowing applications program developers to create programs that would run on the Java platform and thus with Navigator. At bottom, when Microsoft restrained distribution of Navigator, it was primarily concerned with excluding Java and, with it, the threat of burying Windows in an unseen software layer.
Microsoft’s concern with middleware included other software as well. Judge Jackson’s findings of fact recite evidence of Microsoft’s success at excluding other perceived middleware threats, including small pieces of software written by Apple and by Intel to enhance Windows’ multimedia capabilities.

But it was Navigator and Java that grabbed Microsoft’s corporate attention. Bill Gates’s worst nightmare was a new library of Java-driven applications programs, running on any operating system and using Navigator to access an Internet full of data, entertainment and remote applications. There would be no need for a large and cumbersome operating system like Windows. PCs would be smaller and cheaper. It was Microsoft’s intention to stifle software development for middleware, especially for Navigator and Java. In this light, Judge Jackson would conclude, Microsoft attempted to monopolize the browser market as the means to maintain its Windows monopoly.

Nevertheless, it is likely that Microsoft’s purposes were multiple – not only to maintain the Windows monopoly but also to dominate a browser market that would become important in its own right. As part of its effort to dominate the browser market, Microsoft engaged in what might be called predatory innovation. Microsoft licensed Java from Sun Microsystems in order to develop an IE that offered the same capabilities as Navigator. But its programmers altered the Java technology shipped with Windows/IE, according to Microsoft, to improve performance. As a by-product of the changes, however, the Windows version of Java could no longer run on other operating systems. As a result, its value as a multi-platform technology was destroyed. Sun Microsystems sued Microsoft, claiming copyright and trademark infringements as well as breach of contract. Ultimately, the trial judge ruled in Sun’s favour to the extent of enjoining Microsoft from shipping altered versions of Java.

As for the public spectacle, Judge Jackson concluded a 76-day bench

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13 *Sun Microsystems, Inc. v Microsoft Corp.*, 999 F.Supp. 1301 (D.C.N.D. Cal. 1998); ‘Microsoft is told to abide by Sun on JAVA’, *New York Times*, 26 January 2000, C2. Of course, Microsoft’s corporate strategy was not limited to a holding pattern. In addition to recognizing the importance of IE as a web-browser, Microsoft engaged in significant efforts to increase its market shares in operating systems for large Internet ‘server’ computers and for small hand-held devices. As well, it invested in cable and satellite television products, both by purchase and by product development.
trial in five months amidst intense media attention. The parties spent the spring of 1999 in fruitless settlement negotiations. Some weeks after announcing that he would publish his findings of fact on an unspecified Friday evening, Judge Jackson did indeed post on the court’s website findings that were 412 paragraphs in length. One month later, in December 1999, he appointed Judge Richard A. Posner as mediator but the meetings ended in April 2000 without settlement. Judge Jackson quickly issued his conclusions of law. The court held that Microsoft violated Sherman Act sections 1 and 2 by engaging in a predatory course of conduct to maintain the applications barrier to entering the market for Intel-compatible operating systems for PCs, the market dominated by its Windows software. As well, the court held that Microsoft attempted to monopolize the market for web-browser software and illegally tied IE and Windows.

As it moved through the appeals process, the case against Microsoft remained difficult even though the evidence clearly supported the government’s claims that Bill Gates and cohorts engaged in an anti-competitive course of conduct, bullying strong companies such as IBM and Intel, and weak ones like Apple. It was a difficult case even though Microsoft abused its monopoly power by effectively restraining Java’s and Netscape Navigator’s access to markets, by stifling innovation that threatened Windows, and by discriminating in price among PC manufacturers in a market driven by intense price competition. It was difficult even though Bill Gates treated the 1994 consent decree and the 1999 trial with an arrogance not seen since John D. Rockefeller ignored the judgment of the Ohio Supreme Court and carried his corporate baggage to New Jersey and the laissez-faire regime created by his attorneys. Bill Gates told Intel executives in a 1995 meeting that ‘This antitrust thing will blow over’. Flouting the 1994 consent decree, he went on to boast, ‘We haven’t changed our business practices at all’. After the 1999 trial, Gates refused to acknowledge that Microsoft’s conduct was anti-competitive.

The remedy phase began with an air of efficiency. But the trial court’s approach and remedies themselves raised controversy. To begin, Judge Jackson ordered Microsoft to submit a plan of divestiture within 60 days. The plan was to provide for separation of the operating systems business

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14 Judge Jackson chose Friday evening to give the stock market the weekend to digest the implications for Microsoft shares.
from the applications business, the latter defined as including IE. In addition, the decree ordered a series of conduct remedies to remain in effect for three years. The two new Microsofts were enjoined, for example, from giving favourable terms to any PC manufacturers, from withholding product information from hardware or software developers, and from engaging in tying or exclusive contracts. The overall purpose was not to punish Microsoft but rather to assure equal access to information about what was and still is, after all, the industry-standard operating system, to bring down entry barriers to software markets and, overall, to promote innovation in the information technology sector. Certainly, the intent was praiseworthy.

The difficulties, however, were numerous and provoked intense public debate. First of all, some critics argued that this particular break-up would simply create two monopolies with no incentive to compete with one another. The applications business would include Microsoft Office, which already dominated its product market, and IE, which, according to Judge Jackson, was dangerously close to monopolizing the browser market. Even then, IE’s market share approached 60 per cent, a likely tipping point to set in motion the winner-take-almost-all logic of network industries that ensued. Nonetheless, network economics would suggest that the separation of the Windows platform from applications software would break a powerful positive feedback loop based on the very theory underlying the litigation – the applications barrier to entry. Yet Microsoft’s strategic history of software integration would arguably survive the decree; the dominant question underlying future controversies over the decree would likely be whether integrating a new application into Windows would for legal purposes transform any application into an operating system module. This view would be consistent with the D.C. Circuit’s approach to the 1994 consent decree, an approach which granted Microsoft discretion to engage in ‘technological tying’ by software integration, notwithstanding the consent decree’s prohibition of contractual tying.

On the other side of the remedy debate, Microsoft and its allies argued that the dissolution would destroy the intra-corporate synergy that fuelled its innovation and, moreover, that the conduct remedies would intrude on Microsoft’s entrepreneurial prerogatives in products that were protected by IPRs. Most troubling of all, what if the remedies destroyed the world’s most successful company and, in crucial ways, dissipated the United States’ greatest asset, its national champion, in the new economy?

There was a second difficulty raised by Judge Jackson’s remedies. Some argued that several of the conduct remedies (the ban against exclusive contracts, for example) were not supported by the conclusions of law. Indeed, Judge Jackson had concluded that Microsoft’s exclusive contracts did
not violate the antitrust laws. Even the Findings of Fact raised questions about remedies. For instance, the judge’s timeframe throughout was relatively short: ‘the next few years . . . several years distant . . . a few years’.

If the duration and effect of the Windows monopoly or harm to consumers could not be gauged beyond that short timeframe, then corporate dissolution seemed too harsh a remedy. Didn’t the short timeframe acknowledge the speed of change in the new economy and, with it, the potential folly of breaking up a monopoly that innovation would unseat in relatively short order?

The Microsoft case was the monopolization case of the new economy just as Standard Oil had been the icon of the old. It began as an easy case on the facts, devolved into a difficult case on the law, and floated atop roiling cross-currents of intense debate over remedies.

It was no surprise that Judge Jackson stayed the decree pending appeal of the liability case. On appeal, the D.C. Circuit left unchanged the findings of fact, affirmed in part and reversed in part the conclusions of law, and vacated the decree for remedy. In short, only the holding of monopolization was affirmed and the case was remanded – but not to Judge Jackson because the Court of Appeals agreed with Microsoft’s claims of judicial misconduct and the appearance of partiality.\(^{17}\)

As for the remedies, on remand, there were extensive hearings before the newly assigned Judge Colleen Kollar-Kotelly. Thereafter, Microsoft and the Justice Department, recently staffed with appointments by the new Bush Administration, quickly agreed to a settlement, joined immediately by 11 states. Adopting the settlement, the judge’s new decree retained district court oversight for five years and included behavioural constraints and imperatives. Microsoft remained intact.

In particular, Microsoft was required to disclose the information necessary to foster interoperability between Windows and third-party ‘middleware’ software products, including server operating systems. The decree limited Microsoft’s ability to enter into agreements that excluded competitors from the marketplace. Moreover, Microsoft was explicitly prohibited from retaliating or threatening to retaliate against licensees for supporting competing products. In this regard, the decree paid special attention to the competitive importance of ‘non-Microsoft middleware’, which certainly included Sun Microsystems’s Java technology. Moreover, original equipment manufacturers (OEMs) were permitted flexibility in configuring icons, shortcuts and menu items on desktop screens, including automatic launching of software programs, so long as the programs

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\(^{17}\) See Microsoft V.
did not ‘drastically alter the Windows user interface’. As a general matter, Microsoft was required to license Windows under the same terms to all PC makers, although quantity discounts were permitted. Pricing terms had to be published on the website established for those purposes. Finally, Microsoft was to appoint an internal compliance officer to assure that its officers and managers read and comprehended the settlement. A committee was appointed by the plaintiffs to supervise compliance with the decree.

It should be noted that Judge Kollar-Kotelly issued an extensive opinion accompanying the remedial decree that approved the settlement. The opinion characterized the settlement as a consent decree and declared that ‘Nothing in this Final Judgment is intended to confer upon any other persons any rights or remedies of any nature whatsoever hereunder or by reason of this Final Judgment’. Much criticized, this language negated Sherman Act section 5(a), which gives *prima facie* effect in follow-on private cases to findings of antitrust liability in fully litigated government actions.18

According to a *New York Times* report, the early court-ordered status reports ‘suggest that the November 2002 consent decree . . . has neither fostered significant competition nor changed Microsoft’s anticompetitive behavior’.19 The very first report had objected that the licence contained anti-competitive terms, including a requirement that licensees sign non-disclosure agreements even before reading the licence terms, a stipulation deterring use and development of free software like Linux, as well as a blanket provision prohibiting licensees from suing Microsoft. Linux, of course, is a significant competitor in the market for network server operating systems.20 The second report stated that in addition to six substantive reports of continuing violations, Microsoft’s licensing program resulted in only three new licensees. Separately, Microsoft agreed with the Justice Department to offer a software update to Windows XP so that it would no

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18 See *Microsoft VI*, n. 2 above, for the opinions regarding approval of the settlement under the Tunney Act. The opinion addressing the remedies sought by the non-settling states is reported at *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76 (D.D.C. 2002) (Final Judgment), also available at www.usdoj.gov/art/cases/f200400/200457.htm (12 November 2002).


20 Cf. *Microsoft Corp. v Lindows.com, Inc.*, 2002 WL 32085605 (W.D. Wash. 2002) (denying plaintiff’s motion for preliminary injunction on grounds of evidence raising substantial question of fact whether ‘Windows’ term was generic); the case was settled for $20 million in exchange for defendant’s stopping use of Lindows name. See http://www.pcworld.com/article/116947/microsoft_lindows_make_a_deal.html.
longer force users searching for music online to use Internet Explorer.\textsuperscript{21} In 2006, continuing difficulties led the parties to agree to a five-year extension of Microsoft's licensing obligations. In 2008, the district judge extended the other provisions for at least two years.\textsuperscript{22}

By June 2004, all state plaintiffs had agreed to join the settlement. West Virginia, for example, joined as part of settling for US$21,000,000 in an associated suit accusing Microsoft of overcharging consumers in that state for Windows. California had earlier joined as part of a similar US$1.1 billion settlement. In all, Microsoft established a reserve of US$1.55 billion to cover state settlements.\textsuperscript{23}

There have also been a number of private lawsuits. In 2000, Microsoft paid Caldera US$155,000,000 in settlement of an antitrust suit claiming predatory use of Windows 3.1 to monopolize the DOS platform. In 2003, Microsoft paid US$23,300,000 to settle an antitrust lawsuit with Be Inc., a software company no longer in business. Microsoft recently agreed to pay US$750,000,000 to AOL/Time Warner, the current owner of Netscape software, to settle its suit. The agreement included a long-term licence wherein AOL agreed to use Microsoft's Windows Media Player for distributing and playing digital media content.\textsuperscript{24}

Sun Microsystems filed suit for antitrust violations and copyright infringement seeking at least US$1 billion in damages as well as injunctive relief. The Fourth Circuit Court of Appeals dissolved a district court injunction ordering Microsoft to distribute Java software as originally received but upheld a second preliminary injunction that prohibited Microsoft from distributing its own version of Java technology because it likely violated Sun's copyright. Microsoft had customized Java to run more


\textsuperscript{23} L.J. Flynn, 'Microsoft settles 6 more suits', \textit{New York Times}, 29 October 2003, C6. Massachusetts was the last state to settle, with Microsoft agreeing to distribute up to US$34,000,000 in vouchers to state consumers as well as vouchers to school districts in the amount of half the difference between US$34,000,000 and the value of the vouchers actually distributed. 'Microsoft and Massachusetts Plaintiffs Settle Massachusetts Class Action Lawsuit', available at www.microsoft.com/presspass/press/2004/jun04/06-29masettlementpr.mspx.

efficiently with Windows, with the result that Java would not run at all on other platforms. In April 2004, Microsoft and Sun Microsystems, Inc. announced that they had ‘entered into a broad technology collaboration arrangement to enable their products to work better together and to settle all pending litigation between the two companies. The companies have also entered into agreements on patents and other issues.’

Windows Media Player was in a worldwide competitive battle with RealNetworks’ Real One Player, with each having in excess of 300,000,000 registered users. In December 2003, RealNetworks filed a US$1 billion antitrust suit claiming that Microsoft was using its monopoly power to restrain competition and limit consumer choice in digital media markets by bundling Windows Media Player with Windows. While bundling has been a successful marketing strategy for Microsoft since Windows first arrived as a middleware interface for DOS, it should be noted that in the Justice Department’s second Microsoft suit, the court rejected Microsoft’s claim that web-browsers were integral components of PC operating systems. It would be even more difficult to persuade a federal court that a media player is integral to an operating system.

Two years later, the case settled. Microsoft paid RealNetworks US$761,000,000 in cash and services. Microsoft agreed to promote Rhapsody, a subscription service for online music that competes with iTunes, throughout Microsoft’s MSN network; moreover, the parties agreed to work together to assure RealPlayer’s seamless interoperability with Windows. The settlement brought to US$4.6 billion Microsoft’s cost of settling private lawsuits stemming from the Justice Department’s case.

3. JUDICIAL DEFERENCE TO MICROSOFT’S STRATEGY OF SOFTWARE INTEGRATION

This section begins by chronicling Microsoft’s long-standing strategy of software integration – its purposes and its effects on both PC users and software developers. Attention then shifts to the approaches taken toward
technological bundling and tying by the D.C. Circuit in its two Microsoft opinions. The section concludes with an analysis of what the Microsoft case suggests about leverage theory, which US courts and commentators largely reject, and their European counterparts embrace, as a plausible economic logic for the practice of bundling.

Microsoft's Strategy of Software Integration

Software integration has long been a winning strategy for Microsoft. The introduction of the Windows 95 operating system in particular was a huge success. Earlier versions of Windows software, including the immediately prior 3.11, were not actually operating systems. They did not manage the PC environment. Rather, they were similar in function to the current Java software – multi-platform middleware designed to present themselves as user-friendly liaisons to the underlying PC operating systems that actually did the management work. In the era of Windows 3.11, the most popular PC operating systems comprised a highly compatible group of DOS (Disk Operating System) software. Microsoft's version was called MS-DOS. Taking ideas and iconography from its Apple OS predecessors, which evolved from still earlier work by Xerox, Microsoft Windows allowed users to issue DOS commands by mouse-pointing-and-clicking screen icons instead of typing strings of characters and punctuation marks. Introduced in 1986, Windows 3.1 was such a graphical user interface (GUI), designed to translate mouse clicks into DOS operating system commands. It was almost ten years later that Windows 95 would combine Microsoft's MS-DOS and the Windows 3.11 GUI middleware layer into an integrated platform. It was not long before Microsoft's integration would eliminate all DOS software under its various brands as a separate product market entirely.

One sight-line into Microsoft's early integration strategy emerges from Caldera's antitrust case against Microsoft, which settled before trial for US$155,000,000. Caldera is the successor in interest to Digital Research, Inc. (DR), which developed DR-DOS. Caldera charged that Microsoft included false error messages in Windows 3.1 that appeared on-screen whenever Windows detected DR-DOS, in order to deceive and unnerve users into switching to Microsoft's MS-DOS. Caldera charged further that Microsoft later made needless changes to MS-DOS and Windows 3.1 simply to create incompatibilities between 3.1 and rivals of MS-DOS software, including DR-DOS.27

Microsoft established a pattern of integrating applications software into

27 Caldera, n. 5 above.
Windows 95, including file compression programs and other disk utilities, usually by copycatting them or simply buying the software or their developers. The next antitrust-provoking episode of software integration emerged a few years later out of the browser wars between Netscape Navigator and Internet Explorer (IE). IE began as a separate applications program and ended up as a partially integrated complement to later versions of Windows 95 and its successors. Windows Media Player has gone through a similar life-cycle. Although Microsoft’s coercion of Intel and Apple to drop development of multimedia modules was portrayed in Microsoft IV as intimidation of middleware rivals to protect Windows, the pressure was more specifically intended to protect its Media Player. Bill Gates and his advisors saw third-party multimedia software as alternative platforms to support applications functions that required multimedia resources, applications including popular computer games and audio-visual content such as DVDs and streaming media. Microsoft strategists were unnerved that software developers would have attractive platform alternatives to Media Player, alternatives with incompatible formats in markets inclined toward a winner-take-all equilibrium. Yet because the US case ultimately succeeded only on the claim that Microsoft monopolized the market for Intel-compatible operating systems software, the remedies were addressed to third-party multimedia software rivals only to the extent they function as middleware. Thus, Microsoft was required to enter into licences for interoperability information with Netscape Navigator and Sun Microsystems’ Java but also Apple QuickTime only to the limited extent they perform what are defined as operating system functions.

And so the remedies were limited. For example, third-party media players are included in the remedy decree only to the extent of their inclusion in the definition of middleware, without regard to consumer choice in the media player market. In this regard, Microsoft must ‘disclose those APIs, along with related technical information, which [Windows Media Player] utilizes to interoperate with the Windows platform’. The limited purpose is to restrain Microsoft from eliminating multimedia software only as middleware threats to Windows by technological lock-out. Similarly, Microsoft is not required to remedy the harm to Navigator in the web-browser market or QuickTime in the multimedia software market by distributing them with Windows because the government did not show how Microsoft’s exclusionary conduct caused harm to competition in

29 See Microsoft VI.
browser or media player markets. Nor must Microsoft segregate IE from Windows for the purpose of opening competition in the browser market.

By contrast, the EC complaint proceeded on the view that there was something different involved than a middleware threat to Windows’ dominance. The bundling, the integration of Windows Media Player and Windows, would harm consumers and rivals by ‘undermin[ing] the competitive structure in the market for media players and risk[ing] . . . spill-over effects in adjacent markets [such as] . . . handhelds where streaming media is going to play an increasingly important role’. Microsoft is a powerful if not the dominant player in those markets, which threaten, when dominated, monopoly prices and fewer choices to consumers. Thus, must-carry provisions or segregating Windows Media Player from Windows were rightly evaluated in light of concerns about dominance in those adjacent markets for Windows-compatible applications software.

According to the D.C. Circuit Court of Appeals, Microsoft’s integration of IE (and presumably Windows Media Player) into Windows was a technical decision that should be granted some measure of deference. It is the measure that changed between the D.C. Circuit’s two Microsoft opinions. The next two sections examine their differing deference doctrines. The final section concludes with a discussion of US attitudes toward leverage theory, the traditional framework now broadly criticized and rejected, for understanding tying doctrine and the underlying commercial conduct of bundling and integration. The criticism is found to be largely unwarranted.

Microsoft I and II: Judicial Deference to ‘Technological Tying’

The opinions by Judge Jackson in Microsoft I and the D.C. Circuit in Microsoft II do not purport to apply antitrust law to an agreement to determine its competitive effects. They engage instead in judicial interpretation of the parties’ agreement to settle their antitrust litigation over Windows 95. The procedural context was a civil contempt hearing commenced by the Justice Department, based on the claim that Microsoft had breached the terms of the settlement agreement. In particular, the courts focused on the contract question of the parties’ intentions with respect to section IV(E) of the settlement agreement, which was embodied in Judge Jackson’s decree:

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Microsoft shall not enter into any License Agreement in which the terms of that agreement are expressly or impliedly conditioned upon:

(i) the licensing of any other Covered Product, Operating System Software product or other product (provided, however, that this provision in and of itself shall not be construed to prohibit Microsoft from developing integrated products); 31

The question joined was the distinction to be made between prohibited tying and the parenthetical permission to develop integrated software products. The context, of course, included the well-known fact that Windows 95 itself was the product of integrating Windows 3.11 and MS-DOS. Rephrased, the contract question before the courts can be understood as asking whether the tying prohibition imposed any limits on future software integration involving Windows 95.

The D.C. Circuit's opinion focused on determining the parties' intentions for entering the agreement, a determination that must be 'consistent with the antitrust laws and accomplishes the parties' evident desires on entering the decree'. The court resolved the issues of private intention and public law by defining the governments' intentions in terms of antitrust law: on one side of the settlement negotiations, the 'Department and DG IV were concerned with the alleged anticompetitive effects of tie-ins'. 32 On the other side, 'Microsoft's goal was to preserve its freedom to design products that consumers would like'. 33

It was in this bargain contract scenario that the court situated the line between permissible integration and prohibited tying of software products. Integration was permissible if it was 'genuine', if it was 'beneficial when compared to a purchaser combination'. In determining the level of proof required to establish permissible integration, the court proceeded from the assumption that '[a]ntitrust scholars have long recognized the undesirability of having courts oversee product design, and any dampening of technological innovation would be at cross-purposes with antitrust law'. In consequence, a 'court's evaluation of a claim of integration must be narrow and deferential'. Proper deference to Microsoft's decision to integrate was expressed in the following standard: 'The question is not whether the integration is a net plus but merely whether there is a plausible claim that it brings some advantage.' 34 The rejected 'net plus' approach

31 Microsoft II, 147 F.3d at 939.
32 'The Department' and 'DG IV' refer to the Justice Department and the 'European competition authorities', which negotiated the settlement agreement with Microsoft. Microsoft II, 147 F.3d at 939.
33 Microsoft II, 147 F.3d at 949.
34 Microsoft II, 147 F.3d at 949–50.
would have approximated a standard rule of reason inquiry into the net competitive effects of the restraint.

The court was easily satisfied that Microsoft’s claims of benefits met the standard of plausible advantage. The court concluded:

The test for the integration of Windows 95 then comes down to the question of whether its integrated design offers benefits when compared to a purchaser’s combination of corresponding stand-alone functionalities. The decree’s evident embrace of Windows 95 as a permissible single product can be taken as manifesting the parties’ agreement that it met this test.35

The D.C. Circuit adverted to opinions by other circuit courts to support its view that the parties’ apparent agreement regarding ‘plausible advantage’ fell within the perimeter of antitrust legality. The support derived from a doctrine of judicial deference to product integration in the information technology sector: other federal appeals courts had already recognized ‘the limits of their institutional competence’, which provided their ground for ‘reject[ing] theories of “technological tying”’.36 In short, Microsoft’s strategy of software integration was given judicial deference that fell just short of per se legality.

**Microsoft II and V: Judicial Deference to Technological Bundling**

Although the D.C. Circuit in *Microsoft II* was careful to state that it was construing the settlement agreement rather than articulating antitrust law, the distinction was difficult to maintain because the court defined the Justice Department’s contractual intent as carrying out antitrust

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35 *Microsoft II*, 147 F.3d at 950. ‘On the facts before us, Microsoft has clearly met the burden of ascribing facially plausible benefits to its integrated design as compared to an operating system combined with a stand-alone browser such as Netscape’s Navigator. Incorporating browsing functionality into the operating system allows applications to avail themselves of that functionality without starting up a separate browser application. J.A. paras 944, 965. Further, components of IE 3.0 and even more IE 4 – especially the HTML reader – provide system services not directly related to Web browsing, enhancing the functionality of a wide variety of applications. J.A. paras 607–22, 1646–48. Finally, IE 4 technologies are used to upgrade some aspects of the operating system unrelated to Web browsing. For example, they are used to let users customize their “Start” menus, making favored applications more readily available. J.A. paras 490–95; 1662–64. They also make possible “thumbnail” previews of files on the computer’s hard drive, using the HTML reader to display a richer view of the files’ contents. J.A. paras 1664-69.’

36 *Microsoft II*, 147 F.3d at 950 (citations omitted).
policy.\textsuperscript{37} The practical irrelevancy of the Circuit’s fine distinction can be seen in Judge Jackson’s memorandum opinion in \textit{Microsoft III}. Although he expressed ‘misgivings’ about treating technological integration as a special category of tying, he nonetheless treated the D.C. Circuit’s contractual intent analysis as controlling law on the tying issue.\textsuperscript{38} In consequence, Judge Jackson adopted the Court of Appeals’ extreme view of judicial deference to deny the government plaintiffs’ motion for summary judgment. The motion asked the court to conclude before trial that Microsoft’s integration of IE and Windows was \textit{per se} illegal under \textit{Jefferson Parrish}, then the prevailing US Supreme Court precedent for tying doctrine.\textsuperscript{39} But the court’s extreme deference not only led to rejecting \textit{Jefferson Parrish’s} doctrine that tying provisions were \textit{per se} illegal when forced by a firm with market power, but also to rushing past the traditional rule of reason inquiry to a shortened quick-look analysis.\textsuperscript{40} This strict judicial deference was satisfied by easily carried assertions of ‘plausible advantage’, which directed courts to conclusions of antitrust legality.

Three years later, the second D.C. Circuit opinion, \textit{Microsoft V}, took a different view of judicial deference, this time deference to Microsoft’s decision to integrate IE into Windows 98. At first sight, the two views can be understood as products of their procedural contexts: the first was a contempt proceeding to determine contract intentions behind a settlement agreement and the other a review on the merits of Sherman Act liability. But there was substantive similarity that transcended the procedural difference insofar as both opinions ultimately relied on antitrust law and policy to support their differing views of judicial deference. Indeed, the latter court \textit{en banc} seemed to recognize that the three-judge panel’s earlier opinion applied an extremely deferential approach that was not only treated as antitrust precedent by Judge Jackson and but prone to similar treatment by other courts: ‘To the extent that [\textit{Microsoft II}] completely disclaimed judicial capacity to evaluate “high-tech product design”, it cannot be said to conform to prevailing antitrust doctrine.’\textsuperscript{41}

\textsuperscript{37} There is also the nice question of whether DG IV intended or even had the power to enter into an agreement whose obligations were governed by US antitrust policy.
\textsuperscript{38} \textit{Microsoft III}, at *10.
\textsuperscript{40} For the ‘quick-look’ doctrine, see \textit{California Dental Ass’n v FTC}, 526 U.S. 756 (1999); \textit{Broadcast Music, Inc. v Columbia Broadcasting System}, 441 U.S. 1 (1979).
\textsuperscript{41} \textit{Microsoft V}, 253 F.3d at 92.
Microsoft V was an unanimous *per curiam* opinion from the entire court sitting *en banc*, an unsigned opinion that reformulated the earlier panel's judicial deference doctrine to accord with well-settled antitrust doctrine. In contrast to the three-judge panel whose *Microsoft II* opinion turned to the very broadly stated policies of encouraging innovation and asserting judicial incompetence in evaluating claims of innovation, the court *en banc* in *Microsoft V* neither turned to general policy prescriptions nor ascribed to such broad protestations of institutional incompetence. Rather, it assumed the traditional judicial role of applying legal doctrine to the facts at hand: here, applying Sherman Act doctrine to two tying claims that were both based on Microsoft's technological integration of IE into Windows 98. The first claim, under Sherman Act, section 2, was that Microsoft's integration was predatory conduct whose purpose and effect were to maintain its Windows' monopoly of the market for Intel-compatible operating systems. The second claim was that the very same integration amounted to an agreement in restraint of trade prohibited under Sherman Act, section 1. Ultimately, the court concluded that both tying claims were to be adjudicated under the rule of reason, the customary ad hoc approach intended to determine the competitive effects of the tying restraint in the particular circumstances of the case at hand.

Still, the legal doctrine presented a perplexing context for the case. Under Sherman Act, section 2, tying provisions imposed by a dominant firm are evaluated under a full-blown rule of reason that calls for scrutiny of actual effects on competition. But under Sherman Act, section 1, tying provisions forced on buyers by a less-than-dominant firm can be illegal *per se*—that is, without regard to competitive effects. The D.C. Circuit ignored this awkward disparity and addressed each claim separately.

Under section 1 of the Sherman Act, the standard question was whether the technological tying amounted to a 'contract, combination, or conspiracy in restraint of trade'. The D.C. Circuit did not reach the ultimate question because it determined as a preliminary matter that the district court took an improper approach to the inquiry by applying the doctrine of *per se* illegality. Although tying by a firm with substantial market power

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42 If there is any justification for the difference, it would be that the potential remedy of divestiture under Sherman Act, s. 2 should call for more measured analysis of the conduct and its anti-competitive effects. Forced tying under s. 1 remains the only vertical restraint that is illegal *per se* after the recent *Leegin* decision moved minimum resale price maintenance inquiry to the rule of reason. In this light, the Supreme Court seems poised to eliminate the need for the special category of technological tying that the D.C. Circuit carved out of the *per se* treatment of forced tying.
would generally call for per se treatment, the D.C. Circuit declared that a special category of technological tying called for rule of reason analysis in this case because:

we cannot comfortably say that bundling in platform software markets has so little 'redeeming virtue', . . . and that there would be so 'very little loss to society' from its ban, that 'an inquiry into its costs in the individual case [can be] considered . . . unnecessary.'

The case was thus remanded to the trial court for further proceedings with the caveat that '[i]n light of the monopoly maintenance section, obviously, we do not find that Microsoft's integration is welfare-enhancing or that it should be absolved of tying liability'.

In the monopoly maintenance section of the opinion, the court applied the standard rule of reason analysis. Monopolization doctrine under Sherman Act, section 2 broadly involved two elements: first, whether Microsoft possessed monopoly power in the market for Intel-compatible operating systems; secondly, whether Microsoft abused that dominance by engaging in predatory conduct. Folded into the inquiry was the standard third element of determining competitive effects. Microsoft appealed the conclusions of law on the first and second elements. The court forcefully affirmed the trial court's conclusion that Microsoft possessed monopoly power. As for the conduct element, tying was but one of the six asserted forms of predatory behaviour. This section's discussion is limited to the court's treatment of Microsoft's integration of IE and Windows as a form of anti-competitive tying.

The tying claim involved:

three specific actions Microsoft took to weld IE to Windows: 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.

Each action was a conscious software design decision. In the first and second design decisions, Microsoft blocked removal of IE and sometimes even required its use. Regarding the third, 'the District Court . . . found that Microsoft commingled operating system-only and browser-only routines in the same library files'. In consequence, 'any attempt to delete

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43 Microsoft V, 253 F.3d at 94 (citations omitted).
44 Microsoft V, 253 F.3d at 89.
45 Microsoft V, 253 F.3d at 58–78.
46 Microsoft V, 253 F.3d at 64–5.
the files containing IE would, at the same time, cripple the operating system’. 47

None of these design decisions was necessitated by an innovation logic of software integration intended to bring even plausible advantage to users. Perhaps the strongest instance of anti-competitive purpose is the commingling of code, which involved nothing more than the organization of separate software modules in a common library. Some of the modules were accessed only by Windows, some only by IE, others by both, and still others by entirely different applications software.

Such library organization is not unusual in the industry. It is important to understand that a modular library structure does not itself necessitate that module removal ‘cripple the operating system’. The crippling effect in the case at hand was a conscious design choice. Each module could easily have been flagged to identify its uses; the identifying flags would have allowed software removal routines to recognize shared modules and allow them to remain in the library upon removal of IE or, for that matter, any other applications software. Indeed, current versions of Windows flag shared files in applications software. Thus it was more Microsoft’s design choice not to flag library modules than the commingling itself that was predatory. Nonetheless, neither the court nor the plaintiffs recognized the distinction between the technological design decision to create a modular library and the strategic commercial decision not to flag modules.

If the court had identified the issue as predatory commercial design, it would undoubtedly have concluded that the decision not to flag shared modules lacked any benefit to users. Just like blocking removal of IE and requiring its use, the purpose of failing to flag shared modules was locking-in users and creating barriers to entry for rivals. Indeed, if the court had distinguished the design question from the broader issue of software integration, a rule of reason analysis of the issue of library design likely would have tilted toward Microsoft. Would the court have concluded that commingled code was itself unlawful tying by a dominant firm? That remains to be seen in the United States.

In Europe, of course, software integration of Windows Media Player even short of commingling code was found to be an abuse of dominance. Moreover, with regard to the European complaint about network server software, there arises the interesting question whether Microsoft’s withholding of interoperability information from rivals can be understood as a looser form of technological tying or software integration of the Windows

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47 Microsoft V, 253 F.3d at 85, 65.
PC operating system and Microsoft's network server software. Close scrutiny of the interoperability question is taken up below.

In the US case as litigated, the D.C. Circuit's entire discussion of commingling code and technological integration more generally was confined to the claim under Sherman Act, section 2 that Microsoft monopolized the operating systems market.48 Under the rule of reason, the lawfulness of product design decisions depended on their competitive effects, informed by their purpose. And so the court framed its analysis of competitive effects with the trial court finding that:

Microsoft's executives believed . . . its contractual restrictions placed on OEMs would not be sufficient in themselves to reverse the direction of Navigator's usage share. Consequently, in late 1995 or early 1996, Microsoft set out to bind [IE] more tightly to Windows 95 as a technical matter.49

In that light, the D.C. Circuit concluded that the integration had the following anti-competitive effects. First, because blocking the removal of IE is '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'. Secondly, overriding consumer choice of a browser with IE was also found to be anti-competitive. Both actions 'reduce 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'. Finally, commingling code had the similar effect of 'reducing rivals' usage share' and thus diminishing software developers' interest in writing programs for rival browsers.50

As for pro-competitive effects, the court evaluated Microsoft's justifications for the software integration. The court began:

Microsoft proffers no justification for two of the three challenged actions that it took in integrating IE into Windows - excluding IE from the Add/Remove Programs utility and commingling browser and operating system code.51

48 In the discussion of tying under Sherman Act, s. 1, the Circuit stated: 'Although the District Court also found that Microsoft commingled operating system-only and browser-only routines in the same library files . . . it did not include this as a basis for tying liability despite plaintiffs' request that it do so'. *Microsoft V*, 253 F.3d at 85 (citations omitted).
49 *Microsoft V*, 253 F.3d at 64 (citing Findings of Fact, para. 160).
50 *Microsoft V*, 253 F.3d at 66.
51 *Microsoft V*, 253 F.3d. In another section of the opinion, however, the court recognized that 'the "shared" library files that perform OS and browser functions
Although Microsoft made some broad claims about the benefits of integrating IE and the operating system, the court dismissed them as too general. But Microsoft did assert that overriding consumer choice in some circumstances increased ease of use. Given both anti-competitive and pro-competitive effects, the court determined that Microsoft would prevail on this particular issue because the government failed to carry the burden of demonstrating that the anti-competitive effects outweighed the asserted benefit of overriding consumer choice. 52

In formal approach, the court treated software integration or technological tying under the rule of reason much as it would any putatively predatory conduct with unpredictable competitive effects. Yet there remained exceptional judicial deference in the court's treatment of Microsoft's asserted benefit as a pro-competitive effect insofar as it was based on facts that seem to evidence nothing more than Microsoft II's earlier standard of 'plausible advantage'. That is, the court in Microsoft V allowed a 'plausible advantage' of increased ease of use to trump all evidence of anti-competitive effects and shift to the government the burden of establishing the net competitive effect. Although shifting burdens of proof follow the form of the structured rule of reason that has become mainstream doctrine in the United States, the minimal burden of proof satisfied by slight evidence of ease of use is not as different as it might appear from Microsoft II's standard of 'plausible advantage'. Judicial deference to software integration decisions remains a powerful doctrine in the D.C. Circuit's antitrust jurisprudence.

**Leverage Theory as the Logic for Tying**

In the Sherman Act case on the merits, the government plaintiffs initially won three claims; but after the D.C. Circuit's en banc review in Microsoft V, victory survived only in the monopolization claim. Even that victory was less than convincing insofar as the government plaintiffs offered no theory of causation. The Circuit acknowledged Microsoft’s argument that the determination of illegality should be reversed because the plaintiffs proved no causation element. But the argument failed because the court was willing to infer causation from the predatory conduct: 'To some

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52 Microsoft V, 253 F.3d at 67.
degree, "the defendant is made to suffer the uncertain consequences of its own undesirable conduct". Still, the lapse did have consequences later in the remedy stage of the proceedings. The D.C. Circuit instructed the lower court on remand:

Microsoft's concerns over causation have more purchase in connection with the appropriate remedy issue, i.e., whether the court should impose a structural remedy or merely enjoin the offensive conduct at issue. As we point out later in this opinion, divestiture is a remedy that is imposed only with great caution, in part because its long-term efficacy is rarely certain. Absent 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.

The missing theory of causation was leverage theory. Judge Jackson had earlier rejected the theory, observing that 'monopoly leveraging theory is in serious doubt', not only amongst commentators but also in opinions from a number of appeals courts, including the D.C. Circuit, which had noted 'substantial academic criticism' some 20 years earlier.

In sharp contrast, the European Commission put 'technological leveraging' centre stage as its theory of causation. The Commission determined that Microsoft, aided by the tailwind of network effects, abused its dominant position in the operating systems market by using it as leverage in markets for two complementary products, media players and low-end network server software. But the US courts have abjured leverage theory. Indeed, leverage theory does not appear even once in the Court of Appeals' opinion. Why did the government fail to appeal the district court's rejection of leverage theory in the US case?

In the physical sciences (biology, chemistry, physics) new paradigms displace older ones. To burn paper, we are taught, requires oxygen, not phlogiston. To understand supernovas, astrophysicists turn to Einstein, not Newton. But in antitrust economics, old paradigms continue to

33 Microsoft V. 253 F.3d at 79 (citing Phillip E. Areeda et al., Antitrust Law (1995), vol. 3, para. 651c, at 78).
34 Microsoft V. 253 F.3d at 80.
35 Microsoft III, 1998 WL 614485, at *27 (citations omitted). See also Jefferson Parish Hosp. Dist. No. 2 v Hyde, 466 U.S. 2, 36 (1984) (O'Connor J concurring) ('The existence of a tied product normally does not increase the profit that the seller with market power can extract from sales of the tying product'). But see Eastman Kodak Co. v Image Technical Services, 504 U.S. 451, 479 n. 29 (1992) (observing that the court had 'held many times that power gained through some natural and legal advantage such as a patent, copyright, or business acumen can give rise to liability if a seller exploits his dominant position in one market to expand his empire into the next').
flourish despite the emergence of new ones. Thus, static price theory (particularly the Chicago School approach) still has great purchase among federal judges despite the widespread acceptance among economists of dynamic theories derived from information economics and game theory.

The static and dynamic paradigms differ in two important respects. First, they proceed from different assumptions about market conditions. Chicago School theorists assume that market conditions remain static, allowing them to attribute changes in price to changes in output. Economists in the mainstream dynamic paradigms examine changes in market conditions resulting from innovation, strategic conduct and other exogenous factors—the very changes held constant in static price theory. Secondly, static and dynamic methodologies look to different time horizons: neo-classical price theory deals with snapshots of short-term price and output changes. Dynamic approaches, in contrast, deal with moving pictures of changed conditions resulting from innovation and strategic behaviour over the longer term. The methodological difference persists even when the Chicago School analyst recognizes innovation and strategic behaviour because the conduct is still analysed in the snapshots of a short-term, statics analysis.

Tying doctrine offers a good example of the gap between policies to further static and dynamic efficiencies. The traditional antitrust concern underlying tying is leverage—using power in one product market as a lever to gain power in a second market. The theory is dynamic insofar as it recognizes the strategy as working over time to achieve a future result. Chicago Schoolers following Robert Bork have persuaded federal judges that a leverage theory of tying makes no economic sense because a monopolist can already obtain the profit-maximizing price in the monopolized market for the tying product. For example, if Microsoft announced it would license Windows only on the condition that customers also purchase all of their rewritable CDs and printer paper from Microsoft, gaining second and third monopolies would not yield greater profits to Microsoft. These tying conditions would not yield greater profits, according to statics logic, because a triple monopolist can charge no more for the bundle of three products without losing customers who refuse to pay more for the bundle than they paid for them separately. In short, statics analysis holds that the profit-maximizing price for the bundle equals the sum of the prices for the separate products.

56 For example, Judge Richard Posner, perhaps the most thoughtful of the first-generation Chicago Schoolers, maintained a 'fixed sum' view of tying in a relatively recent patent licensing opinion, Scheiber v Dolby Laboratories, Inc., 293 F.3d 1014, 1020–21 (7th Cir. 2002).
At first blush, this view seems correct within the static, short-run model of price theory. But even on its own terms, this ‘fixed sum’ theory is limited by rigid and typically counterfactual assumptions: first, as in the example above, Microsoft is assumed to be charging the perfect monopoly price in the Windows market and therefore has nothing to gain. But if the price is not profit-maximizing, either because the monopoly is not perfect or not perfectly executed, then there is something to gain. Perfect execution requires perfect (and thus costless) information. Secondly, as in the example with CDs and printer paper, perfect competition is assumed in the tied product markets. When real markets do not reflect such conditions of perfection, and they rarely do, the ‘fixed sum’ theory simply does not apply because the monopolist has something to gain. These conditions of imperfection go largely unrecognized by judges and scholars who reject leverage theory based on the ‘fixed sum’ critique.57

Within the statics approach, price theorists and their judicial acolytes nonetheless assert that tying has real economic consequences only as a strategy to price discriminate. For example, the technological tying of a printer and replacement print cartridges is seen as a costless measure of the customer’s intensity of use that provides the information for charging different prices to different users, prices that depend on their intensity of use. Low printer prices help sellers lock-in both high- and low-intensity users; sellers make supra-competitive profits from high-cost replacement ink cartridges, increasingly more as intensity of use increases. Overall, sellers’ revenues are higher than they would be under a single profit-maximizing price. Sellers are better off. At the same time, users who would not pay the higher price for printers stay in the market; they are not worse off in the sense that they pay no more for the bundle than their intensity of use can support. In this view, the prices paid for the bundle remain the fixed

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57 See e.g. Eastman Kodak Co. v Image Technical Services, Inc., 504 U.S. 451, 495 n.2 (1992) (Scalia, J dissenting); an article by Chicago School economist Ward Bowman is the classic reference for this view. But the article has been misunderstood insofar as the limiting assumptions described therein and rehearsed in the text above are either misunderstood or ignored. In consequence, the ‘fixed sum’ thesis is vastly overextended. Bowman wrote: ‘The term “leverage”, in this article, specifically describes the establishment of a new or second monopoly. The existence of such leverage depends upon the effect of the tying arrangement on the output of the tied product. If the tying seller is maximizing his return [i.e. if there is a perfect monopoly] on the tying product and the same output of the tied product can still be produced under circumstances consistent with competitive production [i.e. if there is a perfect competition] of the tied product, no additional or new monopoly effect should be assumed’: W. Bowman, ‘Tying Arrangements and the Leverage Problem’ (1957) Yale Law Journal 19, 20 (emphasis added).
sums individual users would pay for the individual items. In terms of static efficiency, everyone is better off – that is, the dreaded deadweight welfare loss is lessened.\(^5\) 8

But the price discrimination theory for tying has its own conditions of possibility. First, perfect price discrimination requires perfect (and costless) information about intensity of demand for the monopolized product. In markets with imperfect information, the efficiency results vary. As imperfections grow, deadweight loss increases and output declines from competitive to single-price monopoly levels. Secondly, there must be supra-competitive profits available in the second market to make the price discrimination worthwhile; at the same time, the fixed-sum critique of leverage theory requires perfect competition in the second market. In short, either both leverage theory and price discrimination can provide plausible explanations for tying, or neither one can. Thirdly, price discrimination cannot explain proportional ties, that is, ties such as nuts and bolts, computers and operating systems, or peanut butter and jelly. There, intensity of demand for the tying product cannot be measured by the sales quantity of the tied product because the quantity does not vary with use. Regardless of the use profile, one nut goes with one bolt, one computer with one operating system, and so on. If leverage theory is rejected as an explanation for proportional ties, price theorists are left without a statics theory to explain the practice.

Moreover, when a dynamic long-run view is taken, the economic logic changes drastically from the statics analysis of neo-classical price theory. Indeed, Harvard law professor Louis Kaplow gave a preliminary explanation some 20 years ago of how the traditional leverage theory seen in judicial tying doctrine reflected concerns that we now term dynamic effects such as market foreclosure, reputation effects, strategic positioning and increasing market share, effects that are invisible to the static model of neo-classical price theory which has influenced so many antitrust decisions in the last 30 years.\(^5\) 9

Moreover, in the context of innovation economics, the dynamic long-run view also requires another look at the claim that perfect price discrimination is a social good. In the short-run, output moves toward competitive

\(^5\) 8 Wealth transfers are not considered, though in strictest economic terms they should be because allocative efficiency is a function of the given distribution of wealth. As wealth changes, so do tastes, then demand, and with them, allocative efficiency.

levels and, with it, approaches an efficient allocation of society's resources. But there is a price to be paid: differential pricing redistributes wealth from inventors and other users to producers. With perfect information, users who value the product more pay more for it. When the users are inventors, their costs of production increase. Simple marginal economics tells us that as the price of inputs for invention increases, the demand for those inputs weakens. The production of invention will be costlier and will decline from levels reached under competitive markets for input factors, precisely because of the transfer of wealth ignored by price theorists. In short, future inventive activity will recede.

Finally, a dynamic long-run view has the added value of recognizing the increasing gains to tying in markets that exhibit system effects. In such markets, an expanding customer base shifts the demand curve outward, increases the value of the bundle, and therefore permits a higher price at every output level. Microsoft's strategy of tying IE to Windows and coercing business partners to drop Navigator is a good example of a successful long-run strategy whose costs to Microsoft can be understood as investments reflected in the zero price of IE and the short-run costs of coercion to maintain in the long run the applications software barrier to entering the market for Intel-compatible operating systems.\textsuperscript{60} A leverage theory of the case offers the dynamic explanation that Microsoft adopted a strategy to forego current profits in pursuit of future gains in markets for complementary products.

As for the US monopolization case against Microsoft, the government's reticence regarding leverage theory had wide-ranging consequences. Most obviously, it weakened the tying and attempt to monopolize claims in two ways. First, it deprived them of a theory of causation. Secondly, it allowed them to ignore the importance of defining the secondary markets involved; the failure to define relevant markets was the basis for the D.C. Circuit's reversal of the tying and attempt to monopolize claims in \textit{Microsoft V}. Less visibly but equally important, the reticence undermined the government's request for injunctive relief – for dissolution – in the monopolization claim. The D.C. Circuit explicitly instructed the lower court on remand to take the absence of causation theory into account in assessing remedies.

In the EC case, however, the leverage theory of causation logically pointed toward remedies more broadly drawn to ameliorate the anticompetitive effects of Microsoft's abusive leveraging of its dominance into the secondary markets of media players and low-end network servers.

\textsuperscript{60} See e.g. \textit{Microsoft V}, 253 F.3d at 55.
4. THE TRANS-ATLANTIC DEBATE: INFORMATION, COMPETITION AND INNOVATION

The nimble\textsuperscript{61} question of information access and interoperability looms over the trans-Atlantic expanse of the Microsoft case. In the US case, the monopolization claim succeeded by characterizing Microsoft's predatory conduct as maintaining a software applications barrier to entering the market for Intel-compatible operating systems. In the rhetoric of competition law, Microsoft would remain dominant as long as its users were locked into Windows as the only Gate(s)way to the largest-by-far software library of compatible applications. The D.C. Circuit dismissed out-of-hand Microsoft's claim that intellectual property rights authorized its restraints. Economists modelled Microsoft's strategy in purely competition terms according to a theory of two-sided markets.\textsuperscript{62} But in the EC case, the question of interoperability was addressed in broader terms that explicitly addressed the interplay of competition policy and intellectual property rights. In consequence, the decision treated information access and interoperability as issues that brought into focus the tension between market access and exclusionary rights as alternative means of promoting innovation.

The two sections that follow investigate the competitive effects of Microsoft's course of denying an array of rivals access to information needed to achieve compatibility with the Windows platform for PCs. The first section discusses private ownership of technical industry standards and its implications for interoperability. The second section then turns to the trans-Atlantic debate that erupted following the European Court of First Instance decision, the debate over consumer welfare and its relationships to competition policy and intellectual property rights.


Industry Standards, Information and Interoperability

This section takes up the compound topic of information access and interoperability to investigate its antitrust implications for technical industry standards in the Microsoft case. Of course, Microsoft's dominance has made Windows the technical industry standard worldwide for PC software developers. In consequence, Windows raises compatibility barriers to market entry whenever Microsoft chooses to withhold technical information, particularly APIs or other protocols. The breadth and depth of Windows' many technological protocols have resulted in a complex standard that is highly differentiated from alternative platforms, whether for hardware designers, applications developers or software platform rivals.

Through the antitrust lens of the US case, Microsoft can be understood as having monopolized the Intel-compatible PC platform market by using impermissible means to strengthen ties between software developers and software users. What tied these two sides of the market together was Windows' set of standard technical protocols. The strategy, now well-modelled by economists, followed from Microsoft's brilliant early recognition that network effects were functioning at two levels. The Windows protocols established PC-system-wide interoperability not only on the developer and user sides but also between them - what economists call both one-sided and two-sided network effects.

First, on each side of the Windows platform, the value of network membership increased as membership expanded. On one side, each new PC user increased the value of membership simply by expanding the size of the user network that communicated through compatible file formats.
and other standard protocols. On the other side, more software developers using the Windows protocol set produced similar effects for similar reasons. Secondly, the Windows platform linked the two sides to produce two-sided network effects as well. As the network on one side grew, membership on the other side grew: more PC users attracted more software developers, who produced more software, which then attracted more PC users. Sheer network size on each side was a magnetic draw for the other, a draw that grew more powerful as each side grew because increasing size strengthened member expectations of longevity, improvement and further expansion of networks with stable protocols for compatibility. The same dynamics rendered alternative networks built around other platforms less attractive and less threatening to the Windows monopoly.

These intra- and inter-network effects reinforced one another to produce a kind of multiplier effect which was powered by the de facto industry standards embodied in the dominant Windows platform. At the same time, the multiplier effect produced a by-product that was actually Microsoft’s primary interest: the ever-increasing indispensability of Windows as the standard platform. In the US case, Microsoft monopolized the operating systems market for Intel-compatible PCs by controlling distribution of information about the Windows platform and thereby managing the multiplier effect that intensified the platform power of Windows. These mutually reinforcing network effects locked-in customers while technical incompatibility simultaneously locked-out rival platforms. Integrating a web-browser, media player, or another complementary product into Windows would heighten entry barriers to those product markets because their zero direct price and familiarity to users would require competing software to be better enough to overcome costs of switching to the rival. Scholars of strategic marketing have shown that switching costs need not be great; their effectiveness in sustaining customer lock-in is notoriously out of proportion to actual costs.

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64 These expectations were not met when subsequent versions of Windows were not backwardly compatible; Microsoft strategies to promote migration to new versions is beyond the scope of this chapter, although it should be said that they began with migration incentives to software developers and ended largely with PC users who either followed the revised software trail or remained with abandoned and unsupported earlier software versions. Microsoft has recognized the widespread disaffection with Windows Vista, at least to the extent of offering business customers the option of purchasing new PCs with a Windows XP ‘downgrade’.

Still, the well-recognized benefits associated with industry standard platforms should not be overlooked. At the price of opportunity costs, an industry standard platform lowers use costs and thus encourages continued investment in learning and innovation. For user networks on all sides of the dominant Windows platform, the issue for intra-systemic competition is access to technical information and, with it, platform compatibility. Moreover, rival platform developers require information to meet technical protocols as well – whether Linux to compete directly, Java to build cross-platform middleware, or media players to carve out sub-market niches. Hence, access to interoperability information is the competition issue that lies at the core of both the US case about middleware (extra-systemic competition) and the EC case about media players and network servers (intra-systemic competition). In sum, both cases can be understood as seeking to enjoin Microsoft from harming or internalizing the public benefits of industry standards.

In the US case, the evidence showed that Microsoft’s strategies reflected an early and unmatched understanding of these two-sided markets: in sub-markets where Microsoft did not develop its own applications software, it made interoperability information universally available in order to strengthen the positive feedback loops within and across the developer and user networks. Indeed, key software developers received from Microsoft not only interoperability information but also financial incentives to write for Windows. In sharp contrast, Microsoft refused to provide interoperability information to IBM, for example, unless it agreed to stop marketing its OS/2 Warp operating system for PCs. The strategy lingered even after the case was concluded. Status reports to the court supervising the conduct remedies describe the ongoing difficulty of obtaining licences from Microsoft that provide interoperability information. In the first 18 months, over 100 companies approached Microsoft for licences under the remedial decree. Seven were granted. Moreover, only after much delay did Microsoft eliminate provisions that prohibited licensees from dealing with Linux (then a start-up rival) and from suing Microsoft.66

Armed with insight into one-sided and two-sided network effects, Microsoft’s strategy was simple, though the tactics were varied and complex. The strategy was to maintain Windows’ technological incompatibility with other platforms and to control its interoperability with

networked complements on all sides of the market. Controlling access to the Windows platform allowed Microsoft to favor its own course of software and content development: For developers whose software did not compete with a Microsoft product, interoperability information was provided and, when deemed advantageous, signing bonuses were paid in order to maintain or expand the software library. But to seek dominance for Internet Explorer, Microsoft Office, Windows Media Player, Windows workgroup server software, and other complementary products, Microsoft would deny interoperability information to rivals. It is the latter strategy of denying interoperability information that attracted the attention of the European Commission.

Both the First and Second Statements of Objections of the European Commission asserted that Microsoft withheld information in order to hinder third parties from making their operating systems for workgroup servers compatible with Windows, the de facto industry standard for PCs. In this network environment of interoperating systems, Microsoft licenses both competing and complementary operating systems software. But it is not clear whether to define the PC or the network operating system as the primary platform. If it is a matter of scope, then the server network is primary insofar as it defines the set of PCs and their components, including their individual operating systems. But if it is a matter of scale, then Windows for PCs is primary because it is the dominant platform both within and without virtually every workgroup worldwide. In either view, however, the economic logic is unassailable: inelastic demand for the globally dominant Windows for PCs identifies it as the primary platform because it embodies inescapable technical standards to which workgroup networks must adhere. This economic logic defines workgroup server software as the complementary product and, of course, brings us back to the EC case. It was control of interoperability information about Windows protocols that gave Microsoft the monopoly power to apply a leverage strategy to gain special advantage over rivals in the workgroup server software market for its NT version of Windows for work groups. The advantage was that Windows NT and Windows for PCs were designed and written from the same set of specifications and, indeed, used much of the same code. Where they differed, they nonetheless adhered to the same set of technical standards, and so their communication protocols are naturally compatible.

Designers of competing software for workgroup servers must have access to the very same protocols, the same Windows vocabulary and syntax, to achieve compatibility. Should Microsoft as the dominant firm have an obligation to give public access to the technical standards for Windows compatibility? In the United States, when an industry standard
is owned by a single firm, antitrust questions have been posed about that firm's duty to disclose information to market participants. In the landmark *Berkey Photo v Eastman Kodak* decision, decided some 25 years ago, the influential Second Circuit Court of Appeals rejected a competitor’s claim that Eastman Kodak, the dominant firm, owed competitors a duty to predisclose new products in order to permit them to learn how to make their complementary products or services compatible with the new Kodak product line. The court concluded that Eastman Kodak had a right to its competitive advantages and, moreover, that a disclosure rule would be unworkable. Still, unlike cameras and photographic equipment, information technology provides the central nervous system for the economic and social networks that have become essential facilities of everyday life. Should that be enough to distinguish Microsoft from Eastman Kodak?

Some years later, the Federal Trade Commission challenged the conduct of Intel Corporation, which is the dominant producer of the microprocessing chip at the heart of PCs as well as many other devices. Intel refused to provide technical information necessary for customers to produce complementary products compatible with Intel’s microprocessor chips, which were the de facto industry standard. Intel stopped sharing the information with customers who asserted intellectual property rights against Intel. The case was settled with a consent decree in which Intel agreed not to withhold information in such circumstances. But in a related private case, the Federal Circuit refused to apply the essential facilities doctrine because the complaining party was not a competitor (as US law requires) but only a customer of Intel. In consequence, an essential facilities doctrine imposed no obligation on Intel to disclose the information. As a general matter, the antitrust laws do not prohibit a firm from withholding information for a legitimate business reason. And maintaining market advantage that amounts to dominance is a legitimate business reason.

More recently, the Federal Court in one of the *Rambus* cases held that a patent 'holder’s breach of its alleged duty to disclose its patents under an industry [standard-setting] committee’s patent disclosure policy was

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not, by itself, sufficient to give rise to antitrust liability', even though the committee's action unknowingly made the Rambus patent the technological standard for the industry and thus made Rambus the dominant firm.70 However, the court did note that the plaintiff was 'not barred from asserting that Rambus’s overall course of conduct, which may include the circumstances and intent behind its decision to not disclose its patents and patent applications, violated antitrust laws'.71 The standard-setting cases, however, must be understood as addressing an extended duty to disclose under special circumstances where silence may be tantamount to fraud.

In the Microsoft case, Judge Jackson found that 'Microsoft tried to convince IBM to move its business away from products that themselves competed directly with Windows and Office . . . When IBM refused . . . Microsoft punished IBM . . . with higher prices, a late license for Windows 95, and the withholding of technical and marketing support.'72 Without pre-release access to the technical information needed for compatibility with Windows 95, IBM was unable to conform its products in time to compete with its rivals until the crucial initial selling season had passed. The trial court determined that those coercive refusals to provide information were part of Microsoft’s monopolizing course of conduct.73

As a general matter, US antitrust laws do not impose on individual firms, even on monopolies, an affirmative duty to share information or otherwise do business with anyone. Nonetheless, there have been a good number of decisions over the years (sometimes termed essential facility cases) that imposed remedial duties to deal in decrees embodying compulsory licences. On a few occasions, the Supreme Court has imposed on dominant firms a duty to deal with competitors. The earliest instance was the decision in Terminal Railroad Association (1912), a joint venture of railroads

71 441 F.Supp.2d at 1081. See also Broadcom Corp. v Qualcomm, Inc., 501 F.3d 297, 312 n.7 (3d Cir. 2007) (distinguishing Hynix).
72 Microsoft IVa, 84 F.Supp.2d at 116.
73 Two courts have disagreed over an essential facilities doctrine's application to Microsoft Windows. Compare Aldridge v Microsoft Corp., 995 F.Supp. 728 (S.D.Tex. 1998) (concluding that essential facilities doctrine does apply to some portions of Windows software but not to the PC hardware manufacturer) with In re Microsoft Corp. Antitrust Litigation, 274 F.Supp.2d 743 (D.Md. 2003) (concluding essential facilities doctrine does not apply and so does not require information disclosure to independent software developers about interoperability protocols, not discussed in any subsequent court decision).
that owned the only railroad switching yard across the Mississippi River at
the important City of St. Louis hub. The Court required the joint venture
to provide access to non-members at non-discriminatory rates. The Court
determined that, ‘in view of the inherent physical conditions’, no practi-
cal alternative was available. In Lorain Journal (1951), the Court enjoined
the only daily newspaper, termed an ‘indispensable medium’, in a region
of northern Ohio from refusing to sell advertising space to customers of
a competing radio station. Despite regulatory oversight by the Federal
Power Commission, the Court in Otter Tail Power (1973) required an
electrical utility to make available its transmission lines to wheel electri-
cal power from competing utilities to its former customers. Through the
course of such decisions was born the ‘essential facilities’ doctrine and the
accompanying remedy of compulsory access.74

It should be noted that while the term ‘essential facility’ has long been
used by federal courts and antitrust scholars, it has never been explic-
titely adopted by the Supreme Court.75 Regardless of the nomenclature,
these decisions have been called into doubt by the decision in Verizon
Communications v Trinko,76 which defined quite narrowly the defendant
monopolist’s duty to deal with competitors. In particular, the Supreme
Court concluded that ‘deficient assistance to rivals’ in providing access to
Verizon’s regional telephone network did not amount to monopolization
since it satisfied the Federal Communication Commission’s standard for
access requirements under the 1996 Telecommunications Act. The Court
adopted the FCC’s view despite a provision in the statute that explicitly
reserved pre-existing antitrust standards.

Writing for the Court, Justice Scalia observed in passing that a monopo-
list’s duty would be just as narrow for an essential facility, should the
Court ever explicitly adopt the doctrine. Justice Scalia’s observation was
clearly no more than obiter dictum. Nonetheless, his opinion has fertilized
a new growth of scholarly commentary, which has divided into two stands.
One takes the view that the observation and the opinion more broadly
should be read in the limiting circumstance of a statute specifically focused
on the FCC and the telecommunications industry. The problem with this

74 United States v Terminal RR Assn, 212 U.S. 1 (1912); Lorain Journal Co. v
United States, 342 U.S. 143 (1951); Otter Tail Power Co. v United States, 410 U.S.
366 (1973); see also Aspen Skiing Co. v Aspen Highlands Skiing Corp., 472 U.S.
585 (1985).
75 AT&T Corp. v Iowa Utilities Bd., 525 U.S. 366, 428 (1999) (Breyer J concur-
ring in part and dissenting in part) (observing that Court never explicitly adopted
essential facilities doctrine).
view is that the statute in *Trinko* has a clear antitrust ‘savings clause’ that was given short shrift. The other stand takes the opinion as a prestatement of the Court’s attitude toward the essential facilities doctrine more broadly. Given the Court’s antitrust track record of non-linear jurisprudence, prestatements cannot earn the rank of precedent unless and until they are later adopted. Which view is right will only be seen in retrospect, if at all.\(^7\) After *Trinko*, whether a dominant firm has an antitrust duty to disclose information remains an open question, but a question influentially answered in the affirmative by both the district and circuit courts in the Microsoft case.

### Innovation, Competition and Consumer Harm

The preceding section discussed private ownership of technical industry standards and its antitrust implications for information access and interoperability in those circumstances. This section proceeds from a broadened vision of competition policy as comprising not only antitrust but intellectual property rights (IPRs). Inquiry into issues of consumer welfare, information access and interoperability begins with the European Court of First Instance’s analysis of Microsoft’s conduct in the work group server market, then considers the likely US treatment, and concludes with an alternative approach.

A trans-Atlantic debate erupted following the CFI decision\(^7\) upholding the Commission, a debate over consumer welfare and its relationships to antitrust and IPRs. The CFI decision was still fresh when directors of the US Antitrust Division and the European Competition Commission crossed rhetorical swords. The *New York Times* printed front page news of this sharp exchange between Brussels and Washington, this clash over who really protects consumers.

In praising the CFI decision, European Commissioner for Competition Neelie Kroes stated, ‘the Court has confirmed the Commission’s view that consumers are suffering at the hands of Microsoft’. But Thomas Barnett, Antitrust Division Chief of the US Justice Department, brandished a conflicting view of consumer effects. He charged that the CFI decision, ‘rather than helping consumers, may have the unfortunate consequence of harming consumers by chilling innovation and discouraging

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\(^7\) For a more recent opinion that seems to reflect *Trinko*’s view of the relationship between antitrust and regulatory regimes, see *Credit Suisse Securities v Billing*, 127 S. Ct. 2383 (2007).

\(^7\) Case T-201/04 *Microsoft v Commission* [2007] ECR II-3601.
competition’. Before turning to the US and EC cases, this section goes in search of suffering consumers, some of Kroes’s and some of Barnett’s. What of Kroes’s consumers who suffered at the hands of Microsoft? And how has the European Commission chilled innovation and discouraged competition to harm Barnett’s consumers? Who understands the true interests of consumers here – Kroes or Barnett?

Of course, Kroes does: Microsoft engaged in a course of conduct to restrain competition in two markets for complementary products, media players and work group server software. As a result, consumers are harmed by costs of dominance, including restricted choice, lower quality and higher prices.

In the server market, Microsoft refused to supply the information rivals need to make their server software compatible with networked PCs running Windows – and almost all of them do. Think of this incompatibility as trying to order dinner from a menu written in an entirely foreign language. You would need a dictionary if not an interpreter. But Microsoft owns IPRs to the dictionary and the interpreter. Kroes’s consumers are harmed by Microsoft’s patent and trade secret claims of protection for Windows protocols because, without a menu of those protocols, Linux, Solaris and other non-Microsoft operating systems for servers lack the vocabulary and syntax needed to communicate with all those PCs running Windows. The protocols are vital and perhaps indispensable information for network servers to communicate with Windows PCs. The CFI opinion rightly concluded that in such exceptional circumstances, the access called for by competition policy properly trumps Microsoft’s exclusionary rights in its intellectual property.

On the other hand, it appears that Barnett is right: requiring Microsoft to share its intellectual property with competitors – with rival server software companies – chills innovation.

In this view, the CFI decision discourages not only Microsoft but every software company from developing communication protocols if they have to share them with competitors. Competitors should be required to solve their own problems rather than demand access to Microsoft’s intellectual property. Barnett’s consumers are harmed insofar as compulsory licensing takes control and profits from software companies like Microsoft

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that have used their ingenuity and resources to develop new and better products. Future innovators will turn their attentions to products that promise stronger intellectual property protection and higher profits. In sum, the CFI judgment threatens to chill innovation in the development of communication protocols and, in consequence, threatens to abandon Barnett’s consumers to the inefficiencies of slower and less stable computer networks.

So, who’s right here? This question is addressed first in the familiar terms of the competition policies we Americans call antitrust and, then, in alternative terms of a neglected competition policy working within the patent regime.

Could it be that both Kroes and Barnett are right? Certainly they agree that consumers benefit from innovation. Where they disagree is on the choice of policy for encouraging innovation. For Kroes, innovation requires open competition on the merits, and that can call for limits on IPRs that exclude rivals. For Barnett, innovation depends on an expansive attitude toward those IPRs because they encourage innovation by stopping free-riding competitors from profiting from the innovator’s work. In short, Kroes and Barnett have different views of what it means to compete by innovation.

It is a policy stand-off, an innovation paradox. The paradox is that innovation is understood as resulting from both open competition and IPRs, from policies calling for both access to and exclusion from the information embodied in intellectual property.

What’s to be done about the innovation paradox that stands between Kroes and Barnett? This section begins its inquiry with a quick comparison of the US and EC approaches to the question of interoperability, the question of access to protected information about the products of innovation. This is a useful point of convergence because, of course, Microsoft is in the business of information flow. The very purpose of an operating system is to create an environment for smooth and reliable information flow, whether between PC components (for example, between computer screen and mouse) or between local area network components (for example, between PCs and work group servers). Microsoft sells operating systems for both PCs and networks. It controls the market for the first and seeks control of the other. In both markets Microsoft products and business strategies are based on control of information flows.

The US case involved Microsoft’s strategy to maintain its Windows monopoly in the intra-PC environment by controlling access to information. Developers of key applications software were given full information access to protocols for interoperability with Windows. But firms whose products included competing software (IBM’s OS/Warp and Apple
QuickTime, for example) were denied such information unless they promised to withdraw them. 81

Moreover, Microsoft blocked access to and information flow about Java in order to protect the interoperability barrier to competition and thereby maintain Windows' brand identity and functional importance. The library of applications software for the Windows platform continues to provide an effective entry barrier because PC users adopt Windows not for its own sake but rather for access to the largest and most stable library of software for work and play, a library bound together by Windows protocols as the set of industry technical standards. If developers were to revise their applications software to run on the Java platform and thus with any underlying operating system, the interoperability barrier would dissolve and Windows would no longer be needed as the industry standard. Other operating systems could compete on price and quality.

The EC case involved what might be called an 'information squeeze' strategy to raise an interoperability barrier to adjacent markets. Microsoft's purpose was to dominate the server software market by blocking the flow of information to developers of rival server operating systems software, by denying access to the very protocol specifications that makes Windows for PCs compatible with Windows for servers. Here, Microsoft's course of withholding compatibility information from rival server software developers was intended to support its campaign to hamstring effective competition in the market for network server software, a market whose product is one among many complementary modules of the larger system of network components, both hardware and software.

In both the EC and US cases, Microsoft lost and, in both, it was ordered to license the interoperability information that rivals need - the protocols for middleware in the US case and, in the EC case, the protocols for server compatibility with Windows PCs. In the United States, Microsoft issued less than a handful of middleware protocol licences in 18 months following the final court decree. About the same time, Microsoft entered into a series of bilateral agreements to settle antitrust cases described in the preceding section, together with more patent development and pooling. Will that strategic shift from withstanding government attacks on exclusionary conduct to pursuing government grants of exclusionary rights lead to information access beyond the bilateralism of strategic joint ventures?

Whether Microsoft remains committed to closed source strategies or more open conditions for interoperability remains to be seen.

But in the trans-Atlantic debate after the CFI judgment, Kroes and Barnett disagreed over the proper resolution of the innovation paradox, the tension between competition policy and IPRs as the proper means to foster innovation. Does the resolution make any practical difference? There is evidence that it does.

In the EC case, the conflict was resolved as follows. First, the CFI simply assumed that Microsoft has patent and trade secret protection of the protocols in question, despite some hesitation over the strength of the claims. Secondly, the CFI confirmed the Commission's determination that, under exceptional circumstances, competition policy can trump IPRs. The exceptional circumstances turn on the question of access to an indispensable asset controlled by a dominant firm, here Windows protocols controlled by Microsoft. The protocols amounted to an essential facility for entry into the adjacent server market.

In the US case, the issue was resolved differently. First, the court dismissed Microsoft's intellectual property claims as 'border[ing] on the frivolous'\(^{82}\), thus, there was no need to confront the paradox. Yet in another part of the decision, the court did recognize as a special case 'technological tying' with software platforms, that is, integrating Internet Explorer into Windows. As a result, Microsoft was given broad discretion to integrate software into Windows even when consumers received only a slight benefit, even when the level of innovation was trivial.

Two other US Courts of Appeals, however, have addressed the innovation paradox directly, with the result a conflict of views. The Federal Circuit Court, which has exclusive jurisdiction over all appeals in patents and trademarks, declared that IPRs trump antitrust, the court stating that a simple refusal to license a patent can never violate the antitrust laws because patents are essentially exclusionary rights\(^{83}\). However, the Ninth Circuit Court, sitting not far from Silicon Valley in California, took a very different approach, an approach favouring antitrust, consistent with the European Commission in attitude and outcome, though somewhat different in analysis\(^{84}\). And so one powerful US court gave priority to IPRs, the other to antitrust limitations.

But these two US cases were decided almost ten years ago and, since

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\(^{82}\) Microsoft \textit{v}., 22 F.3d at 63.

\(^{83}\) \textit{In re Independent Service Organizations Antitrust Litigation}, 203 F.3d 1322 (Fed. Cir. 2000).

\(^{84}\) Image Tech. Serv. \textit{v} Eastman Kodak, 125 F.3d 1195, 1218 (9th Cir. 1997).
then, there has been a continuing contraction of antitrust law that includes greater deference to IPRs. And so, in practical terms, if a US court were to decide the EC Microsoft case today, the decision would likely reflect the Federal Circuit’s approach and Tom Barnett’s strong support of expansive IPRs as the preferred means of encouraging innovation.

In a US antitrust court, the EC Microsoft case would likely face two formidable obstacles to compulsory licensing of Windows protocol information. The first obstacle is the policy, found in both antitrust doctrine and patent legislation, that a patentholder cannot be compelled to license her invention for the sake of promoting competition or encouraging innovation. The second obstacle is the broader doctrine that exceptional circumstances themselves do not trump a dominant firm’s right to refuse to deal. It is highly unlikely that an antitrust court in the United States today would compel Microsoft to license protocol information to rival server software companies.

In the United States, the land where IPRs trump antitrust and dominant firms are free to refuse access to indispensable information, is there any alternative competition policy to correct a market failure of information asymmetry? Indeed there is. Patent policy provides a prescription if not a cure for this market failure when the product is a patented invention. Perhaps more than any other intellectual property regime, the patent system is intended to provide open access to the information needed for

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85 The most recent examples include three opinions of the Supreme Court since the appointment of Chief Justice John Roberts. The first was a unanimous decision in which the Roberts Court overruled long-standing antitrust doctrine to declare that ‘the mere fact that a tying product is patented does not support ... a presumption ... of market power’. Illinois Tool Works, Inc. v Independent Ink, Inc., 547 U.S. 28, 31 (2006) (citing 102 Stat. 4674, Nov. 19, 1988, codified at 35 U.S.C. s. 271(d)), overruling Jefferson Parish Hospital Dist. No. 2 v Hyde, 466 U.S. 2 (1984). As a result, contracts conditioning the sale of patented inventions on the purchase of complementary staple products no longer fall into the category of per se illegality. In two other cases, the Roberts Court’s antitrust doctrine was channelled by the logic of trademark rights. In Leegin Creative Leather Products, Inc. v PSKS, Inc., 127 S.Ct. 2705 (2007), a deeply divided Court overruled a venerable doctrine of per se illegality in holding that resale price maintenance is to be judged by the rule of reason. In Texaco, Inc. v Dagher, 547 U.S. 1 (2006), a unanimous Court held that the decision by Equilon Enterprises, a joint venture between Texaco and Shell Oil – to sell gasoline at the same price to their separate chains of branded service station owners was not per se illegal as a horizontal price fixing agreement. See R.J.R. Peritz, ‘The Roberts Court after Two Years: Antitrust, Intellectual Property Rights, and Competition Policy’ (2008) Antitrust Bulletin 153 (symposium on the Supreme Court’s antitrust jurisprudence under Chief Justice John Roberts), also available at http://ssrn.com/author=75649.
competition by innovation. This is not a new view; it is only a shift in emphasis.86

The remainder of this section takes a quick look at how the US patent regime can be understood as addressing competition problems, in particular the market failure of information asymmetry.87 My example derives from the facts of the EC Microsoft case. The key to the analysis remains information flow. The inquiry raises two questions for US patent policy. First, precisely what obligations for information access accompany patent rights as they are currently understood, particularly patent protection of computer software? Secondly, what changes in US patent doctrine would improve its internal competition policy of promoting information flow? These questions involve the patent regime’s publication requirement, which is intended to promote information flow and thereby improve the conditions for producing further inventions.

In the EC case, Microsoft insisted that patent rights in some Windows protocols (and trade secret rights in others) protected it from antitrust liability for its refusal to disclose them.88 But would that argument make sense in the United States? Wouldn’t there already be public access to the Windows protocols in the US Patent Office database, making unnecessary an antitrust remedy of compulsory licensing simply to gain access? After all, every patent application folder must include a description that is clear enough to enable any person having ordinary skill in the art to make or use the invention. Although files traditionally were kept secret during the patent application process, since 1999 any applicant intending to file outside the United States must make the application public within 18 months.89 The Windows patents, even if still pending, would likely be public knowledge.

What then should we expect to find if we were to search the US Patent Office database? We should not expect to find the actual protocols because Microsoft is not required to disclose them. Indeed, Microsoft characterized some of them as trade secrets. Ten years ago the Federal Circuit

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87 The section does not look to copyright misuse because copyright has become relatively unimportant since software has become so easily patentable, in part because copyright doctrine allows broad access to software through its fair use and misuse doctrines. See Peritz, n. 65 above.

88 Of course a question might be raised about whether such protocols even merit patent protection; the Commission made that argument.

Court declared that a general functional description usually satisfies the so-called description and enablement requirement\(^90\) for software patents. But in practical terms, there is no real enablement. Enabling a skilled programmer to make or use the Windows patents would require flow charts, source code and the detailed descriptions that annotate modules, descriptions that computer programmers always include as documentation for others who subsequently need to understand, change or fix the source code. Both protocols and programmer comments are embedded in source code listings, while protocols also appear in software documentation. Why is a general functional description usually enough for the Federal Circuit Court and, thus, for the Patent Office? Because, according to the court, conversion of functional description into source code is "a mere clerical function to a skilled programmer".\(^91\)

This proposition rings hollow for anyone who has actually designed or written operating systems or complex applications software. Indeed, no judge sitting on the Federal Circuit could have taken such a view after having any actual experience in the field. The author of this chapter spent some years designing and writing such software, and the experience testifies to the reality that conversion of systems design specifications to programming language source code is often challenging work that involves much more than mere clerical function. Nonetheless, the Federal Circuit in its nescience requires only a general description of the software process.

While general information about software function has some limited use value, its satisfaction of the patent disclosure requirement creates two kinds of problems. First, general claims and descriptions produce software patents that are too broad and, as a result, foreclose too much competition. Secondly, and more to the point in this chapter, there is insufficient information flow for subsequent inventors. The combination is deadly: broad patent rights and little public information about them.

If the patent regime is intended to encourage learning from prior art and thereby foster competition by invention, the level and quality of information must be improved. The current requirement of a general process description requires only a low level of information and, in consequence, erects an interoperability barrier to further invention, a barrier that benefits the patentholder by keeping rivals out, rather than an information flow that benefits society by enabling competitors to improve and surpass the invention.

\(^{90}\) Patent Act, s. 112.

\(^{91}\) Northern Telecom, Inc. v Datapoint Corp., 908 F.2d 931, 942 (Fed. Cir. 1990) (citing In re Sherwood, 613 F.2d 809, 817 n.6 (C.C.P.A. 1980)).
The current requirement actually raises an information barrier to entry in two directions. First, it blocks the flow of information that the patent regime promises as a public benefit in exchange for the private right to practice the invention. Secondly, it allows the patentholder to assert trade secrecy for particular elements of the software patent, as Microsoft did for the protocols embedded in patented software.92

And so a conflict arises deep within the patent regime: on one side sits the patent requirement of disclosure, and on the other, the trade-secret-like privilege of non-disclosure. They coexist only because the Federal Circuit’s description requirement mistakenly permits secrecy in its midst. The patent regime, properly implemented, would call for a change in the software description and enablement standard, a change that recognizes the information value of source code and system documentation, a change that requires their publication. Moreover, in the broader view of innovation policy, a proper patent obligation to disclose would promote competition and obviate the need for antitrust litigation over issues of interoperability and compulsory disclosure with patented software.

What impact would a proper patent disclosure requirement have on a case resulting in a compulsory licence like that decreed in the EC Microsoft case? While patent law should require complete disclosure of the software protocols embedded in Microsoft’s server software, the disclosure should not be understood as defining the scope of a compulsory licence issued by an antitrust court. To be more specific, the US patent requirement of description and enablement should include disclosure of the protocols themselves, as well as their configuration and use in the ‘Active Directory’ process module described in the EC case. That is part of the software source code and documentation that should be disclosed to the world.

Nonetheless, such disclosure, which properly falls under the US requirement of describing an invention’s ‘best mode’,93 should not define the antitrust terms of the compulsory licence. A distinction should be made between the protocols themselves and their configuration and use in the ‘Active Directory’. The raw protocols are simply information devoid of invention; they provide the vocabulary and syntax that server software needs to communicate with Windows PCs and, thus, are properly within the scope of the compulsory licence. But the ‘Active Directory’ comes from creative use of the protocols; it is the poetry written with the vocabulary

92 See e.g. Lockwood v American Airlines, Inc., 107 F.3d 1565 (Fed. Cir. 1997).
93 Patent Act, s. 112 also includes the ‘best mode’ requirement.
and syntax. A properly written compulsory licence should cure the information asymmetry by providing only the raw protocols, thereby promoting competition in the invention of other directories, competition in the invention of other configurations of the protocols and associated data that servers need to regulate their Windows PC networks.

5. CONCLUDING REMARKS

There is little disagreement that US antitrust enforcement has declined over the past 30 years, particularly during Republican administrations whose appointments to the enforcement agencies and the Federal Courts have typically reflected a radical laissez-faire ideology reminiscent of the early twentieth century. At the same time, while the Federal Circuit for the most part has been expanding IPRs over the past 20 years, recent Supreme Court decisions and scholarly activity have given rise to a countercurrent of open competition. This disparity raises serious questions about the public benefit of having the Federal Circuit as a specialty court with institutional competency in patent and trademark matters but without authority or competency for the broader policy questions of promoting progress, particularly in view of Supreme Court oversight as a scarce resource.

Nonetheless, we in the United States need not and should not confine ourselves to antitrust law as the sole expression of competition policy. The patent and copyright laws are not composed entirely of exclusionary rights. They also express their own competition policies, policies that predate the Sherman Anti-Trust Act by exactly 100 years. They promote progress through invention and innovation, progress that is served by both competition and cooperation, with competition depending on public access to and use of the new ideas and information embodied in patented inventions. As described in the example of software patents, improved information flow and more open competition would result from the simple step of imposing more rigorous disclosure requirements. Moreover, the recognition of patent law as a competition regime would ease the pressure on antitrust policy to do work done more efficiently by intellectual

94 The poetry metaphor makes patent sense in light of computer software’s textual character despite the metaphor’s copyright aroma.
property policy. Finally, antitrust and IPRs would be better understood as intertwined approaches to promoting progress. One result would be a better informed set of public policy alternatives and regulatory tools for mediating between the legitimate expectations of private right holders and public beneficiaries regarding the rewards from invention and innovation. Simply put, US innovation policy would profit from recognition that competition policy encompasses not only antitrust law but the patent regime and its neighbours in the domain of IPRs as well.