

HEINONLINE

Citation: 87 Minn. L. Rev. 2039 2002-2003

Content downloaded/printed from
HeinOnline (<http://heinonline.org>)
Thu Aug 26 23:35:58 2010

- Your use of this HeinOnline PDF indicates your acceptance of HeinOnline's Terms and Conditions of the license agreement available at <http://heinonline.org/HOL/License>
- The search text of this PDF is generated from uncorrected OCR text.
- To obtain permission to use this article beyond the scope of your HeinOnline license, please use:

[https://www.copyright.com/ccc/basicSearch.do?
&operation=go&searchType=0
&lastSearch=simple&all=on&titleOrStdNo=0026-5535](https://www.copyright.com/ccc/basicSearch.do?&operation=go&searchType=0&lastSearch=simple&all=on&titleOrStdNo=0026-5535)

Has Java Changed Anything? The Sound and Fury of Innovation Litigation

David McGowan[†]

Are we better off now than we were six years ago? Has the Justice Department's suit against Microsoft improved the lot of consumers? Has it improved the rate or direction of innovation? The government's action was the largest and most sustained effort in a generation to use antitrust litigation to improve competition in a technology market. The result should tell us whether antitrust litigation in such markets is likely to enhance welfare. Unfortunately, it does not.

There is no good way to tell whether consumers or innovation benefited from the Justice Department's suit. That conclusion would hold even if the government had broken Microsoft into different firms. Answers are lacking in part because it is too early to tell how the settlement between Microsoft and the government will affect the relevant markets. In part, however, answers are lacking because the government had little concrete evidence that Microsoft harmed consumers or innovation.¹

Insofar as innovation is concerned, the most promising aspect of the government's case focused on Microsoft's actions regarding the Java technologies developed by Sun Microsystems. This short Article uses the government's Java-related claims to explain why the government's victory on its

[†] Associate Professor of Law & Vance K. Opperman Research Scholar, University of Minnesota Law School. My thanks to Dan Farber, Dan Gifford, Mark Lemley, Christopher Leslie, and Bill Page for their comments. Remaining mistakes are my fault.

1. See John E. Lopatka & William H. Page, *Who Suffered Antitrust Injury in the Microsoft Case?*, 69 GEO. WASH. L. REV. 829, 841, 848-49 (2001) (discussing the difficulties with antitrust injury theories based on Microsoft's behavior). The question really should be posed in terms of net results. Even if the government's case produced benefits, they were costly to obtain. If we take into account the costs of litigation, including the money Microsoft and its competitors spent on lobbying, the money the government spent pursuing the case, and the possibility that resources were diverted from productive to unproductive uses, we simply add another layer of uncertainty to the mix.

Java claims does not imply that Microsoft actually harmed competition, a fact that in turn implies, as to this aspect of the case, that we cannot be confident that the government's case increased welfare by enhancing innovation.

Part I of this Article explains the Java-related allegations and examines the government's evidence of those allegations. It concludes that the record evidence provides only weak support for the findings in the case. Part II discusses what this means for future cases and offers recommendations for how the law should deal with such cases.

I. THE GOVERNMENT'S THEORY

The Justice Department has litigated with Microsoft for several years. In this Article, I focus only on events relating to the Internet, middleware, and cross-platform technology. This aspect of the case began in 1997, when the Justice Department alleged that Microsoft violated an earlier consent decree by requiring hardware manufacturers to license its Internet Explorer web browser as a condition of licensing its Windows operating system.²

A. THE BROWSER PLATFORM THEORY

The government's first theory about how Microsoft harmed competition rested on the premise that Netscape's Navigator web browser was a potential substitute for Microsoft's Windows operating system.³ The government claimed that by harming Netscape, Microsoft kept the browser from becoming an actual substitute, thereby maintaining its monopoly.⁴

At this stage, the Java technologies (which I describe in a moment) were literally a footnote.⁵ The browser theory lost appeal over time, however. The idea that Netscape's browser

2. *United States v. Microsoft Corp.*, 147 F.3d 935, 940, 950-51 (D.C. Cir. 1998) (describing the district court's finding that Microsoft was not in contempt of the settlement decree and reversing a district court order preventing Microsoft from conditioning original equipment manufacturer licenses of its operating system on agreements to license its web browser).

3. *See id.* at 939; Mark A. Lemley & David McGowan, *Could Java Change Everything? The Competitive Propriety of a Proprietary Standard*, 43 ANTITRUST BULL. 715, 734 (1998) (describing the Justice Department's theories in the contempt proceeding against Microsoft).

4. *United States v. Microsoft Corp.*, 253 F.3d 34, 59-60 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001).

5. *Microsoft*, 147 F.3d at 939 n.1.

would become a substitute for Windows suffered a serious blow when Netscape's chief executive, James Barksdale, testified at trial that even Netscape never thought its browser could be a complete substitute for Windows.⁶

B. THE JAVA PLATFORM THEORY

The government may have sensed that in the foreseeable future the browser had little chance of becoming a viable substitute for Windows.⁷ When it filed its civil complaint in 1998, it emphasized Sun's Java technologies much more than it had in the contempt proceeding.⁸ In the new account, web browsers still were alleged to be potential substitutes, but they also were significant as the "primary distribution vehicle for Java virtual machines . . . the software programs necessary to run programs written in the Java programming language."⁹

As relevant to the trial, the Java technologies form a translation system in four parts. The Java programming language allows developers to write applications. The Java class libraries expose application program interfaces (APIs) developers can use to write programs that will run through a Java compiler. The compiler compiles Java source code written to Java APIs into Java bytecode. That bytecode runs through a Java Virtual Machine (JVM). JVMs are software machines written for different operating systems. They translate Java bytecode into instructions that can be understood by the operating system for which the JVM is written.¹⁰

6. See Lopatka & Page, *supra* note 1, at 858 (quoting Barksdale testimony); David McGowan, *Innovation, Uncertainty, and Stability in Antitrust Law*, 16 BERKELEY TECH. L.J. 729, 787 n.199 (quoting Barksdale testimony).

7. Indeed, at the end of trial the government submitted a proposed finding of fact stating that "[o]ther 'platform' products, such as Internet browsers and Java, are not good substitutes for operating systems because they cannot function without an operating system." Pls.' Joint Proposed Findings of Fact ¶ 19.1, *Microsoft* (No. 98-1232), <http://www.usdoj.gov/atr/cases/f2600/2613.htm> [hereinafter Findings] (last visited Feb. 25, 2003). This finding reflected a dilemma both sides faced. It was impossible to argue about whether Microsoft had a monopoly without saying existing competition was threatening (Microsoft) or feeble (the government). On the question whether Microsoft's acts thwarted realistic substitutes, however, each side reversed its position.

8. See Compl. ¶¶ 7-8, 68, *Microsoft* (No. 98-1232), <http://www.usdoj.gov/atr/cases/f1700/1763.htm> (last visited Feb. 25, 2003).

9. *Id.* ¶ 68.

10. *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 29 (D.D.C. 1999); see also Daniel J. Gifford & David McGowan, *A Microsoft Dialog*, 44

1. Java as Supporting the Browser

The idea that Java could bolster the browser allegations lost some of its force when the evidence showed that Netscape fell behind in its Java engineering efforts. By 1998, it could not distribute versions of Sun's JVM that complied with Sun's then-current standards.¹¹ One could of course blame Microsoft for Netscape's failure to keep its Java effort current, but the connection is not clear.¹²

The two worst things Microsoft did to Netscape were to give its own browser away for free and to insist that original equipment manufacturers (OEMs) license Internet Explorer as a condition of getting Windows. Evidence at trial suggested the free browser policy is what caused Netscape to fall behind in its Java efforts,¹³ but the district court did not find that this policy broke the law¹⁴ and the government did not press the point on appeal.¹⁵ As to pre-installing Explorer, if Microsoft were forbidden from making such demands, OEMs would have an incentive to auction pre-installation rights to the highest bidder, depending on the relative demand for different browsers. For this reason, it is not clear that Microsoft's demands upon OEM's raised Netscape's costs over what they otherwise would have been.¹⁶

2. Java on Its Own

The D.C. Circuit interpreted the district court as endorsing four theories of how Microsoft's Java-related conduct amounted to unlawful monopolization.¹⁷ It affirmed on three of these

ANTITRUST BULL. 619, 640-41 (1999) (describing Java technologies).

11. *Microsoft*, 84 F. Supp. 2d at 108.

12. McGowan, *supra* note 6, at 772 & n.149.

13. See Findings, *supra* note 7, ¶ 328.1(ii) (citing testimony of Sun's James Gosling).

14. McGowan, *supra* note 6, at 773.

15. *United States v. Microsoft Corp.*, 253 F.3d 34, 68 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001).

16. Lopatka & Page, *supra* note 1, at 855; McGowan, *supra* note 6, at 772 & n.149.

17. *Microsoft*, 253 F.3d at 74. Three of these four findings are discussed in detail in Gifford & McGowan, *supra* note 10, at 653-57. I say the D.C. Circuit interpreted the district court's conclusions of law this way because it is not clear to me that the district court intended to suggest that Microsoft broke the law by developing an efficient but incompatible JVM. See *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 43-44 (D.D.C. 2000), *aff'd in part and rev'd in part*, 253 F.3d 34 (D.C. Cir. 2001) (discussing Microsoft's Java-related activity).

theories, which I will discuss in turn. Two of the theories suffer from a lack of evidence to substantiate the premises on which they rest. The government introduced evidence to establish the premises of the third theory, but did little to relate this theory to actual market harm. Before discussing these theories, I briefly analyze the theory the court of appeals rejected.

a. The Microsoft JVM and Developer Tools

Microsoft developed a JVM for Windows, and Java development tools for Windows. These technologies were incompatible in certain respects with Sun's Java implementation. They made it easier for developers to treat Java as just another development tool for Windows. The easier it was for developers to treat Java this way, the more likely it would be that Java would wind up as a Windows development tool, rather than as a nascent cross-platform substitute for Windows.¹⁸ Making it easier for developers to treat Java this way made such treatment more likely. This was Microsoft's general strategy for dealing with Java.¹⁹

The D.C. Circuit interpreted the district court as holding Microsoft liable for developing its JVM (which was the fastest and in some ways best JVM on the market) and its Java development tools. The D.C. Circuit reversed on this point, holding that the technologies were not exclusionary because they helped developers write Java for Windows more efficiently.²⁰

The court's reasoning on this point was sound. Microsoft's JVM and tools lowered the cost to developers of using Java as a Windows tool. Developers may or may not have felt the lower costs of writing only to Windows were worth the possibly higher costs of porting their programs to other operating systems should they want to do so, but that was their choice.²¹ Offering developers a Windows-only Java option also put competitive pressure on Sun to improve cross-platform Java, inducing technology competition, which antitrust policy should favor.²²

18. See Gifford & McGowan, *supra* note 10, at 649, 653, 658.

19. See *Microsoft*, 87 F. Supp. 2d at 43 (discussing how Microsoft's efforts affected incentives to write cross-platform programs).

20. *Microsoft*, 253 F.3d at 75.

21. See *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 20 (D.D.C. 1999) (discussing the costs to developers of porting programs).

22. *Microsoft*, 253 F.3d at 49-50 (discussing the importance of innovation and inter-standards competition).

This decision complicated the rest of the court's analysis, however. The government's basic claim was that Microsoft tried to fragment Java to keep it from becoming a cross-platform substitute for Windows.²³ As a practical matter, "fragmenting" meant getting developers to use Java to write Windows-only programs instead of cross-platform programs. To the extent Microsoft used lawful means to give developers incentives to do so, it becomes harder to ascertain how its allegedly unlawful conduct affected the market.²⁴

b. Deceiving Developers

The district court held that Microsoft violated section 2 of the Sherman Act by deceiving software developers.²⁵ The first premise of this theory was that Microsoft distributed Java development tools that would help developers write Java programs for Windows efficiently, but which programs would then run only on Windows.²⁶ The D.C. Circuit held that Microsoft's development of incompatible tools did not, standing alone, violate the Sherman Act, however, so by itself this premise alone proved nothing.²⁷

The second premise of this theory was that Microsoft tricked developers into "unwittingly" using these tools to write Windows-specific programs when the developers intended to write cross-platform programs.²⁸ The conclusion was that this deception, and the confusion it caused, impeded Java's progress in the market.²⁹ Impeding Sun's progress extended Microsoft's monopoly.³⁰

The district court found that Microsoft used two means of deceit: It distributed its Java tools with its Windows-specific

23. *Id.* at 76 (describing the government's fragmentation theory).

24. *Id.* at 75 (stating that the JVM, however, does allow applications to run more swiftly and does not itself have any anticompetitive effect); *see also* Gifford & McGowan, *supra* note 10, at 658.

25. *See* United States v. Microsoft Corp., 87 F. Supp. 2d 30, 43 (D.D.C. 2000), *aff'd in part and rev'd in part*, 253 F.3d 34 (D.C. Cir. 2001).

26. *See* Gifford & McGowan, *supra* note 10, at 642-44. In particular, Microsoft extended the Java programming language by adding two words to it, distributed a tool called *J/Directory* that allowed developers to incorporate Windows code more easily into Java-language programs, and modified the Java class libraries for a time. *Id.*

27. *Microsoft*, 253 F.3d at 75.

28. *Microsoft*, 87 F. Supp. 2d at 43.

29. *Id.*

30. *Id.* at 43-44.

modifications as the default settings, and it did not warn developers that these defaults created the risk that they would write Windows-only programs.³¹ Based on these acts, the district court concluded that Microsoft “deliberately designed its Java development tools so that developers who were opting for portability over performance would nevertheless unwittingly write Java applications that would run only on Windows.”³²

This language is worded with care. The district court did not actually say that any actual developers had been deceived. The D.C. Circuit read it that way, however. It described the district court as finding that “developers who relied upon Microsoft’s public commitment to cooperate with Sun and who used Microsoft’s tools to develop what Microsoft led them to believe were cross-platform applications ended up producing applications that would run only on the Windows operating system.”³³

The evidence submitted at trial supports neither the D.C. Circuit’s unqualified assertion that actual developers were confused nor the district court’s elliptical suggestion of the same point. The government presented no direct evidence that Microsoft actually lied to anyone, nor that any developers had been confused.³⁴

31. The language is worth quoting in full:

Microsoft designed its Java developer tools to encourage developers to write their Java applications using certain “keywords” and “compiler directives” that could only be executed properly by Microsoft’s version of the Java runtime environment for Windows. Microsoft encouraged developers to use these extensions by shipping its developer tools with the extensions enabled by default and by failing to warn developers that their use would result in applications that might not run properly with any runtime environment other than Microsoft’s and that would be difficult, and perhaps impossible, to port to JVMs running on other platforms.

United States v. Microsoft Corp., 84 F. Supp. 2d 9, 106-07 (D.D.C. 1999).

32. *Microsoft*, 87 F. Supp. 2d at 43.

33. United States v. Microsoft Corp., 253 F.3d 34, 76 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001).

34. Even the government’s proposed findings of fact tacitly concede the point. The findings offer as a tag line the conclusion that “Microsoft misled developers so that they unwittingly wrote Java programs that turned out to be Windows-specific, even when the developer intended to create a cross-platform program.” Findings, *supra* note 7, ¶ 331. In support of this claim, however, the government cited only hearsay testimony from Sun’s James Gosling to support a different claim: “The absence of warnings about the impact of utilizing Microsoft’s extensions created a significant potential for developer confusion and the creation by them of Java programs that were not cross-

Indeed, the testimony the government cited in its proposed findings of fact on this issue (from Sun's James Gosling) steered away from such a claim.

[T]he issue wasn't so much . . . the code that they [developers] themselves directly wrote. But a lot of it had to do with what libraries did they use, because if they used a library that was tainted with Microsoft-specific extensions, then their applications wouldn't run. And while the developer might have been aware when they wrote their own code whether or not they were using these things—they weren't necessarily aware, because a lot of the stuff was automatically generated by the tool, but whenever they incorporated libraries from other places, you know, they might have been sort of acquiring this problem, and it wasn't at all obvious when this problem would show up.³⁵

The logic of this testimony is poor. It seems to concede that the issue is not that actual developers had been or would be confused—which is how the district court and D.C. Circuit treated this theory. Instead, this testimony suggests that developers might unwittingly incorporate into programs they wrote platform-specific code from other programs. The testimony does not explain how this would happen if the real issue is not confusion, however. Nor does it suggest any other reason why the “tainted library” problem was Microsoft's problem, nor why programmers would fail to spot the problem when they tested their code, as Sun suggested they do.³⁶

Other facts suggested the risk of confusion might be low. A developer could disable Microsoft's Java extension by clicking a box labeled “disable Microsoft extensions.”³⁷ Dr. Gosling dismissed this fact on the ground that the box was “several menus deep.”³⁸ The proposition that professional developers

platform, but rather Windows-specific.” *Id.* ¶ 331.2 (emphasis added). Gosling's hearsay testimony is as follows: “I certainly had developers talk to me who said that they had been developing with Visual J++ and then were surprised to discover that the software they had developed was not portable.” Transcript of Trial at 58 (A.M. Session, Dec. 10, 1998), *Microsoft* (No. 98-1232) (testimony of James A. Gosling), <http://www.microsoft.com/presspass/trial/transcripts/dec98/12-10-am.asp> (last visited Feb. 25, 2003) [hereinafter Transcript of Trial]. Dr. Gosling did not name these developers. *Id.*

35. Transcript of Trial, *supra* note 34, at 58-59 (A.M. Session, Dec. 10, 1998) (testimony of James A. Gosling). This testimony was elicited on cross-examination. The D.C. Circuit cited Dr. Gosling's direct testimony, which in this trial was prepared in advance and submitted in affidavit form, but it did not cite his cross. See *Microsoft*, 253 F.3d at 76.

36. Transcript of Trial, *supra* note 34, at 24 (A.M. Session, Dec. 10, 1998) (testimony of James A. Gosling).

37. *Id.* at 63.

38. *Id.*

were unable to disable the extensions because the dialogue box was too far down the menu tree seems to me implausible. In any event, the government offered no evidence that actual developers found the disable function too obscure to use.

In addition, Microsoft introduced evidence that popular industry magazines reported that Microsoft's Java tools tied developers to Windows.³⁹ That fact alone suggests well-informed developers would have known what Microsoft's defaults were without being warned. That idea is strengthened by the government's evidence that industry participants worried about Microsoft's strategy: They worried about it because they knew about it.⁴⁰ In the analogous setting of a securities fraud action regarding publicly traded securities, Microsoft would have had a good argument that any misrepresentations (had the government shown any) did not affect the market because it was already informed about the relevant facts.⁴¹

The D.C. Circuit referred to Microsoft's "campaign to deceive developers,"⁴² but the evidence of what Microsoft actually did does not justify any inference that the companies succeeded. The government presented good evidence that Microsoft employees *hoped* developers would not notice that using Microsoft Java tools would produce Windows-only programs.⁴³ But there was no evidence that those hopes were realized. There was no evidence of lies; there was no evidence of actual confusion.

Because the government produced no evidence of actual deceit, its theory reduced to the question of how far actual deceit may be inferred from Microsoft's hopes. On that score, the court of appeals was right to stress elsewhere in its opinion

39. Def.'s Ex. at 1952, 1992, *Microsoft* (No. 78-1232), <http://www.microsoft.com/presspass/trial/exhibits/feb99/> (last visited Feb. 25, 2003).

40. *See, e.g.*, Transcript of Trial, *supra* note 34, at 18 (P.M. Session, Nov. 18, 1998) (testimony of John Sorying).

41. *See, e.g.*, *Weilgos v. Commonwealth Edison Co.*, 892 F.2d 509 (7th Cir. 1989) (recognizing a truth-on-the-market defense to securities fraud claim); *In re Convergent Technologies Sec. Litig.*, 948 F.2d 507, 513 (9th Cir. 1991) (same).

42. *United States v. Microsoft Corp.*, 253 F.3d 34, 77 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001).

43. *See, e.g., id.* at 76-77. The D.C. Circuit quoted one internal e-mail in which a Microsoft employee suggested the firm not emphasize the Windows-centered aspect of its Java work and simply "assume that people will take more advantage of our classes without ever realizing they are building win32-only java apps." *Id.* at 76.

that courts must be cautious in inferring market harm from a defendant's intentions.⁴⁴ Especially because confusion should have been easy to prove if it actually existed,⁴⁵ evidence of Microsoft's hopes should not have been enough to infer actual deceit.⁴⁶

c. Agreements with Independent Software Vendors

The D.C. Circuit also affirmed the district court's finding that Microsoft violated section 2 of the Sherman Act by agreeing to give Independent Software Vendors (ISVs) advance access to Windows technologies if the ISVs would distribute Microsoft's JVM as their default technology.⁴⁷ The D.C. Circuit characterized the agreements as "exclusive in practice" though "not literally exclusive."⁴⁸ The court held these agreements were illegal because they foreclosed an important distribution channel for Sun's JVM, thereby strengthening Microsoft's monopoly position, and because Microsoft did not establish a pro-competitive justification for the agreements.⁴⁹

If such agreements reduced distribution of Sun's JVM, they might extend Microsoft's monopoly, but this theory is weaker than the court of appeals implied. The record included evidence that Microsoft's JVM ran programs written purely in Java, and did so faster than other JVMs.⁵⁰ The government's

44. *Id.* at 59 ("[O]ur focus is upon the effect of that conduct, not upon the intent behind it. Evidence of the intent behind the conduct of a monopolist is relevant only to the extent it helps us understand the likely effect of the monopolist's conduct.").

45. *See infra* Part II.

46. That is true even if one is to accept as representing the policy of the firm a suggestion by a single employee in a single e-mail about how he thought the firm *should* proceed (rather than how it had been proceeding, even). There are a host of problems with drawing such inferences. *See* David McGowan, *Networks and Intention in Antitrust and Intellectual Property*, 24 J. CORP. L. 485, 514-16 (1998) (discussing the problems with intent-based inferences in antitrust cases).

47. *Microsoft*, 253 F.3d at 75-76.

48. *Id.* at 75.

49. *Id.*

50. Transcript of Trial, *supra* note 34, at 8 (A.M. Session, Dec. 10, 1998) (testimony of James A. Gosling); Def.'s Ex. at 1952, 2025, *Microsoft* (No. 78-1232), <http://www.microsoft.com/presspass/trial/exhibits/feb99/> (last visited Feb. 25, 2003).

Some of the evidence was from computer magazine reviews of technology, and therefore would be hearsay as to the question whether Microsoft's JVM actually was faster than other JVMs. The evidence was relevant to what the developer community believed, however, and Sun's James Gosling did not

chief Java witness reacted churlishly to evidence that Microsoft's JVM was very fast, but he did not dispute it.⁵¹ He did testify that "quite often" Microsoft's JVM would run "a fairly reasonable fraction" of Java applications (those written without native operating system code) "perfectly fine."⁵² Distributing Microsoft's JVM did not suppress development of such applications.

In one respect, Microsoft's JVMs and Java tools did divide the Java technology. If a developer wanted to incorporate Windows code in a Java program, Microsoft's tools would allow the developer to do so efficiently, but the resulting program would not run on other JVMs.⁵³ It is not clear, however, whether this fact mattered very much. Such programs would not run across platforms, but programs using native code (Windows or otherwise) were not cross platform at the time of trial anyway.⁵⁴ Even Sun's James Gosling conceded at trial that Java technologies had never allowed developers to write a program once and have it run on any platform. Sun's story was that things would get better in the future.⁵⁵

The district court condemned the agreements partly on conjecture. The language of the agreements only required that ISVs use Microsoft technology as a default; they did not prohibit ISVs from distributing Sun's JVM.⁵⁶ The district court thought ISVs would have no incentive to distribute other JVMs, however, because they would all be writing Windows-specific Java programs, which would not work on other JVMs.⁵⁷

rebut it when given the chance to do so. *Id.*

51. Transcript of Trial, *supra* note 34, at 18 (P.M. Session, Dec. 10, 1998) (testimony of James A. Gosling).

52. *Id.* at 14.

53. The district court noted this fact by saying only that Microsoft's and Sun's JVMs were incompatible when native code was used. *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 106 (D.D.C. 1999). The court of appeals did not pick up on this limitation.

54. Even Sun's witnesses conceded this point. *See Gifford & McGowan*, *supra* note 10, at 647-49. Sun's story was that its version of the technologies made it much easier to write code across JVMs written for a particular operating system, and reduced the costs developers would incur in adapting such programs from one operating system to another. *Id.*

55. Transcript of Trial, *supra* note 34, at 11 (A.M. Session, Dec. 10, 1998) (testimony of James A. Gosling). The district court recognized this fact, too. *Microsoft*, 84 F. Supp. 2d at 105.

56. *United States v. Microsoft Corp.*, 253 F.3d 34, 75 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001); *Microsoft*, 84 F. Supp. 2d at 109.

57. *Microsoft*, 84 F. Supp. 2d at 108-09.

If ISVs chose to do so, however, it is hard to see why their choice should count as harm to competition rather than as a form of competition. Things would be different if ISVs were duped. As we saw in the last section, however, there is no evidence for that conjecture in the record, though such evidence would have been relatively easy to obtain.

Finally, there was no evidence that these agreements actually did retard Sun's progress relative to what it would have been without the agreements. Even before the case was filed, Microsoft publicly stated it would not enforce the ISVs' obligations under the agreements,⁵⁸ and in separate litigation with Sun it was temporarily enjoined from enforcing them.⁵⁹ The district court found only that Microsoft "remained free" to enforce the provisions until November 1998.⁶⁰

The D.C. Circuit correctly held that "[a] monopolist, like a competitive firm, may have a perfectly legitimate reason for wanting an exclusive arrangement with its distributors."⁶¹ It took Microsoft to task for not justifying the agreements, however, rejecting as "competitively neutral" Microsoft's claim that the agreements focused developer attention on the Windows platform, thereby presumably improving the performance of that platform.⁶² The D.C. Circuit affirmed the district court's conclusion that the agreements broke the law because Microsoft could not offer a "procompetitive justification" for the agreements.⁶³

Microsoft probably abandoned the agreements to avoid the

58. Def.'s Answer, Fifth Affirmative Defense, *Microsoft* (No. 98-1232), <http://www.microsoft.com/presspass/doj/7-28answerdoj.asp> (last visited Feb. 25, 2003). Microsoft appears to have abandoned all the agreements with software vendors, though it did not abandon browser-related agreements with a couple of large access providers, such as AOL.

59. *Microsoft*, 84 F. Supp. 2d at 109 (noting the use of a November 1998 injunction prohibiting enforcement of such agreements). For a description of the November 1998 litigation, see *Sun v. Microsoft*, 81 F. Supp. 2d 1026, 1027-28 (N.D. Cal. 2000) (denying the motion to reinstate an injunction after the 9th Circuit vacated it).

60. *Microsoft*, 84 F. Supp. 2d at 109.

61. *Microsoft*, 253 F.3d at 72.

62. *Id.*

63. *Id.*

65. For the district court's findings of fact on market power, see *Microsoft*, 84 F. Supp. 2d at 19-28 (finding the existence of Microsoft's monopoly power through evidence of the corporation's excessive market share, a high barrier of entry into the operating systems market, and a lack of "commercially viable alternative[s] to Windows").

risk of antitrust liability, so it deserves no great credit for doing so. That the agreements were not enforced suggests that they caused no harm, however, and raises the question of why Microsoft broke the law by entering into them.

The court of appeals' requirement that Microsoft justify the agreements might be reasonable in light of the evidence showing that Microsoft had a great deal of market power.⁶⁵ It does create a tension in the opinion, however, because the court of appeals also concluded that Microsoft enhanced competition by creating its JVM and Java development tools.⁶⁶ Distributing those technologies therefore presumably created some benefits, which would have to be weighed against whatever costs stemmed from having Microsoft's Java technology rather than Sun's as the default on ISV distributions.

One might respond that if these benefits were real, then developers would have used Microsoft's technology as the default even without the agreements, implying that wider distribution should not count as a benefit. That is a good argument. Microsoft might reply that the agreements signaled its dedication to developing Java for Windows, cut through the market noise to get the attention of developers, or that getting a deal to do what one would have done anyway is just good bargaining. Such arguments could follow one another for some time without reaching definitive conclusions.

For all these reasons, even assuming the theoretical costs to the ISV agreements exceeded the theoretical benefits, the record offers no reason to believe that was the case for actual costs and actual benefits. It is hard to say that condemning those agreements actually improved welfare.

d. Intimidating Intel

The D.C. Circuit also affirmed the district court's conclusion that Microsoft violated section 2 by coercing Intel Corporation into limiting its support for Java.⁶⁷ The evidence on this point was by far the strongest the government introduced to support its Java theory.

Microsoft and Intel occupy adjacent layers of the hierarchy

66. See *supra* Part I.B.2.a (discussing how Microsoft's JVM and Java development tools provided developers with a less expensive Windows-only Java option that "put competitive pressure on Sun to improve cross-platform Java").

67. See *Microsoft*, 253 F.3d at 77; *Microsoft*, 84 F. Supp. 2d at 109.

of complementary products that comprise personal computing. Some degree of cooperation between the two firms is both necessary and efficient. The better their products work together, the better personal computing works. At trial, no one disputed the necessity of such cooperation.

The government's theory was that, with regard to Java, Microsoft crossed the line from cooperating with Intel to coercing it.⁶⁸ The evidence showed that Microsoft demanded that Intel choose sides regarding Java.⁶⁹ If Intel wanted Java to become the new platform, thus displacing Microsoft's operating system monopoly, then Microsoft was not going to help Intel by giving it advance information. Microsoft might instead seek a chip maker, such as AMD, that would side with Microsoft on the Java issue and work to make Java just another development tool for Windows.⁷⁰ Its position was that Intel could either be for it or against it, but not both.

Logically, Microsoft's position might or might not harm competition. If Intel hedged its bets by supporting Java, it might work less hard in its alliance with Microsoft. That would make the "Wintel" alliance less robust in competition with other combinations of complementary technologies.⁷¹ From this angle, Microsoft's insistence that Intel choose sides might enhance competition by giving Intel an unmixed incentive to make the alliance as efficient as possible. On the other hand, Microsoft's position might also reduce the chance that Sun would displace Microsoft as the platform monopolist. If that result enhanced welfare, then Microsoft's demands would reduce welfare.

One cannot determine through *a priori* reasoning how Microsoft's policy affected welfare. The government's position makes the most sense if one assumes that the Wintel alliance was already so strong that marginal increases to its strength were trivial, and that the benefits of such increases would almost certainly be outweighed by losses to rival technologies such as Java. Java losses count only to the extent one assumes that Sun's Java technology is an acceptable proxy for net

68. *Microsoft*, 84 F. Supp. at 109-10.

69. *Id.*

70. *Microsoft*, 253 F.3d at 77; *Microsoft*, 84 F. Supp. 2d at 109.

71. This is of course the premise of the argument that exclusive contracts may enhance inter-brand competition, which is one reason why the D.C. Circuit recognized that such agreements may have significant pro-competitive effects. *Microsoft*, 253 F.3d at 69-70.

welfare, such that gains to Sun would count as net gains in welfare.

How one views the government's theory depends largely on one's confidence in these assumptions. That in turn depends on whether one feels comfortable with basing antitrust rulings on such assumptions and the predictions they generate. Though nominally falsifiable, there is no real way to know whether the predictions are right. The relevant comfort levels are ultimately a psychological fact, though they may of course be influenced by evidence and logic.

Microsoft's "choose sides" policy had two concrete effects. In 1995, it tried to get Intel to stop Java development work. It failed to stop the work, but it did persuade Intel not to support Java publicly.⁷² In 1997, Microsoft persuaded Intel to stop working for a time on certain Java multimedia technologies that competed with Microsoft's Java strategy.⁷³ Neither the district court nor the D.C. Circuit said how long Intel refrained from its work, though both implied it stopped only temporarily.⁷⁴

The relevant Microsoft witness testified that Microsoft tried to stop Intel from working for Sun and against Microsoft by trying to make sure Microsoft was a better partner for Intel than Sun was.⁷⁵ Surprisingly enough, the "smoking gun" exhibit cited by the district court and the D.C. Circuit is consistent with this interpretation, though it does not compel it.⁷⁶ Neither the district court nor the court of appeals

72. Gifford & McGowan, *supra* note 10, at 652-53.

73. *Microsoft*, 253 F.3d at 77.

74. *Id.* (quoting deposition testimony of Eric Engstrom, which said Microsoft persuaded Intel to stop working on Java multimedia technologies "for some period of time").

75. Transcript of Trial, *supra* note 34, at 21-22 (P.M. Session, Feb. 23, 1999) (testimony of Eric Engstrom).

76. Gov.'s Ex. 235, *Microsoft* (No. 78-1232), <http://www.microsoft.com/presspass/trial/exhibits/feb99/> (last visited Feb. 25, 2003). The "smoking gun" was government exhibit 235, a string of e-mails regarding multimedia technologies. The most important e-mail was from Microsoft's Eric Engstrom, who worked with Intel on such technologies. He listed the following as one of Microsoft's goals: "Intel to stop helping Sun create Java Multimedia APIs, especially ones that run well (i.e. native implementations) on Windows." The D.C. Circuit quoted part of this language. *Microsoft*, 253 F.3d at 77. The e-mail also said, however, that, "in the absence of a clear direction and engaging partnership with [Microsoft], [Intel] will end up working with whomever makes the most noise in multimedia at the moment." Gov.'s Ex. 235, *Microsoft* (No. 78-1232), <http://www.microsoft.com/presspass/trial/exhibits/feb99/> (last visited Feb. 25, 2003).

acknowledged this testimony, though the court of appeals cited deposition testimony from the same witness.⁷⁷

The failure to refer to relevant evidence is troubling, but hardly fatal. The testimony of Microsoft's witnesses was as self-interested and self-serving as that of the Sun and Intel witnesses the government called.⁷⁸ The district court certainly was entitled to believe the latter over the former, though it is possible that they all testified truthfully to the situation as they saw it.

Neither the district court nor the D.C. Circuit tried to ascertain how Intel's silence and the interruption of its work affected Java in the market. That might be a reasonable choice. Unlike the developer confusion or ISV allegations, for which the government could have produced evidence of actual developer behavior, it is hard to see how one could measure the effects of these acts. If one interprets Microsoft's "choose sides" policy as exclusionary, then it would be reasonable to place on Microsoft the burden of showing that its interruption of Intel's Java-related work caused no harm.

II. IMPLICATIONS AND RECOMMENDATIONS

The Java aspect of the government's Microsoft case does not show that antitrust litigation improves technology markets. Nor does it show that such litigation cannot improve technology markets. It does suggest some ways courts may improve the likelihood that such litigation will produce net benefits rather

Mr. Engstrom testified at trial that he did want Intel to work with Microsoft and not Sun, but that he sought to achieve this end by persuading Intel to direct its scarce multimedia resources to working with Microsoft. Transcript of Trial, *supra* note 34, at 7 (P.M. Session, Feb. 23, 1999) (testimony of Eric Engstrom). He testified that his means of persuasion were to work harder to be a better partner for Intel than Sun would be. *Id.* at 21-22. Engstrom's pro-Microsoft testimony was as slanted toward Microsoft as the testimony of the government's witnesses was slanted toward Sun, of course. For that reason a court would be entitled to view it skeptically. Neither the District Court nor the D.C. Circuit mentioned this testimony, however, not even to explain why it should not be credited.

77. *Microsoft*, 253 F.3d at 77.

78. The reflexive defensiveness of Sun's James Gosling, creator of the Java technologies, is notable in this regard. Judging by the transcript (which does not convey tone, facial expressions, body language, and other contextual elements relevant to interpretations), he was a partisan witness, loathe to confront squarely credible evidence that many of Java's problems were due to deficiencies in the technology and incompatibility across generations of the technology. See, e.g., Transcript of Trial, *supra* note 34, at 7, 9, 12, 14-15 (A.M. Session, Dec. 3, 1998) (testimony of James A. Gosling).

than net losses.

Apart from the deceit and ISV contract theories, which should have been rejected for lack of evidence, the record shows a mixture of three things: (1) actions by Microsoft that enhanced welfare and which the court of appeals held lawful, such as Microsoft's development of its JVM and Java development tools; (2) unlawful actions by Microsoft, such as intimidation of Intel, but for which no evidence of harmful effects was introduced; and (3) actions unrelated to Microsoft that hurt Java in the market.⁷⁹

There is no way to measure the precise effects of these different types of facts, much less to distinguish effects attributable to lawful acts from those attributable to unlawful ones. The district court recognized this when it acknowledged that the evidence did not show that Netscape or Sun would have become viable platform competitors but for Microsoft's illegal acts.⁸⁰

Microsoft argued that because the government could not show that its acts squelched competition that otherwise would have eroded its monopoly power, the government had not proved that Microsoft's acts "maintained" its monopoly. This proposition is compelling as a matter of logic. It is not very practical as a legal matter, however.

When both an act and a result exist in a complex, rapidly changing environment filled with confounding variables, proving that a particular act *caused* a particular result is extremely hard. Litigants are never able to prove *conclusively* how the world would have been different if the facts had been different.⁸¹ It is unreasonable to demand that they prove it by

79. This last category includes high-profile failures of Java projects undertaken by Corel and Netscape, severe criticism of Java in the press, including statements from Sun allies such as Netscape's Mark Andreesson and IBM's John Soyring (a government trial witness), Def.'s Ex. at 1952, *Microsoft* (No. 78-1232), Transcript of Trial at 12, *supra* note 34, (A.M. Session, Dec. 3, 1998) (testimony of James Gosling), and technical failures even Sun admitted, such as incompatibility across some generations of Java technologies. *Id.* at 9, 16 (A.M. session, Dec. 3, 1998) (testimony of James Gosling) (discussing project failures and Andreesson criticism).

80. *Microsoft*, 253 F.3d at 77; *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 111-12 (D.D.C. 1999).

81. *Microsoft*, 253 F.3d at 79 (discussing the difficulties in proving causation). Indeed, it is impossible to prove logically the easier proposition that the future will be the same if nothing changes. *E.g.* DAVID HUME, AN ENQUIRY CONCERNING HUMAN UNDERSTANDING, at sec. IV, pt. II (1910), http://eserver.org/18th/hume_enquiry.html (last visited April 3, 2003).

a preponderance of concrete evidence, which they could not do. It is unsatisfying to allow them to prove it by piling speculation on top of speculation to create a preponderance of conjecture.

If one has faith that the antitrust laws are a force for good in the world, or even just that they are laws and have to be enforced, the logical force of Microsoft's causation argument must be tempered by the limitations of litigation and the necessary imperfections of real-world judgments. A standard requiring that the government show what would have happened if Microsoft's unlawful acts—and only those acts—had not occurred would effectively put an end to antitrust enforcement in such cases.

This reasoning sounds pragmatic, which it probably is. It is also profoundly troubling. From a social welfare angle, it is circular.⁸² Whether antitrust cases enhance welfare depends on whether they punish welfare-reducing conduct without deterring too much welfare-enhancing conduct. Whether they do that depends on the liability standards those cases employ. Setting low standards so that cases may be brought weakens the connections between antitrust enforcement and welfare.⁸³ On the other hand, unless we are fairly confident that antitrust actions will not improve things, we should not adopt liability standards that preclude such actions altogether.

The D.C. Circuit finessed the causation problem. It said it knew of no authority for the “proposition that, as to § 2 *liability* in an equitable enforcement action, plaintiffs must present direct proof that a defendant's continued monopoly power is precisely attributable to its anticompetitive conduct.”⁸⁴ The court thought uncertainty about causation could be dealt with better through tailoring remedies rather than deciding liability.⁸⁵

On liability, the court said “[W]e may infer causation when exclusionary conduct is aimed at producers of nascent competitive technologies as well as when it is aimed at producers of established substitutes.”⁸⁶ In the Microsoft case, the court thought it was enough to ask “(1) whether as a general matter the exclusion of nascent threats is the type of

82. See McGowan, *supra* note 6, at 793 n.215.

83. This point is discussed in greater detail in *id.* at 791-94.

84. *Microsoft*, 253 F.3d at 79.

85. *Id.* at 80.

86. *Id.*

conduct that is reasonably capable of contributing significantly to a defendant's continued monopoly power and (2) whether Java and Navigator reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue."⁸⁷

The court's willingness to infer causation weakens the connection between "anticompetitive acts" and actual harm to competition.⁸⁸ The court might be read as limiting its causation analysis to the type of "equitable enforcement action" it had before it,⁸⁹ but the opinion offers no doctrinal basis for distinguishing liability standards in such cases from standards in private damages actions. A pragmatist might argue that, when the government presents reasons and evidence to suspect certain conduct harms welfare, and a defendant cannot justify the conduct as enhancing welfare, it makes more sense to enjoin the conduct than to spend time speculating over things that did not happen. That may be a defensible pragmatic judgment, but its legal basis is not clear.⁹⁰

Even assuming the court was right to infer causation, its approach could be improved in three ways. First, the degree to which a court is willing to infer causation from either theories of harm or evidence of a defendant's intention should vary inversely with the difficulty of proving facts relevant to actual harm. To the extent facts in a chain of reasoning are relatively easy to prove, a court should require proof and reject conjecture. The ultimate fact of general market harm may and probably will require some degree of inference, but it will be more or less reliable in proportion to the facts or lack of facts farther up the chain. Where proof is cheap, it should be required.

87. *Id.*

88. Quoting the Areeda & Hovenkamp treatise, the court said that under its approach "[t]o some degree, 'the defendant is made to suffer the uncertain consequences of its own undesirable conduct.'" *Microsoft*, 253 F.3d at 79 (quoting 3 AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 651c, at 78).

89. *Id.*

90. Against this argument one might say it is unfair to demand that firms justify the utility of their behavior because business executives themselves may not understand why or exactly how particular strategies work. See Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 5 (1984) ("Why do particular practices work? The firms that selected the practices may or may not know what is special about them."). This concern may be significant in some cases. The record in *United States v. Microsoft*, however, provides reason to believe that Microsoft's executives understood what they were doing and why.

The government's developer deceit theory illustrates how this approach would work. As noted above, that theory rested on the factual premise that developers actually did "unwittingly" write platform-specific programs because Microsoft set its Windows-specific tools as the default in its Java distributions.⁹¹ If that premise were true, it would not be hard to submit evidence of such mistakes. Individual developers could be deposed or subpoenaed, as market analysts are subpoenaed and deposed in the analogous context of securities litigation. Better still, numbers of developers could be surveyed about their practices. Sun submitted such a survey in its private suit against Microsoft.⁹² There is no reason such evidence could not have been gathered on the deceit issue, as well.

Such percipient evidence would be more reliable than the self-interested speculation of competitors, or the bought testimony of expert witnesses. If a plaintiff introduced evidence showing that developers were confused, a fact finder would be justified in inferring that a defendant's conduct caused market harm. The burden would rightly shift to a defendant to rebut the inference. Because such evidence would be relatively easy to get and relatively reliable, requiring that plaintiffs get it would improve the connection between liability findings and welfare losses without raising the causation bar too high.⁹³

Second, even if the D.C. Circuit has effectively created a separate standard of liability for equitable enforcement actions, courts should continue to require evidence of causation in private actions. It is one thing for the government to enjoin conduct that probably does no good and might well reduce welfare.⁹⁴ It is quite another to award treble damages and

91. See *supra* text accompanying notes 34-46.

92. See *In re Microsoft Corp. Antitrust Litig.*, 237 F. Supp. 2d 639, 649-50 (D. Md. 2002) (discussing the Sun survey).

93. These same points apply to the idea that Microsoft's "first wave" agreements caused ISVs to give up on Java. The government knows who those ISVs are, and could easily ascertain what effects those agreements had on the ISVs' Java development efforts. Because the theory assumes a reduction in such efforts, and because that point is easily proved or falsified, evidence of actual reductions should be required. If it is produced, inferences may be drawn from particular reductions to general market harm.

94. This is so even if, as was the case in *Microsoft*, much of the government's case consists of evidence from competitors grinding obvious axes and trying to piggyback on public funds to compete in the courts as well as the market. As a practical matter, however, much evidence in litigation about

injunctive relief on the ground that harm actually has been done. Private suits by competitors are fundamentally designed to rectify harm. They may be a necessary means of enforcing the antitrust laws,⁹⁵ but they are relatively less reliable as proxies for social welfare than even competitor-infested government litigation.

Sun's current antitrust suit against Microsoft exemplifies the difference. The district court in that case recently ordered Microsoft to distribute with Windows Sun's implementation of the Java Runtime Environment for Windows.⁹⁶ That order rests on the premise that "unless a preliminary injunction is entered, Sun will have lost forever its right to compete, and the opportunity to prevail, in a market undistorted by its competitor's antitrust violations."⁹⁷

The court's conclusion on this point is questionable. The same court denied Netscape's motion for summary judgment on liability on the ground that the government's suit did not establish that Microsoft's bad acts prolonged its monopoly.⁹⁸ That decision was correct. But the reasons that support denial of that motion call into question Sun's premise in the subsequent injunction proceedings which the district court accepted as sound, that "if Microsoft had not committed its anticompetitive acts directed toward thwarting the implementation of Java, current and compatible Java runtime environments would now be ubiquitous on PCs."⁹⁹

The discussion in Part I casts serious doubt on the evidence the government introduced in its case to support the same premise. It is true that issue preclusion prevents Microsoft from re-litigating facts necessary to the judgment in the government's favor, and the trial court in Sun's private

competition will come from competitors. See Herbert Hovenkamp, *Antitrust's Protected Classes*, 88 MICH. L. REV. 1, 32-34 (1989) (arguing that competitors may be in the best position to detect and complain of antitrust violations).

95. *Id.*

96. *In re Microsoft Corp. Antitrust Litig.*, 240 F. Supp. 2d 460 (D. Md. 2003).

97. *In re Microsoft Corp. Antitrust Litig.*, 237 F. Supp. 2d at 646. The Fourth Circuit later stayed the injunction pending a ruling on Microsoft's appeal. 55 Fed. Appx. 197.

98. *In re Microsoft Corp. Antitrust Litig.*, 232 F. Supp. 2d at 538-39.

99. 237 F. Supp. 2d at 646. Sun did introduce at the preliminary injunction hearing new evidence regarding the risk of market "tipping." *Id.* at 649-50. Evidence of prior harm, however, was taken from the government's case. *Id.* at 654-56.

litigation is bound by that doctrine.¹⁰⁰ Even so, however, the district court in the government's case never explicitly said that developers were actually deceived, that ISVs were actually coerced by the first wave agreements, or even that Intel's knuckling under actually hurt Sun.¹⁰¹ Judge Jackson candidly acknowledged he could not say how Sun would have done without these acts; his factual findings do not show the market distortion on which the injunction rests.¹⁰²

The D.C. Circuit's exaggeration of the district court's findings has the beneficial effect of setting a higher standard for liability in future cases than was actually met in the government's case. Litigants drawing analogies between their case and *Microsoft* will have to argue about effects the court of appeals described but which the district court did not actually find. That higher standard tightens the connection between liability and welfare, which is good news insofar as antitrust law aims at enhancing welfare. Subsequent proceedings suggest it may have the opposite effect for Microsoft.

Third, theories of causation should be neutral as among competitors. This seems an obvious point—little more than an extension of Chief Justice Warren's dictum that antitrust protects competition, not competitors.¹⁰³ It is hard to implement with innovation claims, however. Without a potential substitute technology that has been thwarted, maintenance claims are implausible. With such technology, the government must impliedly endorse a path of innovation in which substitution is likely to occur. It must treat deviations

100. *In re Microsoft Corp. Antitrust Litig.*, 232 F. Supp. 2d at 537-38.

101. *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30, 30 (D.D.C. 2000), *aff'd in part and rev'd in part*, 253 F.3d 34 (D.C. Cir. 2001); *United States v. Microsoft Corp.*, 84 F. Supp. 2d 9, 110 (D.D.C. 1999). The district court in Sun's private suit appeared to read more into the findings of fact from the government's suit than the findings actually say, no doubt in part because the D.C. Circuit did so as well. *Compare In re Microsoft Corp. Antitrust Litig.*, 237 F. Supp. 2d 639, 660 (D. Md. 2002) (stating that "in the Department of Justice action findings were made (which the doctrine of collateral estoppel bars Microsoft from challenging) that Microsoft's deception of developers about surreptitious language and development tool modifications were antitrust violations"), *with supra* text accompanying notes 30-31 (observing that the district court had not said that developers were actually deceived).

102. *Compare Microsoft*, 237 F. Supp. 2d at 654-55 (discussing the findings of fact in the government's case) *with Microsoft*, 87 F. Supp. 2d at 30; *Microsoft*, 84 F. Supp. 2d at 110.

103. *See Brown Shoe v. United States*, 370 U.S. 294, 311 (1962) ("[E]xpansion is not rendered unlawful by the mere fact that small independent stores may be adversely affected.").

from that path as undesirable, which in practice risks backing particular firms.¹⁰⁴

The government's case illustrates the point. Though it did not endorse one platform or the other as such, its Java theory essentially presumed that a world in which Sun controlled the evolution of the Java technologies was better than a world in which Microsoft "fragmented" Java by attempting to turn it into just another Windows programming tool. That assumption creates a lot of problems.

For example, Java technologies form what is essentially a translation device. Translation takes time.¹⁰⁵ Java therefore presents developers with a trade-off between writing one program that could run on any operating system, but which might run relatively slowly, or writing the program for particular operating systems.

If Java worked as advertised (as noted above, it did not¹⁰⁶), a developer writing a Java application could cover more operating systems at a lower cost than a developer who wrote the application once for Windows and re-wrote it for other operating systems. The second developer's application would run faster, however. If consumers valued speed, the second developer might have greater sales and a higher yield to his work than the first, even if the first developer's costs were lower. In the real world of imperfect cross-platform Java, "fragmenting" might offer developers an equilibrium between translation time and portability that developers might value

In addition, there are costs to allowing Sun to control Java. Microsoft's witnesses testified its extensions to the Java language might actually have improved it.¹⁰⁷ Sun never said the extensions were technically bad, only that Microsoft had added them on its own without Sun's approval.¹⁰⁸ Microsoft's acts did bypass Sun's process, thus trading off the rate of development against the degree of consensus in the development process. This point was made explicitly at trial during questioning by Judge Jackson.¹⁰⁹

104. McGowan, *supra* note 6, at 786-88.

105. See Transcript of Trial, *supra* note 34, at 23 (A.M. Session, Nov. 11, 1998) (testimony of Steven McGeedy).

106. See *supra* notes 50-55, 78-79 and accompanying text.

107. Gifford & McGowan, *supra* note 10, at 645-46.

108. *Id.* at 645. For its part, Microsoft accused Sun of acting strategically by freezing it out of the development process. *Id.* at 647.

109. Transcript of Trial, *supra* note 34, at 22-23 (P.M. Session, Dec. 10,

Is fast development better than consensus development? I doubt antitrust law can answer that question. To the extent it has anything to say, I suspect it would be based on the premise that consensus is better because it is more likely to produce cross-platform technology rather than just another Windows scripting tool. That, however, is the question to be decided by developers, not assumed as a premise of antitrust law. The government's theory of innovation was tied too closely to Sun's business plan for Java, which is a final reason why we cannot be confident that it has left us better off than we were before.

CONCLUSION

I do not wish to imply that Microsoft is the victim of injustice. Many of its actions were notionally desirable but, given its high degree of market power, potentially destructive in the real world. It played hardball in the markets, and it faced hardball in the courts. If one is skeptical of industrial policy crafted by lawyers and administered through courts, as I am, the case is not a resounding success, but neither is it the end of the world.

The Microsoft case tells us not to expect too much when antitrust and intellectual property collide. It tells us that ideology matters a lot in deciding to bring such cases, and in evaluating the results. Individual presumptions about whether markets, courts, or government do better at innovation or the allocation of resources matter, too, as do the self-confidence or risk aversion of lawyers, economists, and judges who make the predictions on which allegations are made and on which rulings rest. In these respects, I suppose, the Microsoft case tells us that antitrust cases dealing with intellectual property are like many other antitrust cases, only more so.

Are we better off than we were six years ago? Insofar as the Java aspect of the Microsoft case is concerned, there is no reason to believe we are. In part that is because there is no very good reason to believe Microsoft's conduct made us worse off than we should have been. In part it is because we do not know how the remedy will affect things, and we will not be able to measure its effects very precisely anyway. For the vast resources devoted to the case—the most significant antitrust case in a generation—one would have hoped for more.

1998) (testimony of James Gosling).