IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA,

Plaintiff,

v.

MICROSOFT CORPORATION,

Defendant.

Civil Action No:

DECLARATION OF
DAVID S. SIBLEY

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DECLARATION OF DAVID S. SIBLEY

I. Qualifications and Introduction

1. My name is David S. Sibley. I am the John Michael Stuart Centennial Professor of Economics at the University of Texas at Austin. I received the degree of B.A. in Economics from Stanford University in 1969 and a Ph.D. in Economics from Yale University in 1973. In addition to my current teaching responsibilities, I have taught graduate level courses in economics at the University of Pennsylvania and Princeton University. Prior to joining the University of Texas, I was Head of the Economics Research Group at Bell Communications Research. I have also served as a Member of the Technical Staff in economics at Bell Laboratories. During the last twenty-five years, I have carried out extensive research in the areas of industrial organization, microeconomic theory, and regulation. My publications have appeared in a number of leading economic journals, including the *Journal of Economic Theory, Review of Economic Studies, Rand Journal of Economics, American Economic Review, Econometrica*, and the *International Economic Review*, among others. I am also a co-author (with Steven J. Brown) of a leading textbook on monopoly pricing, THE THEORY OF PUBLIC UTILITY PRICING, which was first published by Cambridge University Press in 1986 and is now in its fourth printing. A copy of my *curriculum vitae* is attached to this declaration.[1]

2. I have been asked by the Antitrust Division of the United States Department of Justice to examine the competitive effects of Microsoft Corporation's ("Microsoft's") contractual restrictions (including the bundling of its Internet browser with the Windows 98 operating system) in its agreements with personal computer original equipment manufacturers ("PC manufacturers" or "OEMs"), Internet access providers ("IAPs"), and

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[1] *See* Sibley Appendix to this Declaration (hereinafter "App.") Exhibit 1.

Internet content providers ("ICPs"). In particular, I examined Microsoft's bundling and other contractual practices to determine whether these actions represent anticompetitive behavior undertaken by Microsoft to maintain a monopoly in the market for operating system software used to run Intel-compatible desktop PCs ("PC operating system market," or "OS market"). I also studied whether Microsoft's actions represent anticompetitive behavior undertaken to establish a monopoly in the market for browsers.

3. In conducting this analysis, I examined: (1) public documents and websites containing relevant information; (2) certain confidential Microsoft and third party documents supplied to me by the Department of Justice; (3) deposition transcripts of personnel from Microsoft and other companies, including OEMs, IAPs, and ICPs; and (4) relevant books and articles from the economic literature in antitrust and industrial organization.

4. In analyzing the competitive effects of Microsoft's conduct, I proceeded in three steps. Each of these steps, and the conclusions drawn from my analysis of relevant data, are summarized as follows. First, I examined whether Microsoft possesses a dominant share of the PC operating system market, and whether it has monopoly power in that market. I found that Microsoft has monopoly power because of entry barriers in a bottleneck input in computing -- the operating system. Second, I examined whether Microsoft's contractual practices affecting browser choice would be profitable on their own, regardless of its monopoly power; or, alternatively, if the profitability of its practices depended on impeding competition in the operating system and browser markets. In particular, Microsoft appears to be concerned about the potential of the browser to serve as a software applications platform that would run on operating systems other than those produced by Microsoft. I conclude that, if Microsoft were not attempting to impede this

type of competition, it would encourage the sale of all browsers (including those of its rivals), since greater browser sales would increase the demand for its operating system and increase the profit which could be obtained from users wanting to access the Internet (e.g., by increasing the price of the OS). In fact, I found Microsoft's contractual practices constrained consumers' choice of browsers, thus resulting in a diminution of profits that could most plausibly be recouped only because of competitive restraints in the OS market. Importantly, these contractual restrictions have minimal or non-existent offsetting efficiency justifications. Third, I examined whether Microsoft likely can recoup the reduction in profits resulting from its restrictive practices. I found that Microsoft is likely to recover its lost profits by blunting direct and indirect competitive threats to its OS monopoly and by gaining market power in Internet-related markets. Microsoft's restrictive practices add to the natural entry barriers associated with the OS market by inhibiting the use of competing Internet browsers as software applications platforms that are independent of any particular underlying operating system. This deters future entry into the OS market and protects Microsoft's current monopoly power.

5. An alternative line of reasoning leads to the same conclusion as that drawn from the three-step analysis described above. Because contractual agreements with OEMs, IAPs, and ICPs impose exclusionary restrictions on the use of a competing browser, Microsoft blunts the threat to its OS monopoly posed by the browser's potential as an alternative platform for software applications. Based on my review of internal Microsoft documents, these exclusionary restrictions were imposed with this threat very much in mind. Furthermore, the analysis presented below demonstrates that these restrictions have few apparent purposes aside from discouraging the use of competing browsers. These findings, as well as the three-step analysis outlined in paragraph four, lead me to conclude that Microsoft's contractual practices constitute anticompetitive behavior.

6. The development of the high-tech, computer industry has had a profound positive effect on the nation's economy and the economic welfare of all consumers. The growth of software and computer companies has accounted for almost thirty percent of the increase in gross domestic product since 1994, and it is estimated that commerce conducted over the rapidly expanding Internet will surpass $180 billion dollars annually in the beginning of the next millennium.[2] The absence of effective competition in two important segments of the software industry (PC operating systems and browsers) will not only affect the price that consumers pay for these products but, perhaps more importantly, it will also change the pattern of innovation that has characterized this dynamic industry. Innovation is a driving force in economic progress because it affects the quality of existing products in the marketplace and the development of new and better products. Actions taken to increase competition in this industry may well be among the most critical economic policy decisions facing the nation today. The artificial entry barriers erected by Microsoft (through its restrictive practices, including bundling) will have the effect of slowing or halting the natural tendency of the marketplace to provide alternative technologies, reducing the welfare of many consumers. If current trends in market share continue, the browser market is likely to tip to a Microsoft monopoly soon, eliminating the competitive threat Microsoft faces from Internet browsers that have the ability to run software applications independent

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[2] *See* International Data Corporation (1996), INTERNET COMMERCE IDC INTERNET FACT BOOK: FIRST HALF OF 1996 EDITION, p. 8. According to International Data Corporation, the latest tabulations from The Internet Society indicate that there are ten million Internet hosts, or machines connected to the Internet, a number that is predicted to grow to 120 million by the year 2000. The potential impact of electronic commerce on competition is dramatic, as described in a recent White House Report entitled A FRAMEWORK FOR GLOBAL ELECTRONIC COMMERCE, released July 1, 1997.

of any particular operating system. If this happens, the Microsoft browser may well become the bottleneck input for Internet-related markets.

II. Microsoft Has Monopoly Power in the Operating System Market

7. For the purposes of antitrust analysis, the relevant operating system market is the market for personal computer operating systems that are compatible with Intel x86/Pentium (or Intel-compatible) microprocessors. This definition is motivated by the product market definition given in the U.S. Department of Justice and Federal Trade Commission *Horizontal Merger Guidelines*, and is, in my view, consistent with accepted economic theory.[3] A proposed product market defined under the *Merger Guidelines* is accepted as correct if a price increase in the proposed market would not cause demand to shift to products outside the proposed market to such an extent as to dissuade a hypothetical profit maximizing monopolist from imposing a "small but significant and nontransitory" price increase.[4] Because I am evaluating here an allegation of maintaining monopoly power as opposed to evaluating a merger, I adopt this definition with the clarification that the initial price level prior to the price increase be a competitive price level.

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[3] U.S. Department of Justice and Federal Trade Commission, 1992 HORIZONTAL MERGER GUIDELINES, Section 1.3.

[4] The relevant geographic market is the area that encompasses firms that produce the relevant product such that the hypothetical monopolist of that product would raise the price by a small but significant amount for a nontransitory period. All firms that produce the relevant product are located in the United States.

8. In order to implement this methodology, I begin by noting that the licensing fee for the vast majority of the operating systems currently licensed by Microsoft to OEMs is approximately $65.[5] If a hypothetical monopolist were to increase price by ten percent above this level[6], this would represent an increase of no more than four-tenths of one percent in the price of a $1,500 computer. (For a $1,000 computer, the additional $6.50 represents an increase in price of no more than seven-tenths of one percent.) It seems implausible that a price increase of less than one percent would cause a significant number of buyers of PCs with Intel (or Intel-compatible) microprocessors to switch to Apple or UNIX PCs not using an x86 or Pentium chip, let alone forego the purchase of a PC entirely. Industry experts corroborate this conclusion.[7] Therefore, a hypothetical

[5] This is the per system royalty for Windows 95, MS-DOS and Windows 3.11, and MS-DOS and Windows for Workgroups. The amount does not take into account the approximately $20 discounts the OEM could receive for meeting all of the conditions specified in Microsoft's Market Development Agreement. *See*, for example, Sibley Confidential Appendix to this Declaration (hereinafter "Conf. App.") Exhibit 2, MSV 4274-4288 at 4277, Amendment Number 4 to Microsoft OEM License Agreement for Desktop and Portable Operating Systems (dated May 24, 1996) between Microsoft Corporation and Gateway 2000, Inc., Exhibit C. I note that the per system royalty fee for Windows NT Workstation is generally greater than $65 and is in the neighborhood of $130 per system. Using a $130 operating system in my analysis would not alter the conclusions presented herein.

[6] Using Microsoft's $65 licensing fee in this calculation produces a conservative (or "upper bound") estimate of the dollar increase in the price of a PC that would result from a ten percent increase in the price of an OS. That is, a competitive baseline price of less than $65 when increased by ten percent would produce a smaller dollar increase in the price of a PC.

[7]

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monopolist that was the only supplier of operating systems for Intel and Intel-compatible PCs would find it profitable to increase price by ten percent over a competitive level. The reasoning is that for an end user to switch from the Intel-based PC to an Apple computer, for example, usually requires the end user to incur substantial switching costs, in both time and money, to learn to use the different system. Moreover, as discussed below, even if the product market were more broadly defined to include desktop operating systems for all PCs, such as those offered by Apple and UNIX that do not use Intel (or Intel-compatible) microprocessors, Microsoft's market share would fall only slightly (see discussion below) and its monopoly power would remain.[8]

9. Internet browsers are in a separate relevant product market. An Internet browser is a specialized software program that allows computer users to locate, access, display and use applications located on the Internet's World Wide Web or on internal corporate computer networks known as intranets.[9] Today, a browser is the predominant conduit to the Internet and allows computer users to access and view "pages" on the World

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[8] For simplicity, this discussion has ignored retail sales of the operating system, a relatively minor distribution channel.

[9] This definition excludes so-called shell browsers, which rely on third party software that itself is marketed as a browser, typically Internet Explorer. It would be inappropriate to include shell browsers in the relevant product market because they are not substitutes for browsers such as Internet Explorer or Netscape Navigator, but, instead, rely on them.

Wide Web. Browsers constitute a separate product market because a distinct consumer demand exists for browsers, apart from operating systems, as evidenced, for example, by the many PC users who obtain the Internet browsers they use as a stand-alone product apart from the OS.[10] In fact, many corporate users purchase only an operating system and do not want a browser at all.[11] Moreover, OEMs have a separate demand for a particular

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[10] For example, a browser acquisition study performed by Microsoft indicates that fourteen percent of browsers are acquired through the OEM channel; twenty-nine percent of browsers through ISPs; twenty-five percent through "work"; thirteen percent downloaded; four percent through retail; and two percent through "s/w bundle." *See* Conf. App. Exhibit 6, MSV 10540-10577 at 10551, Kumar Mehta, IE Market Review, April 1997. In an email with the subject heading, "ie data," Kumar Mehta stated that twenty percent of home users of IE obtained it bundled with their computer, while twenty-four percent of those using it at work obtained IE bundled with their computer. *See* Conf. App. Exhibit 7, MS7 6062-6064 at 6063, Kumar Mehta, "ie data," email to Bob Foulon on March 27, 1997.

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In addition, Brad Chase, Vice President of Marketing and Development Relations in the Personal Businesses System Group at Microsoft, acknowledged that "some companies who don't want to have their users go on the Internet" have expressed a desire not to receive a browser with Windows. *See* Conf. App. Exhibit 9, Deposition of Brad Chase, dated March 25, 1998, p. 80.

See also, Conf. App. Exhibit 10, Deposition of David W. Cole, dated January 9, 1998, p. 49. Mr. Cole, Vice President of Microsoft responsible for overseeing the development of Internet technologies and the Windows users interface, stated: "we had feedback from corporate customers that wanted to prevent access to the Internet, so that when they -- they buy a new machine from a PC manufacturer they want the ability to remove easy access to the Internet so their employees, you know, aren't spending their time out on the Web doing whatever."

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browser apart from the Microsoft operating system, as evidenced by CEM's desire to remove the version of Internet Explorer ("IE") packaged with Windows 95 (with the option of replacing IE with another browser).[12]

10. The view that Internet browsers constitute a separate product market is further supported by the fact that browsers are marketed and distributed independently from PC operating systems. Significantly, Microsoft independently markets, distributes, and monitors the distribution of its Internet Explorer browser software even though it is also bundled with its Windows 95 operating system. In addition, Microsoft intends to offer a version of IE (referred to as IE 5.0) after Windows 98 is released.[13] Microsoft's marketing and distribution channels for IE provided apart from its operating system are

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[13] *See* Conf. App. Exhibit 13, Deposition of Christopher Jones, dated April 8, 1998, pp. 77 and 86-88. Jones is Product Manager of the Internet Explorer Team, Microsoft.

numerous: IE is available on the Microsoft website for consumers to "download" directly to their PCs; Microsoft has agreements with IAPs that allow them to distribute IE to their subscribers; and Microsoft sells IE as a stand-alone product at retail software outlets. Microsoft has even developed and distributed versions of the IE browser for Apple Computer's Macintosh and the Sun Solaris operating system, both non-Microsoft operating systems. Finally, Netscape, Microsoft's principal browser competitor, also distributes its browser product apart from an operating system.

11. In many software markets, including the OS market, there are fundamental forces which may lead to one firm being dominant at a given time and which tend to create barriers to entry. These forces have been widely discussed in the economics and computing literature. Very briefly, they are as follows:

> Economies of Scale. For complex software such as an OS, the initial, or first-copy, costs to writing software are often very large, whereas the incremental cost of producing additional copies is small. Hence, average cost declines as the scale of output rises.
>
> Increasing Returns in Consumption. The larger the market share of a particular OS, the more will independent software vendors ("ISVs") tend to write applications for that OS. The more this happens, the more attractive will customers find that OS, further increasing its market share, leading to more new software applications, and so forth. Thus, increasing returns in consumption induces a series of feedback effects, which tend to make a dominant OS more dominant over time.[14]

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[14] Increasing returns to consumption is often discussed as an important consequence of *network effects*. First formalized by Rohlfs, there is a network effect whenever the value to existing users of a network increases as the network expands with new users. *See* Jeffrey H. Rohlfs (1974), "A Theory of Interdependent Demands for Communications Service," *Bell Journal of Economics and Management Science*, Vol, 5., No.1, pp. 16-37. *See also* Michael Katz and Carl Shapiro (1985), "Network Externalities, Competition and Compatibility," *American Economic Review*, Vol. 75, No. 3, pp. 424-440, and Michael

Both economies of scale and increasing returns in consumption, when combined with the lock-in effect created by consumer switching costs discussed below, create natural barriers to entry.

12. Increasing returns to consumption and economies of scale give rise to a phenomenon which lies at the heart of antitrust analysis of network industries: *monopoly tipping.*[15] If a large set of users adopts a new network technology, then that technology becomes more attractive to everyone else due to increasing returns in consumption. As more users join, the technology becomes still more attractive until it becomes dominant; in economic terminology, the market has "tipped" to the new technology. Once tipping has taken place, there are forces that tend to keep the victorious technology dominant until a new, much improved product is developed; incremental improvements are unlikely to be successful. Users invest time and money in learning to use a given technology proficiently. If at some future date a still "newer" technology were to become available, potential users of the newer technology would have already incurred those learning costs on the older one. Therefore, in considering whether or not to adopt the newer technology, potential users would weigh the possible benefits of the newer technology against the switching costs of learning that technology, given that they already know the old technology. Thus, for the newer technology to succeed, it would have to offer a

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Katz and Carl Shapiro (1986), "Technology Adoption in the Presence of Network Externalities," *Journal of Political Economy*, Vol. 94, No. 4, pp. 822-841.

[15] *See*, for example, Joseph Farrell and Garth Saloner (1986), "Installed Base and Compatibility: Innovation, Product Differentiation, and Predation," *American Economic Review*, Vol 76, No. 5, pp. 940-955, and Joseph Farrell and Garth Saloner (1985), "Standardization, Compatibility, and Innovation," *Rand Journal of Economics*, Vol. 16, No. 1, pp. 70-83.

substantial improvement in performance, i.e., enough of an improvement at least to overcome the switching costs associated with the change. In the normal course of markets and competition, such improvements do, in fact, occur. An example is the displacement of slide rules with pocket calculators.

13. The economic theory of network effects describes well the performance of the OS market. As Microsoft itself has stated: "The availability of a rich variety of quality applications software that will run on a particular operating system is fundamental to its success. This fact has been recognized by publishers of operating systems for years."[16] In the computer industry, the theory of network effects is known as "positive feedback." The concept of positive feedback recognizes that as an operating system gains popularity, the incentive to develop software for that operating system grows since the number of potential customers for the application developer is larger. This, in turn, increases the value of the operating system (and likely its market share) which is determined by the quality and variety of software applications written for it. As the OS gains market share, software developers find it even more advantageous to produce additional applications for that system, and so on. As noted by Dr. Nathan Myhrvold, a Senior Vice President of Microsoft, the "positive feedback effect has been responsible for the phenomenal strength of leading software products in both applications and operating systems."[17] Dr. Myhrvold also notes that the exchange of data between computer users is facilitated by computer and

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[16] Conf. App. Exhibit 14, Confidential Submission of Microsoft Corporation to the Staff of the Antitrust Division of the United States Department of Justice, September 19, 1993 (hereinafter "Microsoft Confidential Submission"), p. 61.

[17] Conf. App. Exhibit 15, MS 154265-4279 at 154268, Nathan Myhrvold, file attachment (InterOffice Memo) to email to Bill Gates, Peter Rinearson, and Jonathan Lazarus, July 24, 1993.

computer software compatibility. He observes "the laws of positive feedback govern any system where compatibility with other users is either directly or indirectly a key factor in the utility of a product or service."[18] Positive feedback explains the importance of the number of complementary software applications and the installed base of these applications as a natural barrier to entry, and also why alternative operating systems already in the market at a small scale (such as Unix) are not effective competitors.

14. A predictable consequence of the installed base of applications is evidenced by Table One, which presents market share information for operating systems that rely on Intel x86/Pentium (or Intel-compatible) microprocessors. Microsoft's market share in each period from 1991 to 1997 holds consistently at about ninety percent.[19] Microsoft's OS dominance is stable; has hardly fluctuated in the face of determined attempts at entry by rival operating systems; and is forecast to remain stable in the future.[20]

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[18] *Id.*

[19] Shortly after the introduction of MS-DOS, IBM marketed a version of its popular electronic worksheet program, VisiCalc, which ran on MS-DOS. This applications product, together with a handful of applications software products developed for MS-DOS by Microsoft, was sufficiently popular to sustain the operating system until ISVs could bring other applications software to the market. By 1993, it was estimated that 20,000 applications software programs of various types could run on MS-DOS (*see* Conf. App. Exhibit 14, Microsoft Confidential Submission, p. 62, citing Fax from International Data Corporation to Jennifer Choate, September 10, 1993, p. 2). In 1993, there were also an estimated 5,250 applications software programs available for Windows, the operating system introduced by Microsoft in 1985 (*Id.* at 67). For the most part, those programs that operated on MS-DOS were compatible with Windows.

[20] If the product market were defined to include Apple and non-Intel-based UNIX operating systems, Microsoft's market share would have been 92% (1991), 82% (1992), 82% (1993), 84% (1994), 83% (1995), and 86% (1996). The market share data contained in Table One were obtained from reports published by International Data Corporation, a leading provider of market data in the computer industry. Microsoft's internal documents

TABLE ONE
MARKET SHARE (%) FOR INTEL-BASED OPERATING SYSTEMS SOLD WORLDWIDE

	Year [4]										
Operating System [1]	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Microsoft [2]	93	89	89	91	90	92	92	93	93	93	93
IBM OS/2	0	7	7	6	7	6	6	5	5	5	5
UNIX [3]	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other Intel	7	4	4	3	3	2	2	2	2	2	2

Notes:

[1] Operating systems used in single-user client and PC operating environment.
[2] Includes Microsoft 16-bit and 32-bit Windows and MS-DOS.
[3] Intel-based UNIX operating systems.
[4] Market shares may not total 100% due to rounding.
[5] The market shares for the years 1997-2001 are forecasts.

Sources:

International Data Corporation (1997). OPERATING ENVIRONMENTS, REVIEW AND FORECAST 1996-2001.
International Data Corporation (1997). CLIENT OPERATING ENVIRONMENTS, REVIEW AND FORECAST 1996-2001.

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contain forecasts of its share of licensed PC operating systems that are in the range of 96% to 99% for the years 1998-2001.

15. To illustrate the importance of the installed base as an entry barrier, it is instructive to review the experience of IBM's OS/2 operating system. This operating system, first released in 1987, was designed to compete with Microsoft Windows. In 1994 and 1995, IBM installed OS/2 on its own Aptiva line of computers, but retailers and consumers routinely demanded software applications that were not available on OS/2.[21] In response, IBM abandoned its practice of installing OS/2 on the Aptiva computer, choosing instead to license Windows from Microsoft.[22] Similarly, Packard Bell negotiated with IBM in 1994 to license OS/2 for preinstallation on the Packard Bell PC because Packard Bell was interested in the possible price advantage that OS/2 might offer. But, when IBM stated "in addition to our operating system you need Windows"[23] to ensure software compatibility, Packard Bell decided to license Windows from Microsoft directly and not install OS/2.

16. The importance of an installed base of applications software as an entry barrier is further demonstrated in the analysis of Mr. Joachim Kempin, Senior Vice President of OEM Sales for Microsoft. In discussing what could "derail" Microsoft's OS pricing strategy, Mr. Kempin stated:

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21 **REDACTED**

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> Our high prices could get a single OEM (Compaq might pay us 750M$ next year) or a coalition to fund a competing effort (say in India). While this possibility exists I consider it doubtful even if they could get a product out that they can market it successfully, leapfrog us and would not deviate from their own standard to differentiate. Could they convince customer [sic] to change their computing platform is the real questions [sic]. The existing investments in training, infrastructure and applications in windows computing are huge and will create a lot of inertia. No bundling of OS on low end systems would be the easiest way to hurt us – but who would want to start with this and loose [sic] business.[24]

17. Based on the above discussion, it should be clear that in markets such as OS software, certain economic forces can lead naturally to dominance by a single firm, even apart from exclusionary restrictions. (There are, of course, other countervailing factors that tend to perpetuate competition, such as product differentiation.) If a single firm does achieve dominance, these forces lead to entry barriers which protect that dominance. In themselves these facts do not warrant competitive concern. Preeminence in a market is the market's own way of rewarding excellence. Indeed, there is no reason to think that the market, left to itself, will not generate alternatives to Microsoft's operating system that will be sufficiently superior to overcome the entry barrier advantage that Microsoft enjoys. For example, in an insightful article, Evans and Schmalensee[25] point out how tipping was reversed in the case of stereo long playing record players, a technology with a huge installed base of recordings, by the CD technology, which started with no recordings at all.

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[24] Conf. App. Exhibit 17, MS7 7193-7196 at 7196, Joachim Kempin, email to Bill Gates, Steve Ballmer, and Paul Maritz, December 16, 1997.

[25] David S. Evans and Richard Schmalensee (1996), "A Guide to the Antitrust Economics of Networks," *Antitrust*, Vol. 10, No. 2, pp. 36-40.

18. The bundling and other contractual browser restrictions that Microsoft insists upon in its agreements with OEMs, IAPs, and ICPs add artificial entry barriers to those that occur naturally, and are therefore a source of competitive concern. These artificial entry barriers have the effect of slowing or halting the natural tendency of the marketplace to provide alternative technologies that compete with Microsoft. Specifically, these restrictions are currently threatening the potential of competing Internet browsers that can run software applications independently of the Windows operating system and that therefore challenge the dominance of the Windows OS. Bill Gates recognized this threat when he stated: "They [Netscape] are pursuing a multi-platform strategy where they move the key API into the client [browser] to commoditize the underlying operating system."[26] This is the subject of the next section.

III. Microsoft's Bundling and Contractual Restrictions on the Use of Competing Browsers are Anticompetitive

19. In this section, I carry out the second step of the three-stage analysis outlined in paragraph four above. After describing the browser restrictions contained in the Microsoft agreements with OEMs, IAPs, and ICPs, I analyze their competitive effects and conclude that they are likely to enable Microsoft to monopolize the browser market, thereby removing the Internet browser as a software platform that can exert competitive pressure on the OS market where Microsoft has monopoly power. I also examine possible legitimate business justifications for the browser restrictions and conclude they are likely to be minimal or non-existent, so that the main effects of the restrictions are to reduce

[26] Conf. App. Exhibit 18, MS6 5004550-4558 at 5004553, Bill Gates, email to the Microsoft Executive Committee, May 26, 1995.

profit to Microsoft from browsers and the Internet. Such practices therefore appear to make sense only in their entry-deterring effects in the OS market. Finally, I address the issue of Microsoft's distributing its browser without charge.

A. A Summary of Anticompetitive Restrictions Enforced by Microsoft on the Use of Competing Browsers

20. Table Two presents a summary of the restrictions in Microsoft agreements with OEMs, IAPs (including online service providers and Internet service providers ("ISPs")), and ICPs which have anticompetitive effects. Taken together, these constitute a powerful force against the use of non-Microsoft browsers in four main distribution channels. (Whether or not these restrictions have countervailing benefits will be discussed in Section III.B.)

21. Consider first the OEM agreements. To obtain licenses to preinstall Windows on the PC, OEMs have agreed to restrictions designed to deter them from preinstalling and promoting a competing browser. The requirement that the OEM not modify the OS software has been used to prevent OEMs from offering the OS without the IE browser. It also prevents OEMs from removing the IE icon or replacing it with the

TABLE TWO
SUMMARY OF ANTICOMPETITIVE CONTRACTUAL RESTRICTIONS AFFECTING BROWSER PROMOTION AND DISTRIBUTION

Original Equipment Manufacturer Agreements:

- May not "modify the Product software, nor delete or remove any features or functionality"
- "Shall not alter the content or sequence of the Product software 'start up,' initialization or other screens"
- No display of any screen or image to user before the "Welcome to Windows" screen has been closed
- Must not install any program to execute automatically upon initial boot
- Folders or icons added to desktop must be substantially the same size and shape as those delivered by Microsoft

Online Service Folder Agreements:

- Must "physically distribute Internet Explorer, and not any Third Party Browser" with physical distributions of its software and promotional materials unless a third party browser is requested by a customer
- Must not ship more than 15% non-Microsoft browsers in physical distributions, even upon customer request
- Must place download links to the IE download site on its website
- Limitations on the ability to place links to use/download third party browsers

TABLE TWO
SUMMARY OF ANTICOMPETITIVE CONTRACTUAL RESTRICTIONS AFFECTING BROWSER PROMOTION AND DISTRIBUTION
(continued)

ISP Internet Referral Server Agreements:

- Must not express or imply that an alternate browser is available unless specifically requested by customer
- Limitations on ISP links to use/download non-Microsoft browsers on ISP home page
- Must display IE logo on ISP home pages, along with "hot link" to Microsoft IE web page and use IE logo in promotional and packaging materials
- ISP software shipments which include a browser must include IE as the only browser shipped 75% of the time
- Discounts on referral fees for use of IE-specific technologies

Internet Content Provider Agreements:

- Must implement certain IE-specific technologies on website pages
- Must promote IE and Active Desktop and display IE logo and links to the IE web page on home page
- Must distribute IE exclusively
- Non-paid promotions or endorsements of either of the top two non-Microsoft browsers on website pages are not allowed
- Must not pay or receive payment for any Content agreement with either of the top two non-Microsoft browser companies

icon of a competing browser.[27] This requirement is exclusionary even though the OEM has the option of installing a competing browser. While it is true that OEMs may place two browser icons on the desktop, OEMs are generally reluctant to do so for two reasons. First, OEMs believe that the two icons would cause customer confusion, thereby increasing their own "customer support" costs.[28] Second, the desktop constitutes scarce real estate to OEMs. As such, OEMs are generally reluctant to preinstall more than one product in each functional category.[29]

22. Microsoft's Windows license agreements also require that the folders or icons added to the desktop must be substantially the same size and shape as those delivered by Microsoft. This requirement appears innocuous by itself, but biases browser choice since OEMs cannot remove the IE icon. An OEM that wanted to feature a competing browser, but still had to keep the IE icon on the desktop, might wish to have a larger icon for its preferred browser so as to minimize customer confusion and the resulting support calls; however, limitations on size and shape of icons prevent this and bias the OEM away from promoting or preinstalling a competing browser.

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[27] Pursuant to the Stipulation and Order, filed January 22, 1998 in the United States District Court for the District of Columbia, Supplemental to Civil Action No. 94-1564 (TPJ), Microsoft agreed to allow OEMs to remove IE using a program included with Windows 95 known as the Add/Remove utility. The Stipulation and Order will remain in effect for the duration of any existing or new OEM license to install Windows 95.

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[29] *See*, for example, Conf. App. Exhibit 11, Decker Dep., pp. 15-17.

23. Three additional OEM browser restrictions affect the initial boot and startup screen, and should be viewed as a group. OEMs cannot alter the content or sequence of screens viewed by the end user on the initial boot of the PC; OEMs cannot insert a screen or image of their own during startup; and OEMs cannot cause a non-Microsoft program to execute on the initial boot, as they could IE, for example. One effect of this set of restrictions is to make the initial boot confusing for unsophisticated users who have a PC with a rival browser preinstalled. In Windows 95, the startup screens all refer to Windows and IE so that even with another browser preinstalled, the end user cannot see any reference to it until startup is complete and the desktop appears, showing the icon of the preinstalled competing browser. More generally, these restrictions prevent OEMs from featuring another browser or an IAP that promotes a competing browser during the startup sequence prior to the Welcome to Windows screen where Microsoft promotes its own IAP business partners (see paragraph 25 below). Perhaps more importantly, the startup screen restrictions help to strengthen Microsoft's bargaining power with IAPs and ICPs. If OEMs could make their own deals directly with IAPs or ICPs and feature them on screens during the startup sequence, this would tend to devalue Microsoft's provision of access to the Windows desktop. (As I will describe below, the value of space on Microsoft's channel bar, the Online Service Folder, or the Internet Connection Wizard is what induces IAPs and ICPs to agree to Microsoft's restrictions on their use and promotion of competing browsers.)

24. Microsoft's Online Service Folder Agreements provide the three major online services and AT&T Worldnet with a highly desirable position on the Windows desktop – their Internet access software in the Online Service Folder – in exchange for agreeing to restrictions which deter them from distributing or promoting competing

browsers.[30] The agreements typically specify that an online service provider must distribute IE and not any third party browser with physical distributions of its software and promotional material unless a customer requests that third party browser. The online service provider is not permitted to ship a non-Microsoft browser with more than fifteen percent of its physical distributions of software even if more than fifteen percent of its customers were to request another browser. The online service folder agreements require that the online service provider place download links to the IE download site on its website and place limitations on a provider's ability to provide links to use and to download third party browsers. Again Microsoft's requirements make it more difficult for the end user to download a competing browser than to download IE. While the quantitative importance of this may not be large, it does require the online service provider to bias website visitors' selection of browsers.

25. Microsoft's Internet Referral Server Agreements include the ISP in a list of providers that are shown to an end user who selects his Internet access provider using a process called the Internet Connection Wizard, which is bundled with the Windows operating system. The Internet Connection Wizard can be invoked by the end user not only from the desktop but also from the Welcome to Windows screen -- that is the first screen end users see after initiating their PCs for the first time. In return for this preferential access to potential subscribers, the ISP must not express or imply to any

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potential subscriber (whether or not the subscriber was obtained from the Internet Connection Wizard) that an alternative browser is available unless specifically requested by the subscriber. The ISP must also accept limitations on links to its home page that allow users to download non-Microsoft browsers. The ISP must display the IE logo on its home page, along with a "hot link" to the Microsoft IE web page. and must use the IE logo in its promotional and packaging material. These requirements make it easier for an end user to download IE from an ISP's home page than to download another browser, thus requiring the ISP to bias its website visitors' browser choice. The Internet Referral Server Agreements typically also specify that the ISP must include IE as the *only* browser shipped seventy-five percent of the time. Thus, when more than twenty-five percent of its customers prefer another browser, an ISP is restricted from providing a third party browser to its customers even if they requested it to do so.

26. Microsoft's Internet Referral Server Agreements also provide discounts on referral fees for use of IE-specific technologies, thereby providing ISPs a financial incentive to configure their own web pages in such a way so as to reduce cross-platform threats to Microsoft's OS monopoly. For example, one of the IE-specific technologies is ActiveX controls.[31] My understanding is that ActiveX controls are generally operating system specific. That is, only Windows users can run an ActiveX control developed for Windows embedded in an ISP website. For a competing browser to support ActiveX controls would thus encourage the development of applications on the Internet that are Windows specific, thereby blunting one of the advantages of Internet browsers – the ability to run applications on any operating system.

[31] ActiveX controls are software components that can be embedded in a web page and other applications that allow a programmer to re-use the packaged functionality programmed by others.

27. The Internet Content Provider Agreements grant ICPs placement on the Channel Bar that appears on the Windows desktop.[32] In return, the ICPs must implement certain IE-specific technologies on their websites. This requirement is similar to that imposed on ISPs and has the same anticompetitive effect of reducing the cross platform threat to Microsoft's OS. The ICP agreements also specify that the ICP must promote IE and the Active Desktop, and display the IE logo and links to IE on its home page. These requirements make it easier to download IE from an ICP's home page than it is to download another browser, thus requiring the ICP to bias its customers' browser choice. The ICPs are required to distribute IE exclusively, eliminating these ICPs as a distribution channel for a competing browser. The ICP cannot provide non-paid promotions or endorsements of non-Microsoft browsers on its Web and Content pages. Nor can the ICP pay or receive payment for any Content agreement with a non-Microsoft browser company. These requirements taken together limit the possible financial gains that an ISP and a competing browser supplier could achieve by an agreement with each other.

28. As of August 2, 1996, Microsoft had signed approximately 2,500 "IE preferred" licenses with providers of access to the Internet.[33] An internal Microsoft

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[33] *See* Conf. App. Exhibit 22, Deposition of Brad Silverberg, dated April 14, 1998 (hereinafter "Silverberg Dep."), p. 143. Silverberg is former Senior Vice President of the Applications and Internet Client Group at Microsoft.

document lists the top seventy-five Internet access providers of North America by dial-up users, and the status of their Internet Explorer agreements with Microsoft.[34] According to this document, Microsoft entered into agreements that require a minimum distribution of IE as a percentage of browsers distributed with fifteen of the top seventy-five providers. These fifteen providers offered access to eighty-nine percent of the dial-up users served by the top seventy-five firms.[35] Of the top seventy-five providers, fifty-three had signed agreements Microsoft termed "IE preferred" in which IE is the "preferred and default browser" ISPs distribute to their customers.[36] These data demonstrate that Microsoft's restrictive agreements are with those ISPs that are the first point of Internet access to the majority of PC users.

29. Table Three contains market share data for the IE and Netscape Navigator browsers for the period February 1996 through February 1998. Initial versions of Internet Explorer (versions 1.0 and 2.0) were not comparable to the Netscape browser and did not capture significant share. With the release of Internet Explorer 3.0 in May 1996, Microsoft first offered browser features and quality comparable to those of Netscape, and its market share grew rapidly during the period May 1996 through August 1996. During this period, Microsoft went from the "alpha release" to the commercial release of Internet Explorer version 3.0. It was also during this period that Microsoft began to sign the

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[34] *See* Conf. App. Exhibit 23, MS6 6009919, Top North American Internet Access Providers.

[35] Included in the providers who signed minimum distribution commitments with Microsoft is AOL, which, according to Microsoft, provided access to over 45 percent of dial-up users.

[36] *See* Conf. App. Exhibit 22, Silverberg Dep., pp. 143-145. Agreements with a minimum commitment of greater than fifty percent are included in the tabulation of "IE preferred."

agreements with ISPs that contained the restrictions listed in Table Two. The ICP restrictions listed in Table Two were contained in agreements that became effective between June and September of 1997. With the release of Microsoft's Internet Explorer 4.0, its browser market share has continued to climb, to the point where its share and that of Netscape are roughly equal. As shown in Table Three, Microsoft's share of the browser market increased from three percent to four percent in early 1996, to twenty percent in early 1997, to more than fifty percent in early 1998.

TABLE THREE
INTERNET BROWSER MARKET SHARE (%)

		1996									1997							1998	
Source	Browser [/2]	FEB	APR	MAY	JUN	JUL	AUG	OCT	NOV	DEC	JAN	FEB	MAR	SEP	OCT	NOV	DEC	JAN	FEB
Zona Research [/a]	Navigator	74	87				83				70			62					
	Internet Explorer	3	4				8				28			36					
Positive Support Review [/b]	Navigator													53	46	43	43	42	40
	Internet Explorer													42	48	52	53	55	58

Notes:

[/1] Only months for which data are available are listed.
[/2] All release versions.

Sources:

[/a] Zona Research, Inc. Figures from the latest 'Browser Census.'
[/b] Positive Support Review, Inc. Figures from the 'Browser Market Study.'

30. Without doubt, Microsoft's improvements to its browser would have increased its market share even absent the restrictions described above (the restrictions were first imposed at the same time IE 3.0 was introduced). However, interviews and depositions of the representatives of OEMs, ISPs, and ICPs indicate that these restrictions had an important independent effect on Microsoft's browser market share.[37] That this

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would occur was explicitly recognized by James Allchin, Senior Vice President of Microsoft, in an email to Paul Maritz, Microsoft's Group Vice President, Platforms and Applications, entitled "IE and Windows." Mr. Allchin described his primary concern as follows:

> You see browser share as job 1. The real issue deals with not losing control of the APIs on the client and not losing control of the end-user experience. For Netscape this is synonymous with winning the browser battle. That is because they don't have Windows. We have an asset which has APIs and controls the end-user experience: Windows.
>
> I do not feel we are going to win on our current path. We are not leveraging Windows from a marketing perspective and we are trying to copy Netscape and make IE into a platform. We do not use our strength – which is that we have an installed base of Windows and we have a strong OEM shipment channel for Windows. Pitting browser against browser is hard since Netscape has 80% marketshare [sic] and we have < 20 %. I am especially worried that we don't have a long term winning strategy. I feel we are street fighting. Even if we get IE to be totally competitive with Nav/Communicator, why would [we] be chosen? They have 80% marketshare [sic]. I am convinced we have to use Windows – this is the one thing they don't have. For some reason we are in heavy copy mode against Netscape. I saw a trip report on how our booth should be changed and how we should name the components of "our client", etc. to be competitive with Netscape. This reminds me of the Novell battles. It is not

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> a long term winning strategy. We have to be competitive with features, but we need something more – Windows integration.[38]

This passage unifies the exclusionary practices presented in Table Two. The bundling of the IE browser is precisely the "integration" that Mr. Allchin describes and, as he states, its purpose was for IE to win a competitive battle with Netscape that (apparently) could not be won based on price and quality. The other restrictions perform the same role: by linking the exclusion of competing browsers to space on the desktop and in the Internet Referral Server, Microsoft's agreements with OEMs, IAPs, and ICPs perform the essential function of "leveraging" Windows.

31. Microsoft would be correct in pointing out that the anticompetitive practices in question do not remove completely the ability of final consumers to obtain rival browsers. For example, notwithstanding Microsoft's practices, it remains theoretically possible for Netscape to continue distributing its browser via download from its website. A number of consumers do obtain it in this way, though for many the greater time and expense of downloading (not to mention the nervousness of less computer-literate users who may be wary of trying to obtain their browser in this way), make obtaining the browser directly from an IAP or an OEM the preferred choice. Moreover, in those cases where an OEM has been willing to bear the added customer confusion and support costs, competing browsers can be obtained preinstalled on a PC as well. And, of course, Microsoft would be correct in pointing out that there are at least some IAPs and ICPs with which it does not have exclusionary licenses. Finally, the screen and boot-up restrictions do not present an impenetrable barrier to a consumer's ability to access

[38] Conf. App. Exhibit 27, MS7 005527-5528, Jim Allchin, email to Paul Maritz, January 2, 1996.

competing browser technologies. Nevertheless, Microsoft's practices, although they undeniably stop short of choking off all possible means by which competing browsers can be obtained, collectively amount to a strong "thumb on the scale" that significantly advantages Microsoft, disadvantages competitors, and restrains effective competition. Furthermore, in markets subject to network effects, such as those at issue here, even modest artificial advantages are capable of skewing the browser market Microsoft's way and making it significantly less likely that a competing browser will be able to weaken Microsoft's current dominant position in the OS market.

B. Are Microsoft's Restrictions on the Use of Competing Browsers Justified by Economic Efficiency Considerations?

32. At this point, I will consider possible efficiency justifications for Microsoft's browser restrictions. I will analyze these restrictions by asking two questions. First, are there any efficiency justifications that apply in this case? Second, if one does apply, could the legitimate business purpose of that restriction be served without restricting other parties' distribution and promotion of a competing browser?

1. OEM Restrictions

33. The most important OEM restriction is that the OEM not modify the operating system software as provided by Microsoft. This restriction appears justifiable to the extent that it performs a quality assurance function by prohibiting OEMs from modifying the OS in ways that undermine Microsoft's ability to provide ISVs with a consistent platform to which they can write applications. If each OEM were to modify the OS software it receives from Microsoft in different ways so as to create different versions

of Windows, ISVs might have to rewrite their applications for each version. Microsoft refers to this scenario as "balkanization" of its operating system.[39]

34. However, the desire of Microsoft to provide ISVs with a consistent applications development platform does not provide economic justification for biasing the OEMs' choice of which browser to feature. In the case of Windows 95, Microsoft itself provided the ability to remove Internet Explorer 3.0 and Internet Explorer 4.0 using an uninstall utility called "Add/Remove" supplied in Windows, presumably with the intent that such a removal feature would be used.[40] If removal would have undermined the consistency of the platform for ISVs in any meaningful way, it seems doubtful that Microsoft would have provided such a removal ability. In the case of Windows 98, it is my understanding that the ability to browse the web using IE can be removed and replaced

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[39] Having said this, it is not obvious that ISVs would have to rewrite their applications entirely. ISVs who want to rely on particular code provided by other software -- referred to as "shared-program libraries" -- typically bundle the needed shared-program libraries with their applications, because Microsoft continually releases new versions of its shared-program libraries included with the Windows operating system. *See* App. Exhibit 28, Transcript of Proceedings Before the Honorable Thomas P. Jackson, Washington D.C., on January 13, 1998 (P.M. Session), in United States v. Microsoft Corporation, et al., C.A. No. 94-1564, Testimony of Glenn Weadock, pp. 14-17.

[40] In fact, Microsoft has published articles in its "Knowledge Base," a collection of technical notes and advisories available on its website, that describe the method to remove IE from Windows 95. *See* App. Exhibit 29, Transcript of Proceedings Before the Honorable Thomas P. Jackson, Washington D.C., on January 13, 1998 (A.M. Session), in United States v. Microsoft Corporation, et al., C.A. No. 94-1564, Testimony of Glenn Weadock, pp. 52-58. *See also*, App. Exhibit 30, Microsoft Knowledge Base Articles, "How to Uninstall Internet Explorer 4.0," "Removing Internet Explorer 4.0 for Windows 95 Using Ieremove.exe," "How to Manually Uninstall Internet Explorer 4.0," and "Solving Problems Installing or Uninstalling Internet Explorer 4.0", http://premium.microsoft.com/isapi/support/apgts/apgts.dll.

with a competing browser in such a way that the consistency of the Windows platform for ISVs would not be frustrated in any appreciable manner.

35. Nor can the restriction be justified in the case of Windows 98 by Microsoft's claim that IE and Windows 98 are integrated in a manner designed to give users a superior integrated browsing experience from the Windows desktop to the Web. It is my understanding that a comparable browsing experience can be achieved by the combination of Windows 98 and a competing browser. Furthermore, even if this were not true, restrictions on the use of competing browsers would be unnecessary because end users would select the integrated Microsoft product of their own volition, if it were superior.

36. The anticompetitive effects of the screen restrictions were discussed above in paragraphs 22 and 23. One possible reason for these restrictions is that they prevent OEMs from obtaining referral fees from IAPs through an OEM-sponsored ISP referral server (similar to Microsoft's ISP referral server) presented to the end user during the initial boot. My impression, based on Microsoft documents, is that this motive is a minor one.[41] In any case, given its OS monopoly, Microsoft could probably recapture such referral fees by charging an OEM for the right to insert its own screens or alter those provided by Microsoft during startup. Restrictions that tilt the scales against competing browsers are not essential to Microsoft's retention of IAP referral fees that might otherwise go to OEMs.

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[41] For example, Cameron Myhrvold, Vice President of the Internet Customer Unit at Microsoft, stated that Microsoft's "Referral server doesn't even pay for itself, much less generate any profits . . . ." *See*, Conf. App. Exhibit 31, Deposition of Cameron Myhrvold, dated April 24, 1998, p. 137.

37. A second possible justification for the screen restrictions is that there may be marketing or quality benefits to be obtained from keeping the Windows startup sequence and desktop uniform across all users, regardless of whose PC the end user is buying. For example, Microsoft devotes resources to ensuring that there are no failures during the initial boot. If OEMs were allowed to put in their own screens and change the icons on the desktop, it is conceivable that this could, for example, result in a longer initial boot-up process or increased confusion to consumers which could reflect poorly on Microsoft. This is a variation on the ISP balkanization argument discussed above but applied to end users.

38. As an initial matter, replacement of the IE icon with the icon of a competing browser would not appear to interfere with any marketing or quality benefits associated with uniformity of the startup sequence and the desktop screen. In fact, the screen restrictions as applied to Windows 98 support this view since Microsoft does permit the OEM to add items of any shape and size to the desktop screen if the OEM turns on the Active Desktop as the default configuration on its PCs. I therefore see no legitimate business interest in Microsoft requiring OEMs to limit the size and shape of additional folders and icons on the desktop.

39. Potentially, the balkanization argument is more significant in the case of OEMs inserting their own screens highlighting a competing browser or an ISP service that promotes a competing browser prior to the desktop screen because more significant changes in the appearance and startup sequence of Windows could result. Therefore, although these startup sequence restrictions probably have some anticompetitive effects, legitimate business justifications may be important. On balance, I consider the anticompetitive effects of these restrictions to outweigh concerns about balkanization of

the startup sequence. I base this judgment on the fact that Microsoft has negotiated exceptions to these startup sequence restrictions with OEMs.[42]

2. Browser Restrictions for ISPs, ICPs and Online Services

40. Collectively, these browser restrictions are remarkably uniform in their focus on promoting IE and discouraging the use of competing browsers. One possible justification for these restrictions could be that Microsoft and its Internet partners are engaged in joint marketing of their respective products. Microsoft offers promotional facilities on the desktop, and the IAPs and ICPs promote Microsoft on their web pages and Microsoft technologies with their services. The anticompetitive browser restrictions, it might be argued, perform the necessary function of limiting *ex-post* opportunism,[43] without which the joint marketing might not take place. For example, an Internet partner, such as an ICP, could get top billing on the Microsoft desktop but would then look for a

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[42] *See*, for example,

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Conf. App. Exhibit 34, Deposition of Joachim Kempin, dated March 18, 1998, pp. 59-61. *See also*, Conf. App. Exhibit 35, MSV 0000726-744 at MSV 0000738, Microsoft OEM License Agreement for Operating Systems #2811-5180, dated July 1, 1995, with Dell Computer Corporation; Conf. App. Exhibit 36, MSV 0000411-413 at MSV 0000412, Microsoft OEM License Agreement for Desktop Operating Systems with Packard Bell Electronics, Inc., Amendment 1, Addendum to Exhibit C1, May 1, 1996.

[43] *Ex-post* opportunism arises when one party to a proposed transaction must make an investment with no alternative use for the transaction to occur. That party might be concerned that the other party will behave opportunistically once the investment is made and refuse to share the cost of that investment. In such a setting, the first party might reasonably require a highly restrictive agreement governing the other party's *ex-post* behavior. *See* Oliver E. Williamson (1985), THE ECONOMIC INSTITUTIONS OF CAPITALISM: FIRMS, MARKETS, RELATIONAL CONTRACTING, Free Press.

similar deal on the channel bar of a competing browser in return for allowing that competitor to advertise on the ICP's web pages, too. From the standpoint of economic efficiency, though, anticompetitive restrictions such as these are justifiable only if there is no obvious alternative that is less anticompetitive. In this case, the restrictions are not reasonably necessary for the joint marketing to occur. The reason is that it is in Microsoft's interest to continue this joint marketing whether or not the Internet partner also deals with a competing browser vendor in the same way.

41. To see this, suppose that the Internet partner does joint marketing with a competitor in the browser market. What is Microsoft's best response? If it does not allow the Internet partner access to the Windows desktop, Microsoft leaves the competing browser as the only means by which an end user can be a customer of that IAP or ICP. If the IAP or ICP is of any importance, Microsoft would still want it on the Windows desktop in order to boost the use of IE. Similarly, because Microsoft has an OS monopoly, it is to the advantage of the IAP or ICP to allow Microsoft to advertise on its Web pages and install links to Microsoft's own Web pages, etc. Thus, I would expect that the joint marketing activities between Microsoft and its Internet partners would continue in the absence of the browser restrictions. Indeed, Microsoft has voluntarily dropped some of these restrictions, which appears inconsistent with a claim that they are necessary for joint marketing. This being so, the restrictions cannot be justified as a means of deterring *ex-post* opportunism by Microsoft's Internet partners.

42. A second justification sometimes given in the economics literature for certain types of exclusionary restrictions is that they can facilitate usage metering and thereby make possible efficient price discrimination. In this case, there seems to be no such metering function that is related to pricing and is facilitated by excluding competing

browsers. A third type of justification in the literature is that exclusionary restrictions may be needed to maintain quality control. For this justification to apply, the use of a rival browser with Windows would somehow degrade the operation of Windows. To my knowledge, Microsoft often points out how well rival browsers such as Netscape Navigator works with Windows 95.[44] (As pointed out above, if the technical integration of the browser with the OS in Windows 98 is required in order to provide seamless and efficient operation, then exclusionary restrictions would be unnecessary.)

43. The discussion in this section and in the preceding section demonstrates three main points. First, the exclusionary restrictions heavily bias end users' choices towards IE and away from competing browsers. Second, absent these restrictions, many end users would have been offered a competing browser by their OEM, IAP, or ICP. Third, these restrictions have little apparent business purpose besides being anticompetitive regarding a competing browser's cross platform role. These points by themselves would lead me to conclude that Microsoft's browser restrictions are intended to reduce competition to its OS monopoly. There is, however, an additional line of reasoning which leads to the same conclusion. This is the subject of the next section.

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[44] *See* Conf. App. Exhibit 37, Microsoft's Answers to Interrogatories, Civil Investigative Demand No. 18140, Response to Interrogatory No. 1, p. 5; App. Exhibit 38, "Overview of Section 2 of the Sherman Act and its Application to Microsoft," Charles F. Rule, http://www.microsoft.com/corpinfo/doj/rickrulewp.htm.

C. Would Microsoft's Contractual Restrictions be Profitable but for Their Effects in Impeding Competition in the OS Market?

44. At this point, I turn to the question of whether the restrictions just described are aimed solely at expanding Microsoft's profit in Internet-related markets by increasing IE browser usage, or whether they are undertaken to impede competition in the OS market. To analyze the full economic effects of these restrictions, I rely on the main finding of Section II, that Microsoft has monopoly power over a bottleneck input in computing -- the operating system. In this setting, browsers are complementary to the bottleneck input, and the restrictions described above tend to exclude competing browsers from being used with Microsoft's dominant OS. This paradigm, a monopoly with alleged exclusionary practices in a complementary market that it also services, has been analyzed by a number of economists and antitrust scholars.[45] The general conclusion from this body of work is that if the price level in the complement's market is limited by competitive forces, then in the absence of efficiency justifications such as those discussed above, the monopolist's control over the bottleneck input does not give it any profit incentive to restrict or exclude a competitor's product in the complement's market. The reason is that control over the bottleneck input allows the monopolist to extract value from consumers no matter whose version of the complementary good the consumer buys.

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[45] For a discussion of the monopolist's incentive to exclude a competitor's product in a complementary market (and the efficiency justifications for tying) see, for example, Aaron Director and Edward Levi (1956), "Law and the Future: Trade Regulation," *Northwestern University Law Review*, Vol. 51, pp. 281-296; Robert H. Bork (1978), THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF, Basic Books: New York; and Richard A. Posner (1976), ANTITRUST LAW: AN ECONOMIC PERSPECTIVE, Chicago, IL: University of Chicago Press. For a discussion of the case in which the anticompetitive tying can be profitable, *see* Michael Whinston (1990), "Tying, Foreclosure, and Exclusion," *American Economic Review*, Vol. 80, No. 4, pp. 837-859.

45. Applied to the case at hand, the bottleneck input is Microsoft's OS and the complementary product is the browser. Profits earned from browsers come not from the browser software itself, which is generally offered free to end users at the current time, but from Internet-related businesses engaged in by Microsoft, such as referral fees from IAPs and advertising revenue from the Microsoft website. Potentially, revenue could also come from the sale of desktop space to IAPs.

46. The analysis of Microsoft's restrictions involves several steps. Assume, for the sake of argument, that Microsoft markets a "better" browser than any of its rivals. For example, suppose hypothetically (and contrary to my previous analysis) that the integration of IE with the OS could provide a more "seamless" experience than would the use of another browser. In that case, the bundle of Windows and Internet Explorer would create more value for the end user than would Windows with a competing browser. Given its dominant position in the OS market, Microsoft could extract higher value in the form of profits, whether through a higher royalty for the OS software, through raising customer referral fees paid by ISPs to Microsoft, or by charging IAPs and ICPs for space on the Windows desktop (other methods are doubtless possible, as well). Under these assumptions, absent anticompetitive motives, if IE is superior to competing browsers, Microsoft would have no need to impose contractual restrictions to encourage the use of IE.

47. Now suppose that a competing browser is superior to IE. In this case, it might well seem that Microsoft would gain by imposing exclusionary restrictions against the users of competing browsers. However, the economic logic described above applies in this case, as well. If the combination of Windows with a competing browser did provide more value to the user than bundling Windows with IE, Microsoft's bottleneck OS

monopoly would allow it again to extract this value through a higher OS royalty (or by one of the other means described above), even though the increase in consumer value came from another company's browser and not its own.

48. The evidence establishes, however, that Microsoft has put in place contracting restrictions that indeed had force and constrained licensees of various versions of Windows from offering Netscape Navigator in circumstances where they wished to do so.[46] Making the reasonable assumption that OEMs, IAPs and ICPs who wanted to offer Navigator wanted to do so because it would provide value to their customers, Microsoft's restrictions prevented end users from obtaining this additional value. Microsoft could have extracted this additional value from consumers (or OEMs, IAPs and ICPs), but chose not to in order to obtain the restrictions. In economic terms, Microsoft has incurred an *opportunity cost* by foregoing the additional value it could have extracted from consumers (or OEMs, IAPs, and ICPs). An example of the foregone value it could have obtained is the provision of free space on its Channel Bar to ICPs who were willing to pay a positive price for placement on the Channel Bar as evidenced by deals Netscape struck with a number of ICPs for placement on the Netcaster Channel Bar.[47]

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[46] *Supra* footnote 37.

[47] *See* Conf. App. Exhibit 37, Microsoft's Answers to Interrogatories, Civil Investigative Demand No. 18140, Response to Interrogatory No. 6, pp. 22-23.

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49. Why would Microsoft incur the opportunity cost of these restrictions? In my view the economic rationale is that it is attempting to preserve its OS monopoly. This behavior is easy to understand once we take account of the competitive threat to Microsoft's operating system monopoly by the competitive browser platform. The threat of Netscape's browser to Microsoft's OS dominance has been known for some time and has been described by Microsoft's Steve Ballmer:

> If I wanted to compete with Microsoft, I wouldn't say 'Oh yeah, let's try to write a better memory manager, and we'll have lighter-weight threads than they do.' In this day and age it's not sexy enough, and there's no user interface. The OS/2 experience proves full well the value of that. I would do what Netscape is doing. I'd say I'll build on top of [Windows] and I'll take their future away from them.[48]

More recently, Microsoft's James Allchin stated: "The goal, the stated goal of Netscape was to replace the user interface of Windows where you couldn't see it and to create a new set of APIs that developers would write to."[49] When asked how Netscape could threaten Windows and the sales of Windows, Mr. Allchin stated: "You get developers to write the APIs, you cover up Windows, you've just got this layer running on top, and if the size, performance was acceptable, it becomes irrelevant. Windows becomes irrelevant."[50]

50. Because the browser can serve as a software applications platform independent of the underlying OS, a new entrant in the OS market would not have to

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[48] *See* App. Exhibit 40, *Microsoft VP Steve Ballmer Speaks*, C/NET News, May 10, 1996 (http://www.news.com/SpecialFeatures/0,5,1300,00.html).

[49] *See* Conf. App. Exhibit 41, Deposition of James Allchin, dated March 19, 1998, p. 120.

[50] *Id.*, at 121.

create an installed base of software applications complementary to its OS and comparable to Microsoft's in its size and use in order to succeed. Developers would no longer have to incur the extra cost of rewriting software to be "ported" to the new OS. Instead, these applications written to the browser platform (perhaps using Sun Microsystems' Java programming technology[51]) would be accessible to a user using any OS that supported that browser. This would reduce both the installed base entry barrier and the switching costs entry barrier in the OS market. Therefore, I conclude that Microsoft's browser restrictions are likely to have the effect of weakening a potential competitive threat to its dominant position in the OS market.

51. Moreover, Microsoft could obtain an additional benefit if these restrictions force major browser vendors to leave the market. The browser market could tip to monopoly, and entry barriers are likely to arise naturally, much as they do in the OS market. Thus, the browser market and associated Internet markets will become less competitive. With IE dominating the browser market, websites will tend to be written to the IE technology. This will induce more end users to switch to IE, increasing software developers' incentives to build websites around IE. As this occurs and as end users incur the sunken adjustment costs to IE, the natural entry barrier of installed base (of websites and other technology) and switching costs will act to give Microsoft market power for Internet services. Thus, in the long term, Microsoft will have the opportunity to benefit from a less competitive market structure in the Internet just as it has in the OS market.

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[51] The Java technology allows software written in the Java programming language to run on any system, regardless of the operating system and the underlying hardware. Browsers that are Java enabled can execute programs written in Java. In this way, a browser can serve as an effective software platform for Java applications, regardless of the underlying operating system.

52. An important part of the exposition in this section is the conclusion reached in paragraphs 45 through 47, that if these restrictions were aimed solely at expanding Microsoft's profits in Internet-related markets by increasing IE browser usage, it could do better by capturing such profits through the price of its OS, or through selling Internet products tied to the OS (such as desktop space and ISP referral fees). The implication is that these restrictions serve an anticompetitive purpose. However, as stated in paragraph 42, my conclusion that these restrictions are anticompetitive does not depend solely on the framework presented in those paragraphs. There are three additional reasons why I regard Microsoft's browser restrictions to be anticompetitive. First, by restricting the use of competing browsers, Microsoft automatically blunts the threat to its OS monopoly that is posed by the browser's potential as an alternative platform for software applications. Second, the internal Microsoft sources cited above make it clear that OEM, IAP, and ISP restrictions described earlier were imposed with this threat very much in mind. Third, the discussion in Section B above demonstrates that the restrictions listed in Table Two have little apparent purpose aside from their anticompetitive effects.

D. What are the Effects of Microsoft's Giving Away Its Browser?

53. The discussion above demonstrates that the intent and effect of the contractual restriction is predominately anticompetitive. An additional Microsoft practice of considerable importance in light of these anticompetitive effects is that of distributing its browser without charge. This practice has forced Netscape to reduce its browser price to zero and has apparently cut into Netscape's revenue stream considerably. I will now analyze the effects of Microsoft's distributing its browser without charge, taken in the context of the anticompetitive non-price restrictions described above.

54. The starting point for discussing pricing is cost. For a software product like a browser, the vast majority of costs are first-copy costs, i.e., the cost of developing the product. Given that the product has been developed, additional costs related to volume of output are low, consisting mainly of packaging, marketing, and distribution costs. Therefore, a zero browser price certainly does not recover any of the first-copy costs, although the extra, or "marginal," cost of an additional browser may well be close to zero. Hence, Microsoft has priced the browser in such a way that it cannot recover the cost of the browser from the browser market itself.

55. Furthermore, there are significant interactions between zero pricing of the browser and the non-price restrictions analyzed above. For example, by bundling IE with Windows 98, Microsoft ensures that many end users will decide just to go with IE due to convenience, since there is a nontrivial amount of effort involved to download and install another browser after the end user's initial boot of the PC. Because Microsoft does not offer a cheaper version of the OS without IE installed, the zero price of IE simply reinforces the convenience of buying a PC with IE preinstalled. Therefore, zero pricing reinforces the anticompetitive effects of the OEM license requirement that IE cannot be uninstalled. The agreements with certain on-line service providers, ISPs, and ICPs all have elements which make it onerous to use a non-Microsoft browser when attempting to access websites based on IE technology or which do not support non-Microsoft browsers. Zero pricing adds a strong additional inducement for such distributors to go with IE.

56. Microsoft's decision to integrate the IE browser with the Windows 98 operating system suggests the browser is not just free now, but "forever" free, as long as Windows 98 is used. In effect, Microsoft has made a binding, credible commitment to a

free browser. That being true, for a rival to enter or remain in the browser market, that rival must be able to support a free browser with revenue from other sources. Even if Microsoft chooses not to maintain a forever free policy by bundling IE and Windows 98, consumers may form the expectation that such a policy will continue, causing the market to "tip" in its favor more rapidly.

57. It is possible as a matter of theory that (possibly temporarily) free distribution of browsers could be justified without anticompetitive concern, as a penetration policy designed to expand Internet markets. However, given the forever free commitment on the browser price, if the browser market "tips" easily, then if Microsoft drives rivals from the browser market, entry barriers will arise, some as a result of network effects, and some due to Microsoft's contractual restrictions concerning the use of non-Microsoft browsers. At that point, Microsoft can raise the price of its OS, the bottleneck input, so as to exploit this extension of its monopoly power.[52] Alternatively, it could increase referral fees from IAPs, or begin to charge for space on the desktop. In the end, as others have observed, "there is no free browser."[53]

IV. Microsoft Will Recoup the Opportunity Costs of its Contractual Restrictions by Maintaining its Operating System Monopoly

58. In the preceding discussion, I have established two points. First, Microsoft has monopoly power in the market for OS that is protected to a considerable degree by

[52] *See* Michael Whinston (1990), "Tying, Foreclosure, and Exclusion," *American Economic Review*, Vol. 80, No. 4, pp. 837-859.

[53] *See* Irwin Stelzer, "Why Janet Reno vs. Bill Gates is Good for Capitalism: In Praise of Antitrust Law," *The Weekly Standard*, December 1, 1997.

natural entry barriers (such as switching costs and increasing returns to scale in consumption) and by the artificial entry barriers created through its contractual policies regarding competing browsers. Second, Microsoft has adopted contractual restrictions with OEMs, ISPs, and ICPs which have a positive opportunity cost, but seem likely to remove competing web browsers from their potential role as a platform for software applications which would run on computers independently of the underlying operating system. Such a platform would "commoditize" Microsoft's Windows operating system, as applications no longer would be specific to a given OS.

59. Because the likely effect of Microsoft's contractual restrictions will be to remove the competitive threat to its operating system, Microsoft will likely recoup whatever profits it has foregone from ICPs and IAPs due to its browser restrictions. These restrictions are profitable overall because they will help to ensure Microsoft's immensely profitable OS business is without any serious competition for some time to come. Therefore, I find it likely that Microsoft would recoup the lost profits associated with its restriction through higher profits earned on its OS than if those restrictions were not imposed.

60. In reaching this conclusion, I do not need to rely solely on my own analysis. Microsoft's senior executives have made it clear in documents cited above that they consider the browser platform threat to be serious and that their contractual restrictions regarding competing browsers are intended to tie any user benefits from these technologies back to the use of Windows. The company's actions have been entirely consistent with this concern. Clearly, in Microsoft's own calculations, the benefits from protecting its OS monopoly outweigh the opportunity costs of the restrictions that I have analyzed.

V. Conclusions

61. I have concluded that the Microsoft contractual restrictions that I have analyzed are anticompetitive for four main reasons:

- The restrictions have reduced Microsoft's short-run profits below what could have been achieved, were it not for the anticompetitive goal of diminishing the threat to its OS monopoly that was posed by the browser as a competing alternative software platform;
- Microsoft appears able to recoup this foregone profit due to natural barriers to entry in the OS market together with the artificial entry barriers made possible by these restrictions;
- Microsoft has successfully restricted the use of competing browsers with the explicit goal of removing them as a competitive threat to its OS monopoly;
- The browser restrictions that I have listed in this declaration appear to have no important legitimate purposes to offset their anticompetitive effects.

62. What would be the consequence to consumers if Microsoft's bundling and restrictive practices enabled it to maintain its OS monopoly and create a monopoly in the market for browsers? Consumers would be harmed in two significant ways. First, virtually all consumer and business users would pay prices for personal computers higher than those that would exist in a competitive market. Given the increased reliance on personal computers both at home and in the work place, even a small increase in price would create substantial economic welfare losses. Second, and perhaps more importantly, innovation in areas that threaten Microsoft would be inhibited. This could potentially have significant adverse consequences for the pace and direction of innovative activity in the software industry.

63. How is it that Microsoft's anticompetitive behavior, aimed at maintaining its dominance, could adversely affect the type and extent of innovation in the computer software industry? As a general proposition, firms invest in research and development only if they expect to earn, at a minimum, a competitive rate of return, that is, a return equal to that obtained on an investment of comparable risk. To the extent that Microsoft's anticompetitive practices make it that much more difficult for an innovator to prove successful in markets where Microsoft currently dominates, independent innovative activity that might otherwise have been profitable may not be. At the extreme, if Microsoft's practices were to erect an insurmountable barrier to successful entry in its core monopoly markets, independent third party innovation in these markets would be less likely, and the prospects for technical advance in these markets would rely solely on the efforts of Microsoft itself. While it does not seem likely that Microsoft's practices will have quite so extreme an effect, it remains the case that innovative activity is likely to be skewed inefficiently, as firms seek to "invent around" the Microsoft bottleneck, rather than compete directly against it.

64. Beyond any adverse effect on innovative effort in the PC operating system market itself, Microsoft's practices threaten also to deter efficient innovative activity aimed at developing technologies complementary to its operating system (such as Internet browsers). As discussed earlier in this declaration, and as recognized in much of the economics literature, even firms with monopoly power generally have an incentive to encourage the development and success of products complementary to their own. All else equal, this tends to enhance the value of the dominant firm's product. However, where the development of such products and technologies has the potential eventually to threaten the dominant firm's market power, for example, by creating a computing environment in which application software would work regardless of which operating system was installed

on the user's computer, the deterring of efficient innovation in this area could be in the self-interest of Microsoft.

65. In sum, Microsoft's actions are likely not only to affect the prices consumers pay for products over which Microsoft has monopoly power, but also to affect adversely the path of innovation in the computer software industry. The artificial entry barriers erected by Microsoft (through bundling and its other restrictive practices) will have the effect of impeding the natural tendency of the marketplace to provide improved and alternative technologies that compete with Microsoft's OS monopoly, reducing the welfare of society as a whole.

I declare under penalty of perjury that the foregoing is true and accurate. Executed on May 15, 1998 in Austin, Texas.

David S. Sibley

David S. Sibley

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, Plaintiff, v. MICROSOFT CORPORATION, Defendant.	Civil Action No:

APPENDIX TO DECLARATION OF DAVID S. SIBLEY

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Teaching Fields:

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Research Fields:

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Professional Experience:

March, 1992 - Present: John Michael Stuart Centennial Professor of Economics, University of Texas at Austin.

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September, 1983 - August, 1991: Research Manager, Bell Communications Research, Morristown, NJ. Head of Economics Research Group.

September 1981- September 1983: Member of Technical Staff, Bell Laboratories, Murray Hill, NJ.

September 1980 - September 1981: Adviser to the Chairman of the Civil Aeronautics Board.

January 1980 - September 1980: Consultant, Civil Aeronautics Board, Washington, D.C.

September 1978 - January 1980: Senior Staff Economist, Council of Economic Advisers, Executive Office of the President, Washington, D.C.

October 1973 - September 1978: Member of Technical Staff, Bell Laboratories, Holmdel, NJ.

Teaching:

September 1991 - Present: Introductory Microeconomics, undergraduate and graduate Industrial Organization.

Fall 1989: Visiting Lecturer, Woodrow Wilson School of Public and International Affairs, Princeton University. Graduate course in regulation and public choice.

September 1983 - December 1983: Adjunct Lecturer in Economics, University of Pennsylvania. Graduate course on regulation.

Publications:

A. Journal Articles:

"A Note on the Concavity of the Mean-Variance Problem," *Review of Economic Studies*, July 1975.

"Permanent and Transitory Income Effects in a Model of Optimal Consumption with Wage Income Uncertainty," *Journal of Economic Theory*, August 1975.

"Optimal Foreign Borrowing with Export Revenue Uncertainty," (with J. L. McCabe), *International Economic Review*, October 1976.

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"Optimal Non-Uniform Pricing," (with M. B. Goldman and H. E. Leland), *Review of Economic Studies*, April 1984.
"Reply to Lipman and Further Results," *International Economic Review*, June 1985.

"Public Utility Pricing Under Risk: A Generalization," *Economics Letters*, June 1985.

"Optimal Consumption, the Interest Rate and Wage Uncertainty," (with D. Levhari), *Economics Letters*, 1986.

"Regulating Without Cost Information: The Incremental Surplus Subsidy Scheme," (with D. M. Sappington), *International Economic Review*, May 1989.

"Optimal Two Part Tariffs for Inputs," (with J. C. Panzar), *Journal of Public Economics*, November 1989.

"Asymmetric Information, Incentives and Price Cap Regulation," *Rand Journal of Economics*, Fall 1989.

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"Ex Ante vs. Post Pricing: Optional Calling Plans vs. Tapered Tariffs," (with K. Clay and P. Srinagesh), *Journal of Regulatory Economics*, 1992.

"Optimal Non-linear Pricing With Regulatory Preference over Customer Types," (with W. W. Sharkery), *Journal of Public Economics*, February 1993.

"A Bertrand Model of Pricing and Entry," (with W. W. Sharkey), *Economics Letters*, 1993.

"Regulatory Incentive Policies and Abuse," (with D. M. Sappington), *Journal of Regulatory Economics*, June 1993.

"Multiproduct Nonlinear Prices with Multiple Taste Characteristics," (with P. Srinagesh), *Rand Journal of Economics*, Winter 1997.

"The Competitive Incentives of Vertically-Integrated Local Exchange Carriers: An Economic and Policy Analysis," (with D. L. Weisman), *Journal of Policy Analysis and Management*, Winter 1998.

"Raising Rivals' Costs: The Entry of a Upstream Monopolist into Downstream Markets," (with D. L. Weisman), *Information, Economics and Policy* (forthcoming).

B. Reports and Articles in Conference Volumes, and Other Publications

"The Dynamics of Price Adjustment in Regulated Industries," (with E. E. Bailey), in *Proceedings of IEEE Conference on Systems Control*, 1974.

"Optimal Non-Uniform Pricing for Electricity: Some Illustrative Examples," (with R. W. Koenker), in Sichel (ed.) *Public Utility Ratemaking in an Energy-Conscious Environment*, Praeger, 1979.

"Antitrust Policy in the Airline Industry," (with S. B. Jollie), Civil Aeronautics Board, October 1982. Transmitted by the CAB to Congress as part of proposed sunset legislation.

"Deregulation and the Economic Theory of Regulation," (with W. W. Sharkey), in *Proceedings of the Eleventh Annual Telecommunications Policy Research Conference*, 1983.

"An Analysis of Tapered Access Charges for End Users," (with W. E. Taylor, D. P. Heyman and J. M. Lazorchak), published in *the Proceedings of the Eighteenth Annual Williamsburg Conference on Regulation*, H. Treeing (ed.), Michigan State, 1987.

Report to the Governor, The Task Force on Market-Based Pricing of Electricity. Co-authored with D. M. Sappington, Appendix III.

"Optional Tariffs for Access in the FCC's Price Cap Proposal," (with D. P. Heyman and W. E. Taylor), in M. Einhorn (ed.), *Price Caps and Incentive Regulation in the Telecommunications Industry*, Kluwer, 1990.

"Optional Two-Part Tariffs: Toward More Effective Price Discounting," (with R. Rudkin) in *Public Utilities Fortnightly*, July 1, 1997.

C. Books:

The Theory of Public Utility Pricing, (with S. J. Brown), Cambridge University Press, 1986. Second printing 1986. Third printing 1989. Revised edition planned.

Co-editor of *Telecommunications Demand Analysis: An Integrated View*, North-Holland, 1989.

Completed Papers:

"Incumbency and Bidding Behavior in the Dallas-Ft. Worth Milk Market," (with C. Hewitt and J. T. McClave), submitted to *Southern Economic Journal*.

"An Economic Framework for Estimating Stranded Costs and Implementing a System of Recovery through Competitive Transition Charges," (with M. J. Doane, M. A. Williams, and P. W. MacAvoy), submitted to *Contemporary Policy Issues*.

"Pricing Access to a Monopoly Input," (with M. J. Doane and M. A. Williams), submitted to *Journal of Public Economic Theory*.

Current Research Areas:

Telecommunications policy, especially access pricing and optional tariff design.

Design of incentive mechanisms.

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Editorial Duties:

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Other Professional Activities:

Consultant to the Governor of New Jersey's Task Force on Market-Based Pricing of Electricity.

Referee for National Science Foundation and numerous professional journals.

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May 1998

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

- - - - - - - - - - - - - - - - -x

UNITED STATES OF AMERICA,

PLAINTIFF,

V.

MICROSOFT CORPORATION, ET AL.,

DEFENDANTS.

C.A. NO. 94-1564

- - - - - - - - - - - - - - - - -x

WASHINGTON, D.C.
JANUARY 13, 1998
(P.M. SESSION)

TRANSCRIPT OF PROCEEDINGS
BEFORE THE HONORABLE THOMAS P. JACKSON

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Q. NOW, WHAT HAPPENS TO THIS OSR 2 VERSION OF WINDOWS 95 IF THE USER DELETES ALL THE FILES THAT MAKE UP IE 3.0 AND THE RETAIL CHANNEL?

A. WHEN WINDOWS 95 BREAKS, IT WON'T WORK ANYMORE.

Q. AND WHY DOES THIS HAPPEN?

A. WELL, BECAUSE IF YOU WERE TO FOLLOW THAT PROCEDURE, YOU WOULD HAVE TO DELETE SHARED-PROGRAM LIBRARIES; THAT IS, FILES THAT ARE RELIED UPON BY WINDOWS 95 FOR ITS VERY OPERATION.

Q. COULD YOU TELL US MORE GENERALLY WHAT IS A SHARED-PROGRAM LIBRARY.

A. YES. A SHARED-PROGRAM LIBRARY IS A COLLECTION OF SOFTWARE CODE THAT IS RELIED UPON AND USED BY MULTIPLE OTHER APPLICATIONS AND, IN SOME CASES, BY THE OPERATING SYSTEM AS WELL.

Q. AND DOES WINDOWS 95, THEN, RELY ON SHARED-PROGRAM LIBRARIES?

A. YES, IT DOES.

Q. CAN YOU GIVE ME AN EXAMPLE OF A PARTICULAR SHARED-PROGRAM LIBRARY.

A. YES, I CAN. COMCONTROL 32.DLL IS SUCH A SHARED-PROGRAM LIBRARY.

Q. AND TELL US VERY GENERALLY WHAT DOES COMCONTROL 32.DLL DO?

A. WELL, THE NAME IS SHORTHAND FOR COMMON CONTROLS. IT

CONTAINS SOFTWARE HAVING TO DO WITH THE DISPLAY OF MENUS AND TOOLBARS, FOR EXAMPLE.

Q. AND HOW WOULD AN APPLICATION, FOR EXAMPLE, USE COMCONTROL 32?

A. WELL, AN APPLICATION MIGHT CALL UPON THE SOFTWARE CODE CONTAINED IN THAT FILE IN ORDER TO DISPLAY INFORMATION ON THE SCREEN.

Q. AND HOW MIGHT WINDOWS USE COMCONTROL 32?

A. FOR ESSENTIALLY THE SAME PURPOSE, FOR THE DISPLAY OF, AGAIN, MENUS, TOOLBARS, OTHER ASPECTS OF THE GRAPHICAL USER INTERFACE.

Q. NOW, MORE GENERALLY, HOW ARE SHARED-PROGRAM LIBRARIES DISTRIBUTED?

A. WELL, SHARED-PROGRAM LIBRARIES ARE DISTRIBUTED IN A VARIETY OF WAYS. FOR EXAMPLE, WHEN AN OEM PRE-INSTALLS WINDOWS 95 ON A PC, THE SHARED-PROGRAM LIBRARIES THAT MICROSOFT SHIPS WITH WINDOWS 95 GET INSTALLED ON THAT DISK. THAT'S AT THE VERY BEGINNING. THAT'S ASSUMING, FOR EXAMPLE, A VERSION OF WINDOWS 95 THAT DOES NOT INCLUDE INTERNET EXPLORER WOULD THAT SHARED-PROGRAM LIBRARIES.

OTHER METHODS OF DISTRIBUTION INCLUDE, FOR EXAMPLE, APPLICATION SOFTWARE VENDORS THAT PRODUCE APPLICATIONS LIKE INTERNET EXPLORER OR OTHER PROGRAMS, OFTEN INCLUDES CERTAIN SHARED-PROGRAM LIBRARIES AND REDISTRIBUTE THEM ON THE SAME MEDIA ON WHICH THEY

DISTRIBUTE THEIR PARTICULAR APPLICATION SOFTWARE.

Q. ARE THERE ANY OTHER COMMON DISTRIBUTION METHODS FOR SHARED-PROGRAM LIBRARIES?

A. YES, THERE ARE. UPDATES TO THESE FILES APPEAR ON MICROSOFT'S WORLDWIDE WEB SITE, FOR EXAMPLE, AND ON SOME OF THE CD-ROM SUBSCRIPTION PRODUCTS THAT WE ALLUDED TO BEFORE THE LUNCH BREAK, TECH-NET, THE DEVELOPER NETWORK AND SO FORTH.

Q. LET'S FOCUS AGAIN ON COMCONTROL 32. NOW, DOES THAT SHIP WITH WINDOWS 95?

A. YES, IT DOES.

Q. AND IT'S PRESUMABLY WRITTEN BY MICROSOFT?

A. I BELIEVE THAT TO BE THE CASE.

Q. OKAY. NOW, DID IT SHIP IN THE FIRST COMMERCIAL RELEASE OF WINDOWS 95 BACK IN AUGUST OF 1995?

A. YES.

Q. NOW, YOU MENTIONED THAT APPLICATIONS WILL REDISTRIBUTE, ON OCCASIONS, SHARED-PROGRAM LIBRARIES. WHY WOULD THEY DO THIS?

A. THEY DO THIS TO MAKE THEIR APPLICATIONS MORE RELIABLE. IF AN APPLICATION RELIES UPON SOMETHING IN A SHARED-PROGRAM LIBRARY THAT MAY NEED TO BE UPDATED, THAT PERHAPS THE USER HAS AN OLDER VERSION OF ON THE PC'S HARD DISK, REDISTRIBUTING THE SHARED-PROGRAM LIBRARIES AWAY FROM THE SOFTWARE APPLICATION VENDOR TO INSURE THAT IF THE

USER DOES, IN FACT, HAVE AN OLDER VERSION OF THAT FILE, THE NEWER VERSION NECESSARY TO SUPPORT THE APPLICATION WILL BE COPIED OVER ONTO THE USER'S PC. IT'S A WAY OF GUARANTEEING A MINIMUM LEVEL OF SHARED PROGRAM CODE REQUIRED FOR THE APPLICATION.

Q. AND WOULD THIS INCLUDE APPLICATIONS THAT ARE WRITTEN BOTH BY MICROSOFT AND BY VENDORS OTHER THAN MICROSOFT?

A. YES.

Q. DO YOU KNOW OF ANY APPLICATIONS SPECIFICALLY THAT DO DISTRIBUTE SUCH SHARED-PROGRAM LIBRARIES?

A. YES.

Q. BESIDES IE, CAN YOU GIVE ME AN EXAMPLE OF SUCH AN APPLICATION.

A. YES. MICROSOFT'S WORD 97 IS AN EXAMPLE.

Q. AND DO YOU HAVE ANY OTHER EXAMPLES THAT ARE BY A VENDOR OTHER THAN MICROSOFT?

A. YES. WE HAVE CHATTED ABOUT SYMANTEC'S NORTON UTILITIES. THAT'S ANOTHER EXAMPLE OF SOFTWARE SHIPPED BY, IN THIS CASE, A THIRD-PARTY VENDOR THAT CONTAINS SHARED-PROGRAM LIBRARIES.

Q. NOW, IN THE CASE OF THE NORTON UTILITIES PRODUCT, WERE YOU ABLE TO IDENTIFY ANY PARTICULAR SHARED-PROGRAM LIBRARIES THAT CAME WITH THE NORTON UTILITIES PRODUCT?

A. YES. FOR EXAMPLE, THE COMCONTROL 32.DLL FILE THAT WE MENTIONED EARLIER IS INCLUDED WITH THE NORTON UTILITIES

3.0 CD.

Q. SO, WHEN YOU INSTALLED NORTON UTILITIES ONTO THAT PC, LET'S FOCUS ON WHAT HAPPENED TO THAT COMCCNTROL 32.DLL FILE.

A. CERTAINLY. NORTON UTILITIES COPIES ITS VERSION OF THAT FILE ONTO THE USER'S COMPUTER OR HARD DRIVE.

Q. WHAT HAPPENS TO THE VERSION THAT WAS THERE ON THE PC ALREADY?

A. NORTON UTILITIES ACTUALLY RENAMES THAT PARTICULAR FILE WITH A DIFFERENT SUFFIX .NU3 FOR NORTON UTILITIES 3. WINDOWS 95 WOULD NOT RECOGNIZE THAT FILE WITH THAT NAME, BUT THIS IS SIMPLY TO PROVIDE A WAY FOR THE USER OR FOR A TECHNICIAN TO GO BACK TO THAT EARLIER VERSION, IF IT BECAME NECESSARY FOR SOME REASON.

Q. BUT IT'S NOT USEFUL TO THE OPERATION?

A. NO, WINDOWS 95 WOULD NOT SEE IT.

Q. NOW, IN THE CASE OF WORD 97, THERE ARE SHARED-PROGRAM LIBRARIES INCLUDED WITH THAT PRODUCT AS WELL?

A. YES, THERE ARE.

Q. AND WHAT HAPPENS, THEN, WHEN YOU INSTALL WORD 97 TO THOSE SHARED-PROGRAM LIBRARIES?

A. WELL, WHAT HAPPENS IS THAT THE SETUP PROGRAM LOOKS TO SEE IF THE USER HAS AN OLDER VERSION OF ONE OF THOSE SHARED-PROGRAM LIBRARY FILE. AND IF SO, THE SETUP PROGRAM COPIES OVER THE NEWER VERSION CONTAINED ON THE WORD 97 CD.

Q. NOW, IF YOU INSTALL WORD 97 AND NORTON UTILITIES AND THEN REMOVED THEM USING THE ADD/REMOVE UTILITY THAT WE WERE TALKING ABOUT EARLIER, WHAT HAPPENS?

A. THE PROGRAMS ARE EFFECTIVELY REMOVED; THEY ARE NO LONGER AVAILABLE.

Q. SO CAN A USER--CAN A USER USE EITHER WORD 97 OR NORTON UTILITIES AFTER THEY HAVE BEEN REMOVED IN THIS FASHION?

A. NO.

Q. AND WHAT HAPPENS TO WINDOWS AFTER YOU HAVE REMOVED THEM IN THIS FASHION?

A. NOTHING UNTOWARD. EVERYTHING WORKS FINE.

Q. AND WHY IS THIS THE CASE?

A. BECAUSE THE DE-INSTALLATION OF THE REMOVAL SEQUENCE, THE SCRIPTS THAT WE ALLUDED TO EARLIER THAT RUN WHEN YOU ACTUALLY USE THE ADD/REMOVE PROGRAMS UTILITY, LEAVE THESE SHARED-PROGRAM LIBRARIES IN PLACE.

Q. NOW, LET'S FOCUS ON IE 3. HOW DOES THE MICROSOFT PROPOSAL TO REMOVE IE 3 FROM OSR 2 BY HAVING THE OEM DELETE ALL THE FILES THAT MAKE UP IE 3 AND THE RETAIL CHANNEL AFFECT THE SHARED-PROGRAM LIBRARIES THAT ARE DISTRIBUTED WITH IE 3?

A. ONE WOULD HAVE TO DELETE THOSE FILES.

Q. AND IF YOU DELETE THOSE FILES, WHAT HAPPENS TO WINDOWS?

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, PLAINTIFF,	
VS.	C. A. NO. 94-1564
MICROSOFT CORPORATION, ET AL., DEFENDANTS,	

WASHINGTON, D. C.
JANUARY 13, 1998
(A. M. SESSION)

TRANSCRIPT OF PROCEEDINGS
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THE -- WHAT IS HAPPENING INTERNALLY BEHIND THE SCENES IN THIS PROCESS OF REMOVING IE?

A. YES. I HAVE LOOKED AT THIS AND WHAT HAPPENS -- WELL, SEVERAL THINGS HAPPEN. A NUMBER OF FILES GET DELETED FROM THE DISK. THE DESK-TOP ICON GOES AWAY. THE "START MENU" ENTRY GOES AWAY. VARIOUS CHANGES ARE MADE TO WINDOWS 95 CONFIGURATION FILES, AND ALL OF THE ACCESS MECHANISMS FOR INVOKING OR RUNNING INTERNET EXPLORER AT THAT POINT ARE GONE.

THERE IS A SEQUENCE OF STEPS THAT ARE CONTAINED IN A SCRIPT THAT DEFINES PRECISELY WHAT THE COMPUTER IS SUPPOSED TO DO WHEN THE USER GOES THROUGH THIS PROCEDURE.

Q. NOW, AT THIS POINT I WANT TO TURN TO THE HEARING THAT WAS CONDUCTED BY THIS COURT ON DECEMBER 19TH OF 1997. DID YOU REVIEW A TRANSCRIPT OF THAT HEARING?

A. YES, I DID.

Q. AND DID YOU READ THE DESCRIPTION THAT THE COURT GAVE OF THE DEMONSTRATION HE SAW CALLED "UNINSTALLATION OF INTERNET EXPLORER"?

A. YES.

Q. NOW, STARTING AT THE POINT AT WHICH YOU HAD ALREADY PUT IE -- REINSTALLED IE AND MADE IT AN ENTRY IN ADD/REMOVE PROGRAM MENU, HOW DID THE COURT'S DEMONSTRATION COMPARE TO WHAT YOU DID?

A. WHAT HAPPENED WAS THE SAME.

Q. OVERALL, TAKING THE WHOLE PROCESS INTO ACCOUNT, WERE THERE ANY DIFFERENCES BETWEEN WHAT YOU DID AND WHAT THE COURT SAW THAT DAY?

A. YES. THE ONLY DIFFERENCE WAS THAT I HAD TO GO THROUGH THE PROCESS OF BASICALLY REINSTALLING INTERNET EXPLORER ONTO THE PC IN ORDER TO GET THAT LINE TO SHOW UP IN THE LIST OF INSTALLED PROGRAMS.

Q. NOW, BESIDES THE SPECIFIC PROCEDURE THAT YOU FOLLOWED HERE TO REMOVE IE, DID YOU REVIEW ANY OTHER ALTERNATIVES TO ACHIEVE THE REMOVAL OF IE?

A. YES.

Q. NOW, MR. WEADOCK, I HAVE HANDED YOU TWO EXHIBITS -- TWO DOCUMENTS MARKED GOVERNMENT'S EXHIBIT -- MARKED FOR IDENTIFICATION AS GOVERNMENT'S EXHIBIT 4 AND GOVERNMENT'S EXHIBIT 5. LET'S START WITH GOVERNMENT'S EXHIBIT 4. DO YOU RECOGNIZE WHAT THIS IS?

A. YES. THIS IS ANOTHER KNOWLEDGE-BASE ARTICLE FROM MICROSOFT.

Q. AND GOVERNMENT'S EXHIBIT 5?

A. YES. THIS IS AN ARTICLE FROM COMPUTER RESELLER NEWS, DATED DECEMBER 18, 1997.

Q. AND HAVE YOU REVIEWED THESE ARTICLES BEFORE?

A. YES, I HAVE.

Q. GENERALLY, WHAT DO THEY DEAL WITH?

A. THEY DEAL WITH METHODS OF REMOVING INTERNET EXPLORER

FROM WINDOWS 95.

MS. WAN: YOUR HONOR, WE OFFER GOVERNMENT'S 4 AND 5?

MR. HOLLEY: YOUR HONOR, I JUST OBSERVE FOR THE RECORD THAT GOVERNMENT'S EXHIBIT 4 IS NOT, IN FACT, AN ACCURATE REFLECTION OF WHAT APPEARS ON THE WEB PAGE, BUT I DON'T THINK IT DIFFERS IN MATERIAL RESPECTS. THERE ARE TAGS IN THIS DOCUMENT THAT SHOULD SHOW EITHER TEXT OR PICTURES. AND I AM NOT OBJECTING. THE TEXT IS CORRECT, BUT THE PAGE WOULD NOT LOOK LIKE THIS IF YOU WENT TO THE WEB. WITH THAT NOTATION FOR THE RECORD, I HAVE NO OBJECTION.

THE COURT: VERY WELL. GOVERNMENT'S 4 AND 5 ARE ADMITTED.

(WHEREUPON, GOVERNMENT'S **EXHIBIT NUMBER 4 AND 5 WERE** RECEIVED IN EVIDENCE.)

BY MS. WAN:

Q. LET'S FOCUS ON GOVERNMENT'S EXHIBIT 4 FIRST. NOW, WHAT DOES THIS MICROSOFT DOCUMENT DESCRIBE?

A. YES. THE TITLE IS "HOW TO REMOVE AND REINSTALL IE 3.0 FOR WINDOWS 95."

Q. AND HOW DOES THE PROCEDURE THAT IS OUTLINED THERE COMPARE WITH WHAT YOU DID?

A. IT'S QUITE SIMILAR. THERE IS ONE DIFFERENCE IN THAT THIS PARTICULAR KNOWLEDGE-BASE ARTICLE RECOMMENDS THE

DELETION OF A COUPLE OF FOLDERS AT THE END OF THE PROCESS, SPECIFICALLY MICROSOFT INTERNET AND WINDOWS/TEMPORARY INTERNET FILES -- THOSE TWO FOLDERS. PRETTY MUCH KIND OF A TIDYING UP OR A HOUSEKEEPING STEP.

Q. WHAT IS THE IMPACT ON THE USER IF YOU WERE TO TAKE THESE TWO ADDITIONAL STEPS?

A. OH, I DON'T THINK THE USER WOULD SEE ANY DIFFERENCE, OTHER THAN THAT THEY WOULD HAVE A LITTLE BIT MORE FREE HARD-DISK SPACE AFTER DELETING THESE DIRECTORIES.

Q. NOW, LET'S TURN TO GOVERNMENT'S EXHIBIT 5, WHICH WAS THE NEWS ARTICLE.

A. RIGHT.

MR. HOLLEY: YOUR HONOR, I OBJECT TO THE USE OF THIS ARTICLE IF MS. WAN INTENDS TO INTRODUCE IT FOR THE TRUTH OF WHAT IT SAYS.

MS. WAN: YOUR HONOR, I AM NOT INTENDING TO INTRODUCE IT FOR THE TRUTH OF WHAT IT SAYS. I AM MERELY OFFERING IT TO SHOW THAT THERE ARE OTHER -- THAT THERE WERE REPORTED IN THE TRADE PRESS OTHER ALTERNATIVES TO REMOVING IE, BUT NOT NECESSARILY THAT THOSE ALTERNATIVES WOULD WORK.

THE COURT: AS SO LIMITED, DO YOU STILL OBJECT?

MR. HOLLEY: I'M SORRY, YOUR HONOR.

THE COURT: AS SO LIMITED, DO YOU STILL OBJECT?

MR. HOLLEY: I WITHDRAW MY OBJECTION, YOUR HONOR.

THE COURT: VERY WELL.

BY MS. WAN:

Q. OKAY. NOW, DID YOU REVIEW GOVERNMENT'S EXHIBIT 5, THE NEWS ARTICLE?

A. YES.

Q. AND WHAT DOES IT RECOMMEND? WHAT DOES IT SUGGEST AS A WAY OF REMOVING IE?

A. IT RECOMMENDS SIMPLY THE DELETION OF A SINGLE FILE, IEXPLORER.EXE.

Q. AND HOW DOES THIS COMPARE WITH THE PROCEDURE THAT YOU ACTUALLY FOLLOWED?

A. WELL, THE PROCEDURE THAT I FOLLOWED INVOKING THE ADD/REMOVE PROGRAMS UTILITY TAKES SEVERAL STEPS ABOVE AND BEYOND THIS SINGLE STEP.

Q. SO DOES IT INCLUDE -- DOES IT ALSO INCLUDE THIS STEP?

A. YES, IT DOES.

Q. NOW, YOU MENTIONED EARLIER THAT GOVERNMENT'S EXHIBITS 3 AND 4 CAME FROM SOMETHING CALLED THE "MICROSOFT KNOWLEDGE BASE." CAN YOU GIVE US A LITTLE MORE EXPLANATION OF WHAT THAT IS?

A. YES. THE KNOWLEDGE BASE IS A COLLECTION OF QUITE A NUMBER OF ARTICLES, TECHNICAL NOTES, AND ADVISORIES, PUT TOGETHER, I UNDERSTAND, BY MICROSOFT PRODUCT SUPPORT SERVICES. THIS INFORMATION IS AVAILABLE VIA MICROSOFT'S WEB SITE. IT IS AVAILABLE IN OTHER FORMS AS WELL VIA THE TECH-NET CD-ROM SUBSCRIPTION THAT ONE CAN PAY FOR AND

SUBSCRIBE TO. ALSO, IF YOU ARE A MEMBER OF THE MICROSOFT DEVELOPER NETWORK. I MEAN THERE ARE ANY NUMBER OF WAYS THAT USERS AND TECHNICAL PEOPLE CAN ACCESS THESE KNOWLEDGE-BASE ARTICLES.

Q. YOU MENTIONED TECH-NET. WHAT IS THAT, BRIEFLY?

A. WELL, TECH-NET IS A PRODUCT -- A MICROSOFT PRODUCT THAT SUPPLIES EACH MONTH ONE OR MORE CD-ROMS CONTAINING, AMONG OTHER THINGS, KNOWLEDGE-BASE ARTICLES LIKE THESE.

Q. IS TECH-NET RELATED TO PRODUCT SUPPORT OR IS IT A PRODUCT ITSELF?

A. I WOULD CONSIDER IT A PRODUCT -- A MICROSOFT PRODUCT. TECH-NET. IT IS SOMETHING THAT YOU CAN BUY AND SUBSCRIBE TO.

Q. IS IT IN THE NATURE OF DOCUMENTATION OR A PRODUCT THAT ONE WOULD --

A. IT'S IN THE NATURE OF DOCUMENTATION. THEY ALSO INCLUDE -- MICROSOFT ALSO INCLUDES IN TECH-NET SOFTWARE UPDATES, SERVICE PACKS, AND VARIOUS OTHER UPDATE-AND-MAINTENANCE SOFTWARE.

Q. NOW, GOING BACK TO THE KNOWLEDGE-BASE MATERIAL, IN THE COURSE OF PREPARING FOR WRITING YOUR BOOKS AND TEACHING YOUR SEMINARS, DO YOU HAVE OCCASION TO LOOK THROUGH THE KNOWLEDGE-BASE ARTICLES?

A. YES, I DO. FREQUENTLY.

Q. AND WHAT TYPE OF INFORMATION IS CONTAINED IN THESE

ARTICLES, AGAIN?

A. WELL, A LOT OF THE TIME IT'S ADVICE ON HOW TO DO SOMETHING THAT ISN'T PROPERLY EXPLAINED IN THE STANDARD MICROSOFT DOCUMENTATION, ADVICE ON WHAT TO DO IF YOU RUN INTO CERTAIN KINDS OF COMMON PROBLEMS, AND THAT SORT OF INFORMATION.

Q. NOW, DO THESE KNOWLEDGE-BASE ARTICLES EVER WARN USERS ABOUT THE CONSEQUENCES OF PERFORMING CERTAIN PROCEDURES?

A. YES. THEY CERTAINLY DO. I AM IN THE MIDDLE OF WRITING A BOOK ABOUT SOMETHING CALLED "THE WINDOWS 95 REGISTRY," WHICH IS KIND OF A CENTRAL STOREHOUSE OF CONFIGURATION INFORMATION ABOUT WINDOWS 95. AND I THINK THAT EVERY KNOWLEDGE-BASE ARTICLE THAT I HAVE SEEN THAT HAS ANYTHING TO DO WITH THE REGISTRY HAS A VERY CLEAR WARNING THAT YOU CAN DAMAGE WINDOWS 95 IF YOU DON'T KNOW WHAT YOU'RE DOING WHEN MODIFYING THE REGISTRY, AND IF YOU DON'T KNOW WHAT YOU'RE DOING, YOU SHOULDN'T FOLLOW THE STEPS OUTLINED IN THE KNOWLEDGE-BASE ARTICLE.

Q. NOW, AT THIS POINT I WOULD LIKE TO DIRECT YOUR ATTENTION BACK TO THE TWO EXHIBITS, GOVERNMENT'S EXHIBIT 3 AND 4, WHICH WERE THE TWO MICROSOFT KNOWLEDGE-BASE ARTICLES.

A. OKAY.

Q. WHAT IF ANY WARNINGS ARE THERE IN THESE TWO DOCUMENTS TO THE USER OF THE IMPACT ON WINDOWS OF UNINSTALLING IE, USING THE PROCEDURES THAT ARE DESCRIBED IN THOSE ARTICLES?

A. WHAT IF ANY WARNINGS APPEAR?

Q. YES.

A. I DON'T SEE ANY WARNINGS OF ANY KIND.

MS. WAN: YOUR HONOR, AT THIS POINT I THINK WE'RE AT A CONVENIENT BREAKING POINT, IF IT'S CONVENIENT FOR THE COURT AS WELL.

THE COURT: ALL RIGHT. I THINK IT IS.

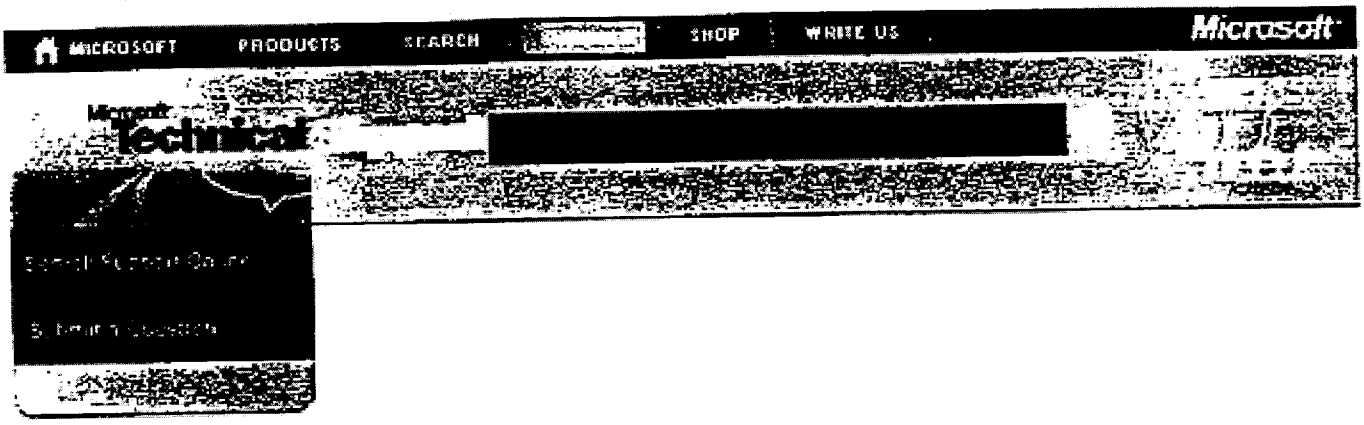
WE WILL TAKE OUR NOONTIME RECESS AND RECONVENE AT 2:00 O'CLOCK.

(WHEREUPON, AT 12:22 P.M., THE ABOVE-ENTITLED MATTER WAS RECESSED TO RECONVENE AT 2:00 O'CLOCK.)

CERTIFICATE OF REPORTER

THIS RECORD IS CERTIFIED BY THE UNDERSIGNED REPORTER TO BE THE OFFICIAL TRANSCRIPT OF THE PROCEEDINGS INDICATED.

PHYLLIS MERANA



How to Uninstall Internet Explorer 4.0

Last reviewed: October 17, 1997
Article ID: Q174265
The information in this article applies to:

- Microsoft Internet Explorer version 4.0 for Windows 95
- Microsoft Internet Explorer version 4.0 for Windows NT 4.0

SUMMARY

This article describes how to uninstall (or remove) Internet Explorer 4.0 (version 4.71.1712.6). For information about uninstalling Internet Explorer Platform Preview 2.0 (version 4.71.1008), please see the following article in the Microsoft Knowledge Base:

```
ARTICLE-ID: Q170757
TITLE     : Uninstalling Internet Explorer 4.0 Platform Preview 2.0
```

When to Remove Internet Explorer

Remove Internet Explorer 4.0 before you perform any of the following actions:

- Installing an earlier version of Internet Explorer (3.0, 3.01, or 3.02).
- Restoring a registry (System.dat or User.dat) that was created before you installed Internet Explorer 4.0 (this applies to Microsoft Windows 95 only).
- Using a Windows NT Emergency Recovery Disk (ERD) you created before you installed Internet Explorer 4.0 (this applies to Windows NT only).
- Upgrading to a later release of Internet Explorer 4.0.
- Reinstalling your operating system (Windows 95 or Windows NT).
- Installing or uninstalling operating system upgrades (for example, Windows 95 Service Pack 1).

Uninstalling Internet Explorer 4.0 May Not Be Supported

There are some configurations in which uninstalling Internet Explorer 4.0 does not work. Uninstalling Internet Explorer 4.0 is not supported in the following situations:

- Internet Explorer 4.0 is installed in multiple operating system installations (Windows 95, Windows 95 OEM Service Release 2, or Windows NT 4.0) on the same logical hard disk. If you need to run Internet Explorer 4.0 in multiple operating systems, you must install each operating system on a separate logical drive.

- You have removed the Internet Explorer 4.0 backup files. If you removed

```
the backup files, you are unable to uninstall Internet Explorer 4.0
without reinstalling Windows into a different folder. For additional
information, please see the following article in the Microsoft Knowledge
Base:

    ARTICLE-ID: Q172919
    TITLE     : Uninstall Internet Explorer 4.0 Option Is Missing
```

MORE INFORMATION

Before you uninstall Internet Explorer, quit all running programs. For information about problems that can occur if you do not quit all running programs before uninstalling Internet Explorer, please see the following article in the Microsoft Knowledge Base:

```
ARTICLE-ID: Q165646
TITLE     : Program Settings Lost After Internet Explorer Setup or
            Uninstall
```

To uninstall Internet Explorer 4.0 in Windows 95 and Windows NT 4.0, follow these steps:

NOTE: You must have administrative privileges to install and uninstall Internet Explorer 4.0 on Windows NT. This includes having administrative privileges the first time you start your computer after you install or uninstall Internet Explorer 4.0.

1. In Control Panel, double-click Add/Remove Programs, and then click the Install/Uninstall tab.
2. In the list of installed programs, click Microsoft Internet Explorer 4.0, and then click Add/Remove.
3. In the Internet Explorer 4.0 Active Setup dialog box, click "Uninstall Internet Explorer 4.0 and all its components," and then click Advanced to specify any additional components you want to remove.
4. Click OK.
5. When Setup starts in Maintenance mode, click Remove All.

   If there are any files in the Recycle Bin, you receive the following message:

   ```
   Internet Explorer 4.0 has modified the format of the
   Recycle Bin.

   If you want to keep any of the items currently in the
   Recycle Bin, open the Recycle Bin and move the items
   to a different location.

   To permanently delete all items from the Recycle Bin
   and continue, click OK.
   ```

   Click OK after checking that there are no files in the Recycle Bin that you want to restore.

Known Issues with Uninstalling

- Office 97 files may be removed after you uninstall Internet Explorer 4.0. This problem only occurs if you install Internet Explorer 4.0 before you install Microsoft Office 97, and then uninstall Internet Explorer 4.0.

  For additional information, please see the following article in the Microsoft Knowledge Base:

  ```
  ARTICLE-ID: Q174431

  TITLE : OFF97: Problems Occur After Removing MS Internet Explorer 4.0 \** \**
  PARTNER: \** Microsoft support engineers should connect to the OFFICE roll-up
  \** database.
  ```

- When you uninstall Internet Explorer 4.0, some user settings are returned to operating system defaults. For additional information about this problem, see the following article in the Microsoft Knowledge Base:

  ```
  ARTICLE-ID: Q171921

  TITLE : Uninstalling Internet Explorer Restores Default Settings
  ```

- You cannot uninstall Microsoft Plus! for Windows 95 after uninstalling Internet Explorer 4.0. Using the Remove All option in Microsoft Plus! Maintenance-mode Setup results in the following error message:

  ```
  Custom Action Error*  The system cannot find the specified file.
  ```

  For additional information about uninstalling Microsoft Plus!, see the following article in the Microsoft Knowledge Base:

  ```
  ARTICLE-ID: 165623
  ```

TITLE : Cannot Remove Microsoft Plus! After Installing Internet Explorer

- When you uninstall Internet Explorer 4.0, any certificates obtained after you installed Internet Explorer 4.0 are removed. Certificates obtained prior to installing Internet Explorer 4.0 are not removed. For additional information, please see the following article in the Microsoft Knowledge Base:

  ARTICLE-ID: Q174920

  TITLE : Uninstalling Internet Explorer 4.0 Removes Certificates

- Some registry entries and files remain on your computer.
- All components may not be uninstalled. You can uninstall individual components by clicking Add/Remove Programs in Control Panel, clicking the program in the list of installed programs, and then clicking Add/Remove.
- If you install Internet Explorer 4.0, install a program, and then uninstall Internet Explorer 4.0, some programs may not work properly. After uninstalling Internet Explorer 4.0, if a program does not work properly, reinstall the program.
- If you uninstall Internet Explorer 4.0, Internet icons may remain in other programs such as Microsoft Word and Microsoft Excel. If you click these icons, nothing happens because no browser is installed.

General Troubleshooting

If Maintenance-mode Setup does not work or you cannot run Setup, try one of the following methods:

- In Windows 95, try restarting your computer in Safe mode, and then use the Add/Remove Programs tool in Control Panel to uninstall Internet Explorer 4.0. To restart the computer in Safe mode, click Start, click Shut Down, click Restart The Computer, and then click Yes. When you see the "Starting Windows 95" message, press the F8 key, and then choose Safe Mode from the Startup menu.
- Reinstall Internet Explorer 4.0, and then uninstall it.
- In Windows 95, restore a registry created before installing Internet Explorer 4.0, and then use the Ieremove tool to restore your shell files. For more information, see the following article in the Microsoft Knowledge Base:

  ARTICLE-ID: Q166313

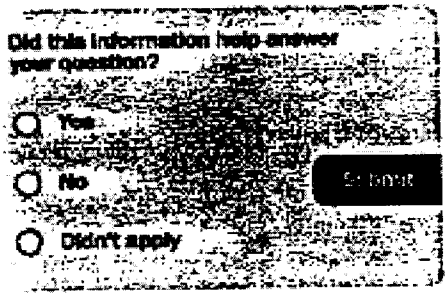
  TITLE : Removing Internet Explorer 4.0 for Windows 95 Using Ieremove.exe

- In Windows NT, use an ERD created before installing Internet Explorer 4.0 to replace necessary system files, and then run the Ieremove tool to restore previous shell components. For more information, see the following article in the Microsoft Knowledge Base:

  ARTICLE-ID: Q166314

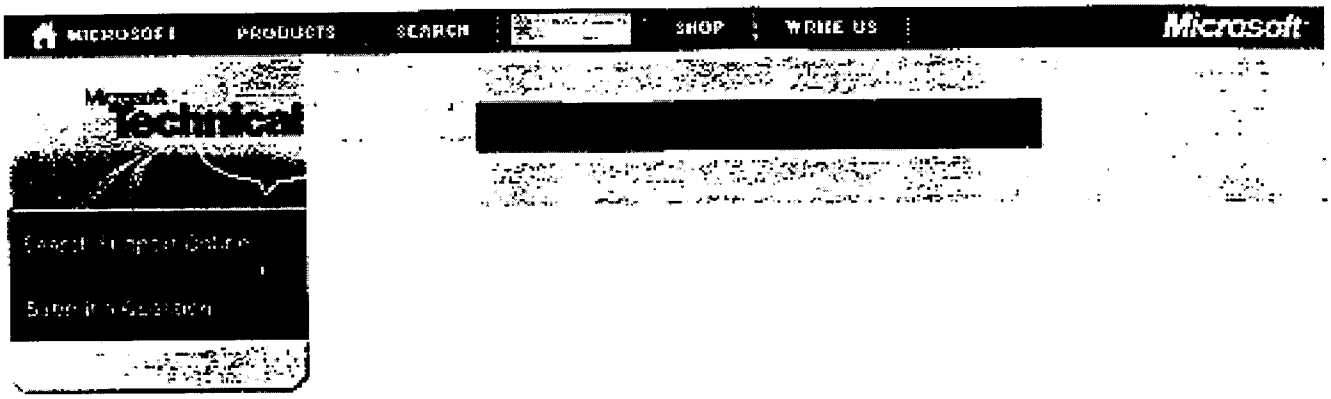
  TITLE : Removing Internet Explorer for Windows NT 4.0 Using Ieremove.exe

- Reinstall your operating system and previous browser in a "clean" folder, or restore from a complete system backup made before installing Internet Explorer 4.0.



Additional query words: 4.00
Keywords : msient msiew95 kbsetup
Version : WINDOWS:4.0
Platform : WINDOWS
Issue type : kbhowto

Last reviewed: October 17, 1997



Removing Internet Explorer 4.0 for Windows 95 Using Ieremove.exe

Last reviewed: October 17, 1997
Article ID: Q166313
The information in this article applies to:

- Microsoft Internet Explorer version 4.0 for Windows 95

SUMMARY

This article describes how to remove Internet Explorer 4.0 for Windows 95 using the Ieremove.exe tool and a registry that was created before you installed Internet Explorer 4.0 (for example, System.1st).

Follow the steps described in this article in the following situations:

- You tried to uninstall Internet Explorer 4.0, but you were unable to do so.
- You restored a registry that was created before you installed Internet Explorer 4.0 while Internet Explorer 4.0 was still installed on your computer.

  Note that you do not need to perform step 1 in the "More Information" section in this article under this condition.

Do not follow the steps described in this article in the following situations:

- You have not tried to uninstall Internet Explorer 4.0 by using the steps described in the following article:

  ```
  ARTICLE-ID: Q174255

  TITLE : How to Uninstall Internet Explorer 4.0
  ```

- You have removed the Internet Explorer 4.0 backup files. If you removed the backup files and you are unable to uninstall Internet Explorer 4.0 by using the steps described in the article in the previous bulleted item, you cannot remove Internet Explorer 4.0 without reinstalling Microsoft Windows 95 in a different folder.

MORE INFORMATION

To remove Internet Explorer 4.0 by using the Ieremove.exe tool and a registry that was created before you installed Internet Explorer 4.0, follow these steps:

1. If you have not already done so, restore a registry that was created before you installed Internet Explorer 4.0.

   NOTE: Internet Explorer 4.0 replaces the original System.1st file with a copy of the registry created during the Internet Explorer 4.0 installation. The original System.1st file is saved in the Integrated Browser.dat file (Integr~1.dat) during the Internet Explorer 4.0 installation.

   To extract the original System.1st file from the Integr~1.dat file, type the following commands at a command prompt. Press ENTER after each command:

   ```
   cd <path>\uninst~1
   attrib integr~1.dat -h
   ieextract /L <dir> integr~1.dat system.1st
   ```

where <path> is the path to the folder in which Internet Explorer is installed, and <dir> is the folder in which the extracted file will be saved.

For additional information about using the System.1st file to restore the registry to the state when you first started Windows 95 successfully, see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q131431

TITLE : How to Troubleshoot Registry Errors

2. Restart the computer. When you see the "Starting Windows 95" message, press the F8 key, and then choose Safe Mode Command Prompt Only from the Startup menu.

3. Type the following commands, pressing ENTER after each command

```
cd <path>\uninst~1
attrib integr~1.dat -h
iextract integr~1.dat
copy shell32.dll c:\windows\system
copy explorer.exe c:\windows
```

where <path> is the path to the folder in which Internet Explorer is installed.

4. Restart the computer.

5. Click Start, click Run, type the following command in the Open box (with quotation marks), and then click OK

```
"<path1>\ieremove.exe" /i:"<path2>\integrated browser.dat"
/n:"<path3>\ie4bak.dat"
```

where <path1> is the full path to the Ieremove.exe file, <path2> is the full path to the Integrated Browser.dat file, and <path3> is the full path to the Ie4bak.dat file. For example, if the Ieremove.exe file is located in the C:\Windows\System folder, the Integrated Browser.dat file is located in the C:\Program Files\Internet Explorer Uninstall Information folder, and the Ie4bak.dat file is located in the C:\Windows folder, type the following command (with quotation marks):

```
"c:\windows\system\ieremove.exe" /i:"c:\program files\internet
explorer\uninstall information\integrated browser.dat"
/n:"c:\windows\ie4bak.dat"
```

6. Click OK, click Yes, and then restart your computer after the Ieremove.exe tool is finished running.

7. Reinstall Internet Explorer 4.0, and then uninstall it. For information about how to uninstall Internet Explorer 4.0, please see the following article in the Microsoft Knowledge Base:

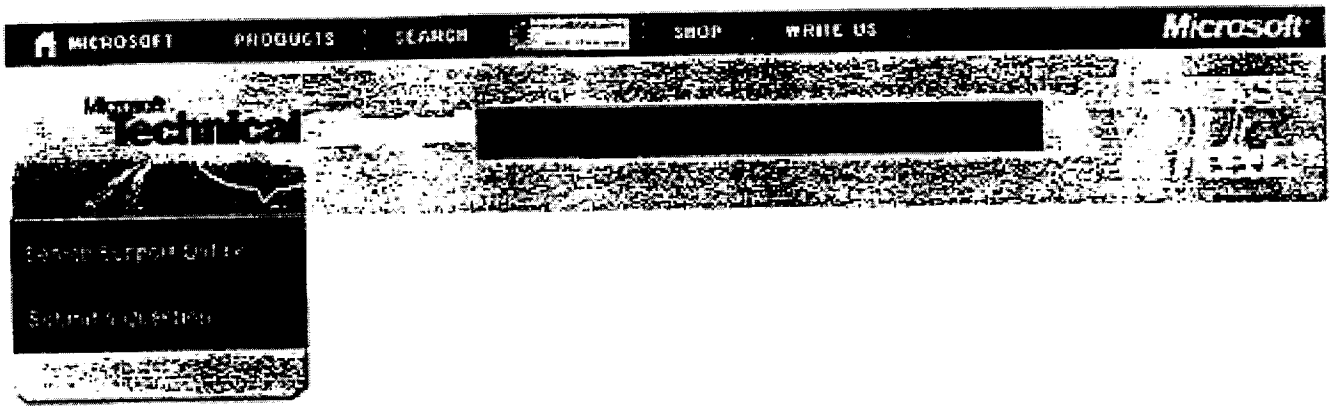
ARTICLE-ID: Q174265

TITLE : How to Uninstall Internet Explorer 4.0 This step is necessary to ensure that the additional components included with Internet Explorer 4.0 are removed.

NOTE: Ieremove.exe is a command line executable designed to remove Internet Explorer and it's components. Ieremove.exe may not remove Internet Explorer without using command line options. For information about the command line options avialable for Ieremove.exe, type "IEREMOVE /?" (without quotes).

Additional query words: 4.00
Keywords : kbenv mslew95 win95 kbfaq
Version : 4.0
Platform : WINDOWS
Issue type : kbhowto

Last reviewed: October 17, 1997



How to Manually Uninstall Internet Explorer 4.0

Last reviewed: October 24, 1997
Article ID: Q175610
The information in this article applies to:

- Microsoft Internet Explorer version 4.0 for Windows 95

SUMMARY

This article describes how to manually uninstall Internet Explorer 4.0 for Windows 95 when you are unable to uninstall Internet Explorer with the Add/Remove Programs tool in Control Panel, or the Ieremove.exe tool.

NOTE: Do not follow the steps in this article if you have not tried to uninstall Internet Explorer 4.0 by using the steps described in the following Microsoft Knowledge Base articles:

```
ARTICLE-ID: Q174265
TITLE     : How to Uninstall Internet Explorer 4.0

ARTICLE-ID: Q166313
TITLE     : Removing Internet Explorer 4.0 for Windows 95 Using
            Ieremove.exe
```

MORE INFORMATION

To uninstall Internet Explorer 4.0 after trying the steps in the articles listed above, use the following steps.

NOTE: If the Windows Desktop Update is not installed on your computer, or Windows 95 does not start, skip to step 4.

1. Click Start, point to Settings, click Control Panel, and then click Add/Remove Programs.
2. On the Install/Uninstall tab, click Microsoft Internet Explorer 4.0, and then click Add/Remove.
3. Click "Remove the Windows Desktop Update component, but keep the Internet Explorer 4.0 Web browser", click OK, and then click OK.

   NOTE: Even though you are unable to uninstall Internet Explorer 4.0, the option to uninstall the Windows Desktop Update should be available in the Add/Remove programs tool. If you cannot uninstall the Windows Desktop Update with the Add/Remove programs tool, you must extract Explorer.exe and Shell32.dll from the original Windows 95 disks or CD-ROM. See step 5.

4. NOTE: If you installed Windows 95 from CD-ROM and you are not using real mode CD-ROM drivers (therefore you cannot access your CD-ROM drive in MS-DOS), install real mode CD-ROM drivers. For information about installing real mode CD-ROM drivers, consult the manufacturer's documentation included with your CD-ROM, or contact the manufacturer of the CD-ROM, and do not continue with the remaining steps.

   Restart your computer. When you see the "Starting Windows 95" message, press F8, and then choose Command Prompt Only.

5. Type the following commands, pressing ENTER after each command:

```
cd windows\system
ren inetcpl.cpl inetcpl.old
ren ole2.dll ole2.old
ren ole32.dll ole32.old
ren oleaut32.dll oleaut32.old
ren olepro32.dll olepro32.old
ren olethk32.dll olethk32.old
ren setupwbv.dll setupwbv.old
ren softpub.dll softpub.old
ren stdole2.tlb stdole2.old
ren urlmon.dll urlmon.old
ren wininet.dll wininet.old
```

NOTE: This procedure assumes you do not have files with these names with the .old extension. If you do have files with these names with the .old extension, use a file name extension that is not currently in use.

If you cannot uninstall the Windows Desktop Update from the Add/Remove Programs tool, type the following commands, pressing ENTER after each command:

```
cd \<windows>
ren explorer.exe explorer.old
cd \<windows>\System
ren shell32.dll shell32.old
```

From the original Windows 95 disks or CD-ROM, extract the Explorer.exe file to the Windows folder and then extract the Shell32.dll file to the Windows\System folder. To do so, use the appropriate method:

Windows 95 CD-ROM ——————

Insert the Windows 95 CD-ROM into the CD-ROM drive, and then type the following commands, pressing ENTER after each command:

```
extract /a <drive>:\win95\win95_02.cab explorer.exe /l windows
extract /a <drive>:\win95\win95_02.cab shell32.dll /l windows\system
```

where <drive> is the drive letter assigned to your CD-ROM drive.

Windows 95 Floppy Disks ——————

Insert the Windows 95 floppy disk 1 into the floppy disk drive, and then type the following commands, pressing ENTER after each command

```
extract /a <drive>:\win95_02.cab explorer.exe /l windows
extract /a <drive>:\win95_02.cab shell32.dll /l windows\system
```

where <drive> is the floppy disk drive letter.

```
For more information about using the Extract tool, type "extract"
(without quotation marks) at a command prompt, or see the following
article in the Microsoft Knowledge Base:

ARTICLE-ID: Q129605

TITLE : Using the Windows 95 Extract Tool (Extract.exe)
```

6. Reinstall Windows 95. To do so, insert floppy disk 1 (or the Windows 95 CD-ROM) into the appropriate drive, and then type the following commands, pressing ENTER after each command

```
<drive>:
setup
```

where <drive> is either the drive letter assigned to your CD-ROM, or the floppy disk drive letter.

Click No when you receive the following prompt:

```
A file being copied is older than the file currently on your
computer. It is recommended that you keep your existing file.

   File name:    <filename.ext>
   Description:  <description of file>
```

```
Your version: <version number>

Do you want to keep this file?
```

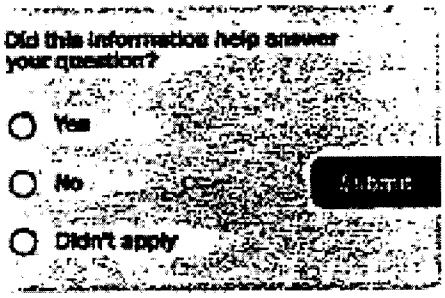
7. After Setup finishes, reinstall Internet Explorer 3.02. For information about installing Internet Explorer 3.02, please see the following article in the Microsoft Knowledge Base:

```
ARTICLE-ID: Q164475

TITLE : Availability of Internet Explorer 3.02 for Windows 95 and NT 4.0 Click
No when you receive the following prompt: A file being copied is older than the
file currently on your computer. It is recommended that you keep your existing
file.
```

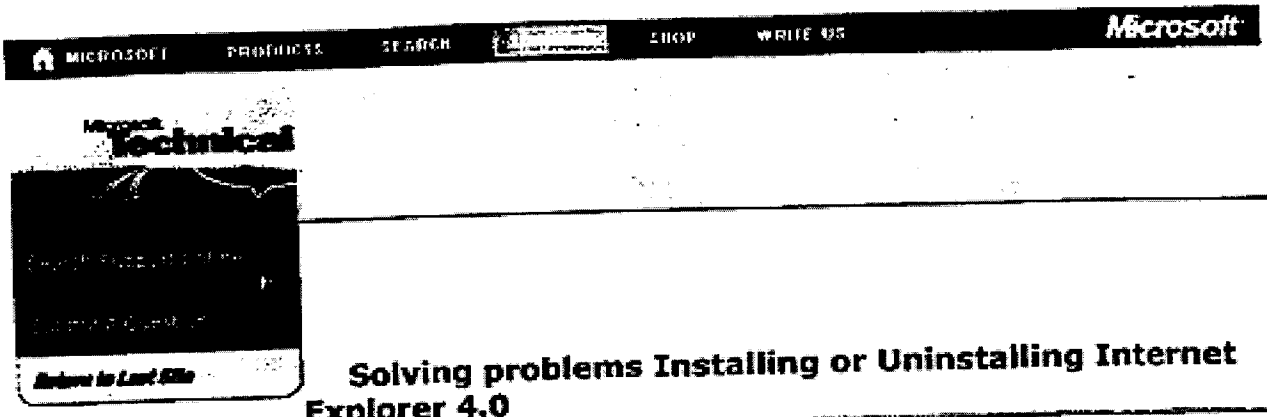
You can now reinstall Internet Explorer 4.0. To completely remove Internet Explorer 4.0 from your computer, reinstall Internet Explorer 4.0, and then uninstall Internet Explorer 4.0. For information about reinstalling Internet Explorer 4.0, please see the following article in the Microsoft Knowledge Base:

```
ARTICLE-ID: Q_170923
TITLE     : How to Install Internet Explorer and Troubleshoot Setup
            Problems
```



Additional query words: 4.00 3.00
Keywords : kbsetup msiew95
Version : WINDOWS:4.0
Platform : WINDOWS
Issue type : kbhowto

Last reviewed: October 24, 1997



Solving problems Installing or Uninstalling Internet Explorer 4.0

Can you uninstall Internet Explorer 4.0 using the Add/Remove Programs Control Panel?

Note

- You must have administrative privileges to install and uninstall this program in Windows NT. This includ administrative privileges the first time you start your computer after installing or uninstalling.

To uninstall Internet Explorer 4.0 in Windows 95 and Windows NT 4.0

1. Click **Start**, point to **Settings**, click **Control Panel**, and then double-click **Add/Remove Programs.**
2. Click the **Install/Uninstall** tab.
3. In the list of installed programs, click **Microsoft Internet Explorer 4.0**, and then click **Add/Remove**
4. In the **Add/Remove Internet Explorer 4.0** dialog box, click **Remove Internet Explorer 4.0 and t components selected below** and click to select all the additional components you want to remove. V have selected all the components you want to remove, click **OK.**
5. When Setup starts, click **Remove All.**

   If you have any files in the Recycle Bin, you receive the following warning:

   ```
   Internet Explorer 4.0 has modified the format of the
   Recycle Bin.
   If you want to keep any of the items currently in the Recycle Bin, open the Recyc
   move the items to a different location.
   To permanently delete all items from the Recycle Bin and continue, click OK.
   ```

6. Click **OK** when you are sure there are no files in the Recycle Bin that you want to restore. You may als following messages:

   ```
   Program has been removed from this computer. Do you want to clean up your persona
   settings for this program.
   ```

   where *Program* is Outlook Express, FrontPad, or Internet Explorer 4.0. If you are planning to rei version of Internet Explorer 4.0, click **No.** Otherwise, click **Yes.**

You can now install a later build of Internet Explorer 4.0. To restore a working installation of Int Explorer version 3.02, you must remove extra files associated with Internet Explorer 4.0.

To remove remaining files associated with Internet Explorer 4.0

1. Complete the uninstall process listed above.
2. Click **Start**, point to **Find**, and then click **Files or Folders**.
3. Type a file name from the list below, and then click **Find Now**.
4. Right-click the file if it appears, and then click **Delete** to remove it.
5. Follow these steps for each of the following files:

   - Inetcfg.dll
   - Icwdial.dll
   - Isign.dll
   - Icwphbk.dll

   These files are associated with the Internet Connection Wizard and are not removed during Internet Ex uninstallation.

6. Remove Internet Explorer 3.x using the Add/Remove Programs tool in Control Panel.
7. Reinstall Internet Explorer 3.02.

For information about the availability of Internet Explorer 3.02, see the following article in the M Knowledge Base:

- **Availability of Internet Explorer 3.02 for Windows 95 and NT 4.0 (Q164475)**

Were you able to sucessfully uninstall Internet Explorer 4.0?

- ( ) Yes
- ( ) No
- ( ) I don't want to do this now.

Next

This table tracks your status in the troubleshooting process. If you need to change your respon question, you can do so below:

Problem: Cannot Uninstall

Supported Configuration: ( ) Yes (•) Unknown

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April 29, 1996

OVERVIEW OF SECTION 2 OF THE SHERMAN ACT AND ITS APPLICATION TO MICROSOFT

By Charles F. (Rick) Rule

A great deal of the public discussion concerning Microsoft seems to assume that, because Microsoft has been highly profitable and has engaged in various practices that have placed a number of rivals under intense competitive pressure, the company is fair game for whatever "remedies" the Department of Justice might choose to impose. In fact, however, the Department's power to impose remedies on Microsoft is dependent on its ability to establish in court that Microsoft has violated section 2 of the Sherman Act. Specifically, the Department must prove not only that Microsoft has monopoly power but also that Microsoft has acquired or maintained that power through "exclusionary" or "predatory" acts.

In light of those legal requirements, there simply is no sound basis for a section 2 suit against Microsoft. The various theories that have been advanced by Microsoft's detractors as grounds for a section 2 suit would require a radical departure from existing case law. In effect, the law's current focus on consumers and innovation would have to be diverted to protection of competitors at the expense of consumers. Moreover, those theories would require courts to second-guess Microsoft's product design and distribution efforts – a task that the courts are simply not equipped to perform. And, even if the Department could persuade the courts to transform the antitrust laws so radically, any remedy that the Department might seek to impose would inevitably be highly regulatory and would almost certainly reduce consumer welfare and impede innovation.

I. Section 2 of the Sherman Act and "Monopolization"

As the Supreme Court has stated, "Congress designed the Sherman Act as a 'consumer welfare prescription.'" *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979), quoting R. Bork, The Antitrust Paradox 66 (1978). In other words, the law protects the marketplace from private conduct that interferes with the competitive process. Or stated differently, the antitrust laws protect "competition, not competitors." *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962).

Antitrust law as a general matter does not attempt to regulate the unilateral activities of a person or firm. In addition, the law does not condemn commercial success achieved through competition on the merits, even when it results in the competitive triumph of a single firm. Rather, the law – section 2 of the Sherman Act specifically – only condemns "monopolization" (or attempts to "monopolize"). 15 U.S.C. § 2. As interpreted by the courts, "monopolization" has two elements: (A) the possession of monopoly power in a relevant market and (B) the "willful" acquisition or maintenance of that power "as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." *United States v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966).

A. Monopoly Power

(1) The Law – A necessary, though not sufficient, prerequisite for a violation of section 2 of the Sherman Act is a showing that the defendant has "monopoly power." The Supreme Court has defined such power as "the power to control market prices or exclude competition." *United States* v. *E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 391 (1956). While a very large market share may raise an inference of monopoly power, "[w]hen there are better ways to estimate market power, the court should use them." *Ball Memorial Hosp.* v. *Mutual Hosp. Ins.*, 784 F.2d 1325, 1336 (7th Cir. 1986). For example, a large market share is only indicative of monopoly power if it is durable and persistent. If there are low barriers to entry or to expansion by fringe firms or if the market is highly dynamic, then a firm's current market position is likely to be fragile and any hope of exercising market power will be futile. *See, e.g., Los Angeles Land Co.* v. *Brunswick Corp.*, 6 F.3d 1422 (9th Cir. 1993) (holding that the defendant did not possess monopoly power despite the fact that it had a 100 percent share of the relevant market).

(2) Application to Microsoft – Microsoft's critics claim that, because Microsoft's operating systems are installed on a large percentage of the PCs being shipped today, Microsoft has monopoly power. That claim, however, is extremely misleading for several reasons.

First, a "market" limited to operating systems installed by computer manufacturers on Intel-compatible PCs is unduly circumscribed. Not only can a computer manufacturer choose among various PC operating systems, including IBM's OS/2, Solaris x86 from Sun Microsystems, UnixWare from Santa Cruz Operation, and Linux (the "open" operating system based on Unix), but consumers and businesses can choose systems other than a PC, such as an Apple Macintosh, a so-called Net Computer ("NC"), or even bigger systems such as mini-computers. In addition, any market definition that ignores the fact that Microsoft must compete against its own installed base fails to take account of an important competitive dynamic. Computer software does not wear out. A current computer owner will switch to a new operating system (whether Microsoft's or anyone else's) only if he or she perceives the *incremental* value of the new operating system to be worth its price. And, one cannot ignore so-called "middleware" layers, such as Netscape's browsing software or Lotus Notes, that provide independent software vendors or developers ("ISVs") with platforms complete with their own application programming interfaces ("APIs") that are being touted as substitutes for Windows. Indeed, powerful competitors such as IBM and Sun Microsystems are investing hundreds of millions of dollars to develop and market new technologies that they hope will replace Windows.

Second, the "market share" of a software product is much less significant than the typical market share possessed by a manufacturer of a producer of physical goods. Once written, a piece of software can be copied an infinite number of times at virtually zero marginal cost. In other words, the productive "capacity" of every piece of software, once written, is virtually infinite, even if its current sales are de minimis. If the owner of the "dominant" software tries to reduce output, the fringe firms can costlessly increase the output of their software, completely replace the output withheld by the dominant software publisher, and thus thwart any effort to raise price. Therefore, any effort by Microsoft to raise prices (without providing commensurate value) would be doomed to failure because consumers are able to switch to competing operating systems or simply continue using the operating system they currently own. The price Microsoft charges and the market share it achieves are nothing more than a reflection of the inherent value (or superior efficiency) of Microsoft's operating systems as compared to the available alternatives.

Third, because of the rapid change in technology in the computer

market, there are always new opportunities for start-up firms or established players (such as IBM, Oracle, or Sun) to introduce new operating systems or to enhance existing ones. And, if those new or improved operating systems indeed represent the proverbial "better mousetrap," then they have a real chance to supplant the existing market leader. These opportunities are driven by changes, *inter alia*, in software, in hardware, in communications technology, and in consumer preferences. Microsoft has only succeeded by constantly bringing new technologies to consumers more efficiently, more attractively, and at lower prices than the competition.

Some of Microsoft's critics claim that, because of so-called "network externalities," it is virtually impossible for anyone to challenge Microsoft's "dominance" on the PC desktop. Certainly, Windows is very popular, in part, because it provides for literally thousands of ISVs a valuable platform that simplifies the task of creating compatible applications and because millions of consumers have become familiar with the "look and feel" of Windows and have assembled libraries of Windows applications. Nevertheless, the notion that these "externalities" insulate Microsoft from competition is simply wrong. The same "lock-in" story was being told just a few short years ago about Nintendo's "monopoly" position in video games. Yet, in the intervening years, Sega and now Sony have overtaken Nintendo. The same thing will happen to Microsoft if it does not continue to innovate at a rapid pace and continue to offer its operating system at competitive prices.

In short, notwithstanding the percentage of PCs currently being shipped with Windows, Microsoft has no power to suppress the changes that almost daily create opportunities for those hoping to supplant Microsoft. The company's only hope of sustaining its success is to continue to do the best, most efficient job of making each technological advance available to the consumer. That technological treadmill is hardly the quiet life and "deaden[ing] of initiative" experienced by a *true* monopolist. *United States* v. *Aluminum Co. of America*, 148 F.2d 416, 427 (2d Cir. 1945).

B. "Willful" Acquisition or Maintenance

(1) The Law - Even if Microsoft did have (or were ever found by a court to have) monopoly power, possession of such power alone would not constitute a violation of section 2 of the Sherman Act. The acquisition, maintenance or extension of monopoly power by virtue of foresight, skill, industry, or even luck is not unlawful. *See, e.g., United States* v. *Grinnell Corp.*, 384 U.S. at 570-71.

Section 2 of the Sherman Act does not condemn a firm with lawfully obtained monopoly power from competing vigorously on the merits; rather, the law prohibits such a firm from engaging in "exclusionary" or "predatory" acts that lead to monopoly or that maintain an existing monopoly. According to the Supreme Court, "[i]f a firm has been 'attempting to exclude rivals on some basis other than efficiency,' it is fair to characterize its behavior as predatory." *Aspen Skiing Co.* v. *Aspen Highlands Skiing Corp.*, 472 U.S. 585, 605 (1985), quoting R. Bork, The Antitrust Paradox 138 (1978). For example, in *United States* v. *Lorain Journal Co.*, 342 U.S. 143 (1951), the Court found that the only local newspaper in Lorain, Ohio, had monopoly power over the sale of local advertising and had engaged in illegal exclusionary conduct. That conduct was blatant – the Journal flatly refused to accept any advertisements from companies also advertising on a new radio station that broadcast into Lorain and provided the only competing medium for local advertising. According to the Supreme Court, advertising in the Journal was "essential" for local advertisers, and the evidence was clear that the Journal engaged in the conduct to drive its only competitor out of business. The Journal, moreover, offered *no* efficiency rationale or other legitimate business justification for its conduct.

On the other hand, conduct for which there *is* a legitimate business justification (*i.e.*, conduct designed to lower the cost of production, distribution or marketing or to increase demand for the product or service) is not exclusionary or predatory even if the conduct disadvantages competitors. *See, e.g., Multistate Legal Studies,*

Inc. v. Harcourt Brace Jovanovich Legal and Prof'l Publics., 63 F.3d 1540, 1550 (10th Cir. 1995) ("A defendant may avoid liability by showing a legitimate business justification for the conduct"). In addition, so long as the justification is "asserted in good faith and not as a pretext, the defense does not require any kind of 'balancing' of social gains against competitive harms, except in the gross sense that trivial justifications should be disregarded." 3 P. Areeda & H. Hovenkamp, Antitrust Law ¶ 658f, at 127 (Rev. ed. 1996).

Moreover, section 2 proscribes conduct, not intent, and illegality ultimately turns on objective evidence of anticompetitive *effect*, not on subjective evidence of intent. *See, e.g., Ocean State Physicians Health Plan v. Blue Cross & Blue Shield*, 883 F.2d 1101, 1113 (1st Cir. 1989) (a "desire to crush a competitor, standing alone, is insufficient to make out a violation of the antitrust laws"), *cert. denied*, 494 U.S. 1027 (1990). Statements by an alleged monopolist's officers – no matter how aggressive or colorful the rhetoric – cannot substitute for objective evidence that the alleged monopolist has actually engaged in exclusionary or predatory conduct. *See, e.g.*, 3 P. Areeda & H. Hovenkamp, Antitrust Law ¶ 651a, at 74 (Rev. ed. 1996).

(2) Application to Microsoft – When evaluating all the allegations concerning exclusionary conduct by Microsoft, it is useful to recall the outcome of the first wave of investigations of Microsoft in the first half of this decade. Notwithstanding careful examination (by both the Federal Trade Commission and the Antitrust Division of the U.S. Department of Justice) of numerous allegations, the Department found only a single practice – the so-called per processor license – to be worthy of challenge. And, even then, the Department stated on the record that the practice did not account for Microsoft's success in licensing operating systems to computer manufacturers but that the practice represented only a future threat to competition. According to the Department, Microsoft's position in the market was obtained by lawful means.

Microsoft's rivals, of course, did not stop making allegations when the court entered the consent decree preventing Microsoft from continuing to offer the option of a per-processor license. Indeed, not long after it agreed to the consent decree, the Department declared itself to be the "Microsoft complaint department." Now, the critics are alleging that Microsoft has engaged in various exclusionary practices in order to *maintain* its "monopoly" or to *extend* that monopoly into new markets, primarily the Internet. Nevertheless, most of the recent allegations are similar if not identical to those investigated and rejected by the Department during its original investigation. And, with respect to the current allegations that reflect actual (as opposed to confabulated) Microsoft practices, the conduct represents vigorous competition on the merits, not unlawful exclusion.

• **Integrating Internet Functionality into Windows** –The current allegations focus largely on Microsoft's decision to integrate support for open Internet standards into Windows 95. However, the business justifications for that integration are numerous and manifest, while the adverse effect on rivals is nothing more than the inevitable impact of competition on the merits.

Quite simply, the principal reason Microsoft has integrated Internet functionality into its operating systems is that ISVs have demanded it. For example, ISVs are increasingly writing their applications to display information, whether stored locally (*e.g.*, on a PC's hard drive) or downloaded from the Internet, in the common language of the Internet – so-called, hypertext mark-up language ("HTML"). Putting that functionality in the operating system allows the thousands of ISVs to call on the same HTML "shared library" in the operating system and to avoid the need for each ISV to write its own version of HTML rendering in its application. Having integrated HTML rendering and other Internet functionality into the operating system in order to satisfy the demands of ISVs, it is logical (and efficient) for Microsoft to provide a means (for example, the Internet Explorer ("IE") icon on the desktop) to enable consumers to launch that functionality to "browse" the Internet.

While the efficiencies of integrating Internet functionality into Microsoft's operating systems seem clear, the exclusionary effect of that integration is difficult to discern – except to the extent that such integration is so technologically superior that it diverts demand from web browsing software such as Netscape's Navigator and Communicator. Indeed, some level of Internet functionality has been integrated into Windows 95 from the time it was first shipped to computer manufacturers;

however, it was not until IE's functionality (embodied in versions 3.0 and 4.0) surpassed that of Netscape's products that consumers in large numbers started choosing IE instead of those products.

Moreover, in its consent decree case against Microsoft, the Department has pointed to no evidence that Microsoft attempted to prevent any computer manufacturer from installing Netscape's web browsing software. Rather, Microsoft simply requires computer manufacturers to install Windows as shipped, thereby precluding them from deleting features, including Internet functionality and the IE icon. Ironically, Microsoft's enforcement of this license provision *prevents* Netscape – whose web browsing software is still used by more than 50 percent of Internet surfers – from obtaining exclusives with computer manufacturers; yet, the critics suggest it is Microsoft's conduct that is exclusionary!

• **"Giving Away" Internet Explorer** - Similarly, the claim that Microsoft's policy of "giving away" IE amounts to predatory pricing is specious. In light of the fact that IE is integrated into Windows, it would be odd if Microsoft were to charge a separate, positive price for that one feature out of the scores of Windows features. And, no one disputes that Microsoft makes a profit on its sales of Windows.

Of course, Microsoft also allows existing owners of Windows to download the latest version of IE off the Internet at no charge and gives away to the users of non-Microsoft operating systems, such as Apple's Macintosh, the web browsing software that Microsoft has written for those other operating systems. However, those "give aways" are also not predatory. The Supreme Court has indicated that an alleged monopolist's pricing is not "predatory" unless its prices are "below an appropriate measure of [that firm's] costs." *Brooke Group v. Brown & Williamson Tobacco Co.*, 509 U.S. 209, 222 (1993). Once a piece of software is written, the cost of copying it is essentially zero. Thus, even giving away copies of software would not be "predatory," as the Supreme Court has defined the term. Also, it was Netscape, not Microsoft, that began the practice of giving away web browsing software. Moreover, like Microsoft, Netscape gives away its web browsing software in the expectation of earning revenues elsewhere – for example, by stimulating sales of related software and services.

• **Manipulation of APIs to Disadvantage Competing Browsers** – One of the favorite excuses of companies that have been unsuccessful in selling applications in competition with Microsoft has been the allegation that Microsoft has taken unfair advantage of undisclosed APIs in its operating systems in order to make Microsoft's applications work better than those of its rivals. The Department of Justice thoroughly investigated those allegations and rejected them before the original consent decree was negotiated in 1994. Nonetheless, based on published reports, Netscape is now trying to resurrect this canard as an excuse for its declining market share in web browsing software.

As with the past allegations, there is simply no substance to the claim that Microsoft has manipulated APIs in Windows to harm Netscape or anyone else. First, based on both Microsoft's own tests of its operating systems (both Windows 95 and Windows 98) and the observations of unbiased third parties (such as journalists), Netscape's browser products and related software install and function well on Windows – there is no evidence that Netscape's products routinely crash or that their performance is degraded. Second, Microsoft treats Netscape no differently from any of the other thousands and thousands of ISVs that successfully and profitably write applications for Windows. Netscape has full access to Windows APIs, and Microsoft's large software-developer relations group has always been available to work with Netscape to ensure that Netscape's browsing software functions to its maximum capabilities on Windows. Third, as even Microsoft's severest critics note, a central reason for Microsoft's commercial success has been the support Microsoft provides to ISVs writing applications for Microsoft's operating systems. That strategy, which Microsoft has traditionally and consistently followed, is fundamentally at odds with the allegations being resurrected by Netscape.

In short, there is no evidence that Microsoft has done anything to make Windows incompatible with Netscape's products. It would make no sense to do so given the popularity of those products among Windows users. Moreover, given the importance that Microsoft attaches to good relations with software developers, it is in Microsoft's interest to avoid even the appearance of treating one of those software developers unfairly by depriving it of information needed to develop

applications that are compatible with Windows.

Nevertheless (and somewhat ironically), it is *not* unlawful for even a monopolist to make improvements in its products in such a way as to give its own related products (such as applications in the case of an operating system) a competitive advantage over competing products sold by rivals. And the law imposes no obligation on a monopolist to reveal proprietary information (such as APIs) to rivals simply because they are competitively disadvantaged without that information. *A fortiori*, if a company such as Microsoft systematically discloses large amounts of information about its new operating systems well in advance of commercial release to facilitate the development of compatible products, the fact that a feature of an operating system works better than a substitute stand-alone application would certainly not violate the antitrust laws.

• **Promotion of Microsoft's Web Browsing Software** –Microsoft includes as part of Windows a so-called "wizard" that makes it easy for consumers to sign up for Internet access from a select group of Internet Service Providers ("ISPs"). Under their previous agreements with Microsoft, the few ISPs participating in the wizard-referral service agreed to promote Microsoft's web browsing software and not to promote (or otherwise try to switch consumers referred by the wizard to) competing web browsing software.

The provision reflected nothing more than a normal and legitimate understanding in a cross-marketing initiative, and it was not exclusionary. The provision appeared in Microsoft's agreements with only twelve ISPs in the United States, and those agreements did not prohibit the affected ISPs from distributing the web browsing software of Microsoft's rivals. The ISPs also were free to offer other Internet services (not participating in the referral program) that promoted competing web browsing software. In short, the provision was no more restrictive than similar provisions typically found in cross-marketing arrangements. Regardless of the industry, few if any firms (including those without the slightest hint of monopoly power) are willing to refer customers to third parties without some assurance that those customers will not be switched to the competition.

While the provision was hardly remarkable and clearly justified, it proved to be not very important to Microsoft's business. As a result, earlier this year when Microsoft was reviewing its agreements with participating ISPs, it modified the contracts to require merely that an ISP promote Microsoft's web browsing software no less favorably than the ISP promotes competing web browsing software. (Microsoft subsequently made essentially the same change to similar promotional limitations that appeared in its contracts with a few Internet content providers that participate in Microsoft's Channel Bar, a feature of Windows by which Internet content is automatically downloaded to a user's PC.)

• **The "First Screen" Provision** – Microsoft's critics also argue that it is "exclusionary" for Microsoft to ensure, through a provision in its licenses with computer manufacturers that, when a new PC is turned on ("booted up") for the very first time, the Windows user interface with all its features intact will appear. That provision of the Windows license reflects a key element of Microsoft's business formula for success, namely its guarantee to consumers and ISVs that the "look, feel, and functionality" of Windows will be consistent. When the consumer buys a PC that has Windows preinstalled, the provision ensures that the features a consumer associates with, and expects to see on, Windows will in fact be on the screen. Having allowed a computer manufacturer to install Windows and to use the Windows names and marks to sell the PC, Microsoft has a legitimate interest in preserving its goodwill by ensuring that its product reaches the consumer intact and not degraded. Indeed, in a few instances in the past when computer manufacturers shipped machines that initially booted to a first screen other than Microsoft's, some of the Windows' functionality was impaired and irate consumers blamed Microsoft.

While the "first screen" provision generates significant efficiencies, it is also crucial to keep in mind that it is in no legal sense exclusionary. Under the terms of Microsoft's license, a computer manufacturer is free to install on its PCs additional, non-Microsoft user interfaces to which the consumer can switch with a single "click of the mouse." After a new PC's very first "boot up" is complete, the machine's owner can configure the machine to boot to a different first screen thereafter. Similarly, computer manufacturers are free to load other third party applications

and utilities – the icons for which computer manufacturers are free to place on the first screen of Windows – even if those applications and utilities compete with features of Windows. Indeed, if, as Microsoft's critics claim, the Windows first screen is the world's most valuable commercial real estate, more than three-quarters of that screen is "vacant" and freely available to a PC manufacturer to accommodate the icons of applications and utilities provided by the manufacturer and third parties.

• **"Tipping"** – Some critics have claimed that because the operating system market is subject to "network externalities," practices that ordinarily might seem benign or that have only a slight exclusionary effect can "tip" markets in favor of a given operating system platform. It is claimed that such tipping can have a dramatic long-term anticompetitive impact, perhaps even enabling Microsoft to suffocate a paradigm shift (for example, to NCs) that threatens to make Windows obsolete. According to these critics, any of the foregoing practices (as well as others) alone or together may tip the market in Microsoft's favor. As a result, they argue that small threats of tipping warrant government intervention even when Microsoft has a valid business justification for the practices being challenged. In effect, they argue that the theoretical threat to competition outweighs even very substantial efficiencies that benefit consumers.

In order to succeed, an antitrust challenge based on such an argument would require a dramatic change in the way the courts have historically interpreted section 2 of the Sherman Act. As explained above, in section 2 cases, the courts historically have avoided even trying to balance legitimate business justifications against perceived anticompetitive effects – antitrust courts are simply not capable of engaging in such complex and subjective balancing. Moreover, Microsoft's conduct that some have characterized as "tipping" can just as easily and more accurately be characterized as competition on the merits. Microsoft, no less than Netscape, Sun, IBM, or any other competitor, should be free to convince consumers that its vision of computing after the next paradigm shift is the most desirable. Microsoft should also be free to bring that vision to market as quickly and efficiently as possible.

II. Remedies and The Inescapable Threat of Regulation

If Microsoft has not violated the law, then – no matter how much the lawyers at the Department would like to change or restrict Microsoft's behavior – they have no power to impose *any* remedy. Thus, unless and until there is some indication that the Department has meritorious claims against Microsoft, it is inappropriate for the Department even to contemplate remedies.

Nevertheless, if and when the Department (appropriately or not) reaches the issue of remedies, it is a virtual certainty that any remedy the Department might consider would enmesh the Department in broad regulation of the software industry. Even in the best of circumstances when it has explicitly tried to *avoid* regulation, the Department has almost always found itself acting as a regulator under section 2 decrees. The examples of regulatory decrees abound. However, one need go no further back than 1982 and the AT&T decree to find a striking example of how difficult it is to fashion a non-regulatory remedy when the Government seeks to constrain or manipulate the ability of a company or companies to compete.

The AT&T consent decree (also referred to as the "Modified Final Judgment" or "MFJ") marked the end of the Department's section 2 case against the nation's telephone monopoly. In addition to breaking up "Ma Bell," the decree also restricted the ability of the divested local telephone companies (the Regional Bell Operating Companies or "RBOCs") to enter competitive, non-regulated businesses. Though the Department believed that it had crafted decree restrictions that were simple, self-enforcing, and non-regulatory, those restrictions very quickly mired the Department in a regulatory quagmire that was only eliminated with the enactment of the Telecommunications Act of 1996. Within a year of the break-up of AT&T, there was a small staff of Department lawyers doing nothing but applying the decree restrictions to the day-to-day operations of the RBOCs. Decisions that most businesses make in a matter of days or weeks took the RBOCs months or years because they had to be cleared with the Department and, in some cases, even the decree court. Moreover, because of the evolution of technology, definitions that made sense in 1982 mandated inefficient conduct only a few years later.

The Department's experience with the AT&T decree bodes ill for any effort to find "non-regulatory" remedies to impose on Microsoft, particularly if the concern is "tipping." Remember the AT&T experience is not ancient history; it is recent and this Administration was every bit as responsible as its predecessors were for implementing the decree in a regulatory manner. Moreover, no one can doubt that Bill Baxter, who authored the decree, was sincere in his search for a non-regulatory solution to the competitive problems posed by the AT&T monopoly.

While reports indicate that the Department recognizes that a "break-up" of Microsoft would not be warranted (and would make no sense in any event), the Department might fool itself into believing that it can devise modest but effective "remedies" that are non-regulatory. It has been suggested, for example, that one such remedy could be found in a decree provision that simply requires Microsoft to make any new operating system feature optional to computer manufacturers. Though it may sound modest, such a remedy would in fact be highly regulatory.

First, such a provision would require Microsoft to consult with and defer to the Department in designing its operating systems, complicating and slowing the process to an intolerable extent.

Second, giving each computer manufacturer the option of picking and choosing features of the operating system would defeat the efficiencies and consumer benefits associated with ensuring that Microsoft's operating systems are consistent throughout the market. Currently, that consistency ensures software developers that, if they write their applications in a way that uses (and depends upon) certain functionality in (*i.e.*, system services provided by) Windows, such functionality will be present in every copy of Windows that is installed on a PC. That consistency also ensures consumers that the features they associate with and expect from Windows will be present on any PC with Windows, regardless of the manufacturer of the PC. Not only is it more efficient to market Windows nationally and internationally if it has a consistent feature-set, but it is also makes using computers easier (*i.e.*, consumers don't have to relearn how to use a computer's features every time they move from one brand of PC to another).

Third, because of the integrated nature of the various functionalities in an operating system, it is no simple matter to determine the impact that removing a given function will have on the rest of the operating system. The cost and delay associated with testing and "de-bugging" the numerous resulting varieties of Windows would be huge. Moreover, if any new feature of Windows must be made optional to computer manufacturers, the number of potential varieties of Windows that Microsoft would have to support (for example, by providing customer service) would be virtually infinite. The enormous cost and confusion would largely be borne by unhappy consumers.

Finally, such a regulatory remedy would undoubtedly beget even more regulation. For example, the Department might decide that such an option would only be meaningful if Microsoft charged more for a fully functional operating system than for an operating system from which certain features had been removed. That step, however, would inevitably involve the Department in regulating Microsoft's pricing decisions, a truly radical interference with the operation of the free market.

* * *

Based on the available information, it would appear that there is simply no viable section 2 case against Microsoft. That should be the end of matter – there is no need to consider remedies. However, if the Department launches a quixotic campaign to persuade the courts to overturn the accumulated lessons of over one hundred years of section 2 case law, the cost to innovation and consumers will be enormous.

Microsoft VP Steve Ballmer speaks

By CNET STAFF
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NEWS.COM
May 10, 1996, 2 p.m. PT
URL: http://www.news.com/SpecialFeatures/0,5,1300,00.html

Steve Ballmer has opinions--lots of them. As the Microsoft executive vice president of sales and support, he has to convince the buying public that the software giant has the goods to be a leader in the Internet-dominated world. Ballmer held court on Microsoft and the Web during a visit to CNET earlier this week.

CINET: Have you seen any significant improvement in market share for Internet Explorer?

BALLMER: Some improvement. We're still at the level where even that improvement isn't something where you go, "Oh, oh, oh!" On the intranet, I think we're starting to make some real inroads. It's not clear to a lot of people why they ought to go out and buy the Netscape browser when our stuff will be very well integrated with Windows and will be very integrated with our Office stuff. So certainly in that [intranet] environment we've seen some great progress, but it's a little harder to measure. But I sure feel like there's a lot of momentum in the customers I visit. I see people moving fairly nicely.

CINET: Do you have a specific expectation on the Internet? Do you think you'll get 20 percent by the end of the year?

BALLMER: I don't think we have a stated target. We just know we have to put our heads down and get everything we can, as fast as we can. AOL itself, if that all works out right, should be a significant bump, almost independent of everything else, but we just have to keep our heads down. We've got to ship IE 3.0--that's actually a very important milestone. We've got to get content that really takes advantage of IE 3.0. IE 3.0 is very customizable, which from the number of provider standpoints, is very attractive.

The best way to become number one is to first become number two! And the best way to never be number two is to seize number three and number four! When we started building market share in word processing, we didn't take it away from WordPerfect at first. Eventually we started cutting into them.

CINET: Are there going to be just two horses in this browser race?

BALLMER: You tell me. I think so. I have not seen significant momentum, at least in terms of what ISVs [independent software vendors] or ICPs [independent content providers] are talking about other than our stuff and Netscape's stuff, but maybe I'm fooling myself. But I think that's pretty true.

CINET: Bill Gates at Internet World said he thinks the Web browser is the fastest-growing piece of software out there and that if we don't watch out we're going to have another OS on our hands. Many people see Netscape Navigator as an alternative, on some level, to the traditional OS.

BALLMER: Yeah, [Netscape] wants to be an OS. That's right.

CINET: Is Internet Explorer 3.0 not headed for the same goal?

BALLMER: No, IE 3.0 doesn't need to reproduce that. We have to make sure that we share well with the rest of Windows. That's basically the difference. So it doesn't need to be another OS; it just needs to add on certain things that you don't get today in Windows. We need to integrate in. There doesn't need to be an Explorer and an Internet Explorer. There just needs to be one thing. We'll do that later this year. We don't need to have multiple ways of letting people view email. That can be integrated and not done twice. In other words, we don't need two programming models; ActiveX attempts to unify the programming model.

CINET: How seriously is Microsoft going to get into providing content?

BALLMER: Quite seriously. The content field is vast, so it's not clear what it means to say "seriously." But we clearly have plans to try to add value, to do some exciting things in more than one area. Slate [an online political magazine set to launch this summer] is a good example. What we're doing with MSN is a good example. I read that rumor about old CityScape--who knows whether that's a good example or not, but we've done some stuff in health already. I think our pregnancy stuff is available today. I guess "health guides" is the best way to characterize what we've done there. Car Source, of course, will be 100 percent Web based. You can call it content or not--it's more of a shopping and information guide. It's a form of content, absolutely. The work we're doing with NBC certainly falls into that category. So we'll have a number of things that we try to do. Hopefully, some of those will be viewed positively. I'm sure we'll get some bumps and bruises from some of them.

CINET: And your business model is to have users pay for the content?

BALLMER: Well it's a mix, like everybody else. Where appropriate, each of the properties will have sort of a different mix of zero subscription fees, all advertising-funded, to exactly the reverse. We know there's definitely a subscription fee for Slate. Not only might that be important in having it make money, but it's very important to [Slate editor Michael] Kinsley because he doesn't come from the same kind of world that maybe some of us do. He doesn't think anything is worth owning if you didn't have to pay for it. That's the magazine world.

CINET: A year and a half ago the platform for most users was Windows, and today on a PC, for a lot of people the platform is Windows plus Office. Very soon it will be Windows plus Java, Office, a built-in browser, and ActiveX components. What does Windows take on next?

BALLMER: Telephony, video, MPEG, 3D. There are a lot of things that relate to the way people communicate to the platform. One of the key messages of the whole browser thing isn't so much the Internet, because we always bet that communication prices would come down and people would communicate. But people like hypertext links.

If you ask me what's the number-one lesson we should have learned, it's kind of a shame on us--we had this very tree-oriented metaphor. People turned out to like this hypertext link mode. Now, I think there's sometimes people who actually like to go back to the old tree metaphor. Being able to mix those two modes well is important, but there's always something on the frontier of what people want to do in the way they organize information to express themselves, to communicate.

CINET: Are Microsoft's expectations in line with Windows 95's penetration into the corporate market?

BALLMER: Right now, we've exceeded our plans reasonably significantly.

CINET: If you're taking market share with Windows 95, who are you taking it from?

BALLMER: OS/2 has kind of faded, so primarily we take it from Windows 3.1. The battle for the operating systems isn't about Windows. It's really about what's the future for Windows. Is the future of Windows Windows, or is the future of Windows Navigator? Windows' number-one competitor is Netscape today much more than it is OS/2.

CINET: Why do you say that, even if Navigator isn't a fully fledged operating system?

BALLMER: Oh, because [Netscape's Marc] Andreessen says it's going to be.

CINET: Really?

BALLMER: Whatever you want to call it--an operating environment. Aren't you fined a quarter for calling Navigator a "browser" at Netscape? You're supposed to call it a "client."

CINET: Do you take that seriously?

BALLMER: Sure! Let me tell you a story. Once upon a time there was a piece of software that was an extension of an operating system, and it had a nice little user interface and it had some programming interfaces and people kind of liked it, and over time they built on top of it. One day, the thing that it was built on top of wasn't all that important anymore, and it kind of got subsumed inside of the thing that was originally an extension.

OK, well I'm telling you, of course, the story of Windows 95, Windows, and DOS. And when we tell the story about what's happening today with browsers ten years from now, I want the thing that replaces Windows to be Windows. I don't want to wake up in a position one day where the guys at Netscape say, "Isn't Windows just that little thing that we use to put up menus and draw lines? Let's just write our own and suck it up into our client."

Is that a real competitive risk or not? It is if we screw up, you bet! That's the way we will get smacked over the head. If I wanted to compete with Microsoft, I wouldn't say, "Oh yeah, let's try to write a better memory manager, and we'll have lighter-weight threads than they do." In this day and age it's not sexy enough, and there's no user interface. The OS/2 experience proves full well the value of that. I would do what Netscape is doing. I'd say I'll build on top of [Windows], and I'll take their future away from them.

So yeah, we look at [Navigator] as a very direct threat for Windows if we don't do a good job. That's not a threat a month from now or five months from now. It's a longer-term threat, but it's a clear threat. It's sort of an everyday issue, but if we screw up, you won't know for a few years. You'll know day-by-day what our browser share is, but that doesn't really speak to the issue, doesn't threaten the fundamental health of Windows. I'm not sure any of us will know which day it was when we got it salted away. So we're just going to keep working very, very, very hard--at least the rest of my working life! [Windows] is our core franchise. What else is worth working hard on?

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