

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

UNITED STATES OF AMERICA,
Plaintiff

v.

MICROSOFT CORPORATION,
Defendant.

Civil Action No. 98-1232 (TPJ)

STATE OF NEW YORK, ex rel.
Attorney General ELIOT SPITZER, et al.,
Plaintiffs and
Counterclaim-Defendants,

v.

MICROSOFT CORPORATION,
Defendant and
Counterclaim-Plaintiff.

Civil Action No. 98-1233 (TPJ)

COURT'S FINDINGS OF FACT

November 5, 1999

(excerpts)

These consolidated civil antitrust actions alleging violations of the Sherman Act, §§1 and 2, and various state statutes by the defendant Microsoft Corporation, were tried to the Court, sitting without a jury, between October 19, 1998, and June 24, 1999. The Court has considered the record evidence submitted by the parties, made determinations as to its relevancy and materiality, assessed the credibility of the testimony of the witnesses, both written and oral, and ascertained for its purposes the probative significance of the documentary and visual evidence presented. Upon the record before the Court as of July 28, 1999, at the close of the admission of evidence, pursuant to Fed. R. Civ. P. 52(a), the Court finds the following facts to have been proved by a preponderance of the evidence. The Court shall state the conclusions of law to be drawn therefrom in a separate Memorandum and Order to be filed in due course. . . .

III.

MICROSOFT'S POWER IN THE RELEVANT MARKET

33. Microsoft enjoys so much power in the market for Intel-compatible PC operating systems that if it wished to exercise this power solely in terms of price, it could charge a price for Windows substantially above that which could be charged in a competitive market. Moreover, it could do so for a significant period of time without losing an unacceptable amount of business to competitors. In other words, Microsoft enjoys monopoly power in the relevant market.

34. Viewed together, three main facts indicate that Microsoft enjoys monopoly power. First, Microsoft's share of the market for Intel-compatible PC operating systems is extremely large and stable. Second, Microsoft's dominant market share is protected by a high barrier to entry. Third, and largely as a result of that barrier, Microsoft's customers lack a commercially viable alternative to Windows.

A. Market Share

35. Microsoft possesses a dominant, persistent, and increasing share of the world-wide market for Intel-compatible PC operating systems. Every year for the last decade, Microsoft's share of the market for Intel-compatible PC operating systems has stood above ninety percent. For the last couple of years the figure has been at least ninety-five percent, and analysts project that the share will climb even higher over the next few years. Even if Apple's Mac OS were included in the relevant market, Microsoft's share would still stand well above eighty percent.

B. The Applications Barrier to Entry

1. Description of the Applications Barrier to Entry

36. Microsoft's dominant market share is protected by the same barrier that helps define the market for Intel-compatible PC operating systems. As explained above, the applications barrier would prevent an aspiring entrant into the relevant market from drawing a significant number of customers away from a dominant incumbent even if the incumbent priced its products substantially above competitive levels for a significant period of time. Because Microsoft's market share is so dominant, the barrier has a similar effect within the market: It prevents Intel-compatible PC operating systems other than Windows from attracting significant consumer demand, and it would continue to do so even if Microsoft held its prices substantially above the competitive level.

37. Consumer interest in a PC operating system derives primarily from the ability of that system to run applications. The consumer wants an operating system that runs not only types of applications that he knows he will want to use, but also those types in which he might develop an interest later. Also, the consumer knows that if he chooses an operating system with enough demand to support multiple applications in each product category, he will be less likely to find himself straitened later by having to use an application whose features disappoint him. Finally, the average user knows that, generally speaking, applications improve through successive versions. He thus wants an operating system for which successive generations of his favorite applications will be released—promptly at that. The fact that a vastly larger number of applications are written for Windows than for other PC operating systems attracts consumers to Windows, because it reassures them that their interests will be met as long as they use Microsoft's product.

38. Software development is characterized by substantial economies of scale. The fixed costs of producing software, including applications, is very high. By contrast, marginal costs are very low. Moreover, the costs of developing software are "sunk"—once expended to develop software, resources so devoted cannot be used for another purpose. The result of economies of scale and sunk costs is that application developers seek to sell as many copies of their applications as possible. An application that is written for one PC

operating system will operate on another PC operating system only if it is ported to that system, and porting applications is both time-consuming and expensive. Therefore, application developers tend to write first to the operating system with the most users—Windows. Developers might then port their applications to other operating systems, but only to the extent that the marginal added sales justify the cost of porting. In order to recover that cost, ISVs that do go to the effort of porting frequently set the price of ported applications considerably higher than that of the original versions written for Windows.

39. Consumer demand for Windows enjoys positive network effects. A positive network effect is a phenomenon by which the attractiveness of a product increases with the number of people using it. The fact that there is a multitude of people using Windows makes the product more attractive to consumers. The large installed base attracts corporate customers who want to use an operating system that new employees are already likely to know how to use, and it attracts academic consumers who want to use software that will allow them to share files easily with colleagues at other institutions. The main reason that demand for Windows experiences positive network effects, however, is that the size of Windows' installed base impels ISVs to write applications first and foremost to Windows, thereby ensuring a large body of applications from which consumers can choose. The large body of applications thus reinforces demand for Windows, augmenting Microsoft's dominant position and thereby perpetuating ISV incentives to write applications principally for Windows. This self-reinforcing cycle is often referred to as a "positive feedback loop."

40. What for Microsoft is a positive feedback loop is for would-be competitors a vicious cycle. For just as Microsoft's large market share creates incentives for ISVs to develop applications first and foremost for Windows, the small or non-existent market share of an aspiring competitor makes it prohibitively expensive for the aspirant to develop its PC operating system into an acceptable substitute for Windows. To provide a viable substitute for Windows, another PC operating system would need a large and varied enough base of compatible applications to reassure consumers that their interests in variety, choice, and currency would be met to more-or-less the same extent as if they chose Windows. Even if the contender attracted several thousand compatible applications, it would still look like a gamble from the consumer's perspective next to Windows, which supports over 70,000 applications. The amount it would cost an operating system vendor to create that many applications is prohibitively large. Therefore, in order to ensure the availability of a set of applications comparable to that available for Windows, a potential rival would need to induce a very large number of ISVs to write to its operating system.

41. In deciding whether to develop an application for a new operating system, an ISV's first consideration is the number of users it expects the operating system to attract. Out of this focus arises a collective-action problem: Each ISV realizes that the new operating system could attract a significant number of users if enough ISVs developed applications for it; but few ISVs want to sink resources into developing for the system until it becomes established. Since everyone is waiting for everyone else to bear the risk of early adoption, the new operating system has difficulty attracting enough applications to generate a

positive feedback loop. The vendor of a new operating system cannot effectively solve this problem by paying the necessary number of ISVs to write for its operating system, because the cost of doing so would dwarf the expected return.

42. Counteracting the collective-action phenomenon is another known as the “first-mover incentive.” For an ISV interested in attracting users, there may be an advantage to offering the first and, for a while, only application in its category that runs on a new PC operating system. The user base of the new system may be small, but every user of that system who wants such an application will be compelled to use the ISV’s offering. Moreover, if demand for the new operating system suddenly explodes, the first mover will reap large sales before any competitors arrive. An ISV thus might be drawn to a new PC operating system as a “protected harbor.” Once first-movers stake claims to the major categories of applications, however, there is a strong chance that the new operating system could stall; it would not support the most familiar applications, nor the variety and number of applications, that attract large numbers of consumers, and there would no longer exist a first-mover incentive to attract additional ISVs to the important application categories. Although the upstart operating system might find itself with enough applications support to hold a fraction of the market, the collective-action phenomenon would still prevent the system from gaining the kind of positive feedback momentum that can turn a fringe entrant into a rival that would put competitive pressure on Windows.

43. The cost to a would-be entrant of inducing ISVs to write applications for its operating system exceeds the cost that Microsoft itself has faced in inducing ISVs to write applications for its operating system products, for Microsoft never confronted a highly penetrated market dominated by a single competitor. Of course, the fact that it is extremely difficult for an efficient would-be rival to accumulate enough applications support to compete with Windows does not mean that sustaining its own applications support is effortless for Microsoft. In fact, if Microsoft stopped investing the hundreds of millions of dollars it spends each year inducing ISVs to write applications for Windows, it might become easier than it currently is for a competitor to develop its own positive feedback loop. But given that Windows today enjoys overwhelmingly more applications support than any other PC operating system, it would still take that competitor years to develop the necessary momentum. Plus, while Microsoft may spend more on platform “evangelization,” even in relative terms, than any other PC operating-system vendor, it is not difficult to understand why it is worthwhile for the principal beneficiary of the applications barrier to devote more resources to augmenting it than aspiring rivals are willing to expend in speculative efforts to erode it.

44. Microsoft continually releases “new and improved” versions of its PC operating system. Each time it does, Microsoft must convince ISVs to write applications that take advantage of new APIs, so that existing Windows users will have incentive to buy an upgrade. Since ISVs are usually still earning substantial revenue from applications written for the last version of Windows, Microsoft must convince them to write for the new version. Even if ISVs are slow to take advantage of the new APIs, though, no applications barrier stands in the way of consumers adopting the new system, for Microsoft ensures that successive versions of Windows retain the ability to run

applications developed for earlier versions. In fact, since ISVs know that consumers do not feel locked into their old versions of Windows and that new versions have historically attracted substantial consumer demand, ISVs will generally write to new APIs as long as the interfaces enable attractive, innovative features. Microsoft supplements developers' incentives by extending various 'seals of approval'—visible to consumers, investors, and industry analysts—to those ISVs that promptly develop new versions of their applications adapted to the newest version of Windows. In addition, Microsoft works closely with ISVs to help them adapt their applications to the newest version of the operating system—a process that is in any event far easier than porting an application from one vendor's PC operating system to another's. In sum, despite the substantial resources Microsoft expends inducing ISVs to develop applications for new versions of Windows, the company does not face any obstacles nearly as imposing as the barrier to entry that vendors and would-be vendors of other PC operating systems must overcome.

2. Empirical Evidence of the Applications Barrier to Entry

45. The experiences of IBM and Apple, Microsoft's most significant operating system rivals in the mid- and late 1990s, confirm the strength of the applications barrier to entry.

a. OS/2 Warp

46. IBM's inability to gain widespread developer support for its OS/2 Warp operating system illustrates how the massive Windows installed base makes it prohibitively costly for a rival operating system to attract enough developer support to challenge Windows. In late 1994, IBM introduced its Intel-compatible OS/2 Warp operating system and spent tens of millions of dollars in an effort to attract ISVs to develop applications for OS/2 and in an attempt to reverse-engineer, or "clone," part of the Windows API set. Despite these efforts, IBM could obtain neither significant market share nor ISV support for OS/2 Warp. Thus, although at its peak OS/2 ran approximately 2,500 applications and had 10% of the market for Intel-compatible PC operating systems, IBM ultimately determined that the applications barrier prevented effective competition against Windows 95. For that reason, in 1996 IBM stopped trying to convince ISVs to write for OS/2 Warp. IBM now targets the product at a market niche, namely enterprise customers (mainly banks) that are interested in particular types of application that run on OS/2 Warp. The fact that IBM no longer tries to compete with Windows is evidenced by the fact that it prices OS/2 Warp at about two-and-one-half times the price of Windows 98.

b. The Mac OS

47. The inability of Apple to compete effectively with Windows provides another example of the applications barrier to entry in operation. Although Apple's Mac OS supports more than 12,000 applications, even an inventory of that magnitude is not sufficient to enable Apple to present a significant percentage of users with a viable substitute for Windows. The absence of a large installed base, in turn, reinforces the disparity between the applications made available for the Mac OS and those made available for Windows, further inhibiting Apple's sales. The applications barrier thus prevents the Mac OS from hindering Microsoft's ability to control price, regardless of whether the Mac OS is regarded as being in the relevant market or not.

c. Fringe Operating Systems

48. The applications barrier to entry does not prevent non-Microsoft, Intel-compatible PC operating systems from attracting enough consumer demand and ISV support to survive. It does not even prevent vendors of those products from making a profit. The barrier does, however, prevent the products from drawing a significant percentage of consumers away from Windows.

49. As discussed above, Be markets an Intel-compatible PC operating system, called BeOS, that is specially suited to support multimedia functions. The operating system survives on a relatively minuscule number of applications (approximately 1,000) and a user base which, at around 750,000, is trivial compared to the number of Windows users. One of the reasons the BeOS can even attract that many users despite its small base of applications is that it advertises itself as a complement to, rather than as a substitute for, Windows. Although the BeOS could run an Intel-compatible PC system without Windows, it is almost always loaded on a system along with Windows. What is more, when these dual-loaded PC systems are turned on, Windows automatically boots; the user must then take affirmative steps to invoke the BeOS. While this scheme allows the BeOS to occupy a niche in the market, it does not place the product on a trajectory to replace Windows on a significant number of PCs. The special multimedia support provided by the BeOS may, for a small number of users, outweigh the disadvantages of maintaining two large, complex operating systems on one PC. Of that group, however, it is likely that only a tiny number of users will find that support so attractive that they would be willing to forego Windows, and its huge base of compatible applications, altogether.

50. The experience of the Linux operating system, a version of which runs on Intel-compatible PCs, similarly fails to refute the existence of an applications barrier to entry. Linux is an “open source” operating system that was created, and is continuously updated, by a global network of software developers who contribute their labor for free. Although Linux has between ten and fifteen million users, the majority of them use the operating system to run servers, not PCs. Several ISVs have announced their development of (or plans to develop) Linux versions of their applications. To date, though, legions of ISVs have not followed the lead of these first movers. Similarly, consumers have by and large shown little inclination to abandon Windows, with its reliable developer support, in favor of an operating system whose future in the PC realm is unclear. By itself, Linux’s open-source development model shows no signs of liberating that operating system from the cycle of consumer preferences and developer incentives that, when fueled by Windows’ enormous reservoir of applications, prevents non-Microsoft operating systems from competing.

3. Open-Source Applications Development

51. Since application developers working under an open-source model are not looking to recoup their investment and make a profit by selling copies of their finished products, they are free from the imperative that compels proprietary developers to concentrate their efforts on Windows. In theory, then, open-source developers are at least as likely to

develop applications for a non-Microsoft operating system as they are to write Windows-compatible applications. In fact, they may be disposed ideologically to focus their efforts on open-source platforms like Linux. Fortunately for Microsoft, however, there are only so many developers in the world willing to devote their talents to writing, testing, and debugging software pro bono publico. A small corps may be willing to concentrate its efforts on popular applications, such as browsers and office productivity applications, that are of value to most users. It is unlikely, though, that a sufficient number of open-source developers will commit to developing and continually updating the large variety of applications that an operating system would need to attract in order to present a significant number of users with a viable alternative to Windows. In practice, then, the open-source model of applications development may increase the base of applications that run on non-Microsoft PC operating systems, but it cannot dissolve the barrier that prevents such operating systems from challenging Windows.

4. Cloning the 32-Bit Windows APIs

52. Theoretically, the developer of a non-Microsoft, Intel-compatible PC operating system could circumvent the applications barrier to entry by cloning the APIs exposed by the 32-bit versions of Windows (Windows 9x and Windows NT). Applications written for Windows would then also run on the rival system, and consumers could use the rival system confident in that knowledge. Translating this theory into practice is virtually impossible, however. First of all, cloning the thousands of APIs already exposed by Windows would be an enormously expensive undertaking. More daunting is the fact that Microsoft continually adds APIs to Windows through updates and new versions. By the time a rival finished cloning the APIs currently in existence, Windows would have exposed a multitude of new ones. Since the rival would never catch up, it would never be able to assure consumers that its operating system would run all of the applications written for Windows. IBM discovered this to its dismay in the mid-1990s when it failed, despite a massive investment, to clone a sufficiently large part of the 32-bit Windows APIs. In short, attempting to clone the 32-bit Windows APIs is such an expensive, uncertain undertaking that it fails to present a practical option for a would-be competitor to Windows.

C. Viable Alternatives to Windows

53. That Microsoft's market share and the applications barrier to entry together endow the company with monopoly power in the market for Intel-compatible PC operating systems is directly evidenced by the sustained absence of realistic commercial alternatives to Microsoft's PC operating-system products.

54. OEMs are the most important direct customers for operating systems for Intel-compatible PCs. Because competition among OEMs is intense, they pay particularly close attention to consumer demand. OEMs are thus not only important customers in their own right, they are also surrogates for consumers in identifying reasonably-available commercial alternatives to Windows. Without significant exception, all OEMs pre-install Windows on the vast majority of PCs that they sell, and they uniformly are of a mind that there exists no commercially viable alternative to which they could switch in response to a substantial and sustained price increase or its equivalent by Microsoft. For example, in 1995, at a time when IBM still

placed hope in OS/2's ability to rival Windows, the firm nevertheless calculated that its PC company would lose between seventy and ninety percent of its sales volume if failed to load Windows 95 on its PCs. Although a few OEMs have announced their intention to pre-install Linux on some of the computers they ship, none of them plan to install Linux in lieu of Windows on any appreciable number of PC (as opposed to server) systems. For its part, Be is not even attempting to persuade OEMs to install the BeOS on PCs to the exclusion of Windows.

55. OEMs believe that the likelihood of a viable alternative to Windows emerging any time in the next few years is too low to constrain Microsoft from raising prices or imposing other burdens on customers and users. The accuracy of this belief is highlighted by the fact that the other vendors of Intel-compatible PC operating systems do not view their own offerings as viable alternatives to Windows. Microsoft knows that OEMs have no choice but to load Windows, both because it has a good understanding of the market in which it operates and because OEMs have told Microsoft as much. Indicative of Microsoft's assessment of the situation is the fact that, in a 1996 presentation to the firm's executive committee, the Microsoft executive in charge of OEM licensing reported that piracy continued to be the main competition to the company's operating system products. Secure in this knowledge, Microsoft did not consider the prices of other Intel-compatible PC operating systems when it set the price of Windows 98.

56. As the Court found above, the growth of server- and middleware-based applications development might eventually weaken the applications barrier to entry. This would not only make it easier for outside firms to enter the market, it could also make it easier for non-Microsoft firms already in the market to present a viable alternative to Windows. But as the Court also found above, it is not clear whether ISVs will ever develop a large, diverse body of full-featured applications that rely solely on APIs exposed by servers and middleware. Furthermore, even assuming that such a movement has already begun in earnest, it will take several years for the applications barrier to erode enough to enable a non-Microsoft, Intel-compatible PC operating system to develop into a viable alternative to Windows.

D. Price Restraint Posed by Microsoft's Installed Base

57. Software never expires, so consumers who already have a version of Windows with which they are content and who are not shopping for a new PC system are somewhat reluctant to incur the cost of upgrading to a new version of Windows. Fortunately for Microsoft, the pace of innovation in PC hardware is rapid, and the price of that hardware has declined steadily in recent years. As a result, existing PC users buy new PC systems relatively frequently, and OEMs still attract at a healthy rate buyers who have never owned a computer. The license for one of Microsoft's operating system products prohibits the user from transferring the operating system to another machine, so there is no legal secondary market in Microsoft operating systems. This means that any consumer who buys a new Intel-compatible PC and wants Windows must buy a new copy of the operating system. Microsoft takes pains to ensure that the versions of its operating system that OEMs pre-install on new PC systems are the most current. It does this, in part, by increasing the price to OEMs of older versions of Windows when the newer versions are released. Since Microsoft can sell so many copies of each new operating system through the sales of new PC systems, the average

price it sets for those systems is little affected by the fact that older versions of Windows never wear out.

E. Price Restraint Posed by Piracy

58. Although there is no legal secondary market for Microsoft's PC operating systems, there is a thriving illegal one. Software pirates illegally copy software products such as Windows, selling each copy for a fraction of the vendor's usual price. One of the ways Microsoft combats piracy is by advising OEMs that they will be charged a higher price for Windows unless they drastically limit the number of PCs that they sell without an operating system pre-installed. In 1998, all major OEMs agreed to this restriction. Naturally, it is hard to sell a pirated copy of Windows to a consumer who has already received a legal copy included in the price of his new PC system. Thus, Microsoft is able to effectively contain, if not extinguish, the illegal secondary market for its operating-system products. So even though Microsoft is more concerned about piracy than it is about other firms' operating system products, the company's pricing is not substantially constrained by the need to reduce the incentives for consumers to acquire their copies of Windows illegally.

F. Price Restraint Posed by Long-Term Threats

59. The software industry in general is characterized by dynamic, vigorous competition. In many cases, one of the early entrants into a new software category quickly captures a lion's share of the sales, while other products in the category are either driven out altogether or relegated to niche positions. What eventually displaces the leader is often not competition from another product within the same software category, but rather a technological advance that renders the boundaries defining the category obsolete. These events, in which categories are redefined and leaders are superseded in the process, are spoken of as "inflection points."

60. The exponential growth of the Internet represents an inflection point born of complementary technological advances in the computer and telecommunications industries. The rise of the Internet in turn has fueled the growth of server-based computing, middleware, and open-source software development. Working together, these nascent paradigms could oust the PC operating system from its position as the primary platform for applications development and the main interface between users and their computers. Microsoft recognizes that new paradigms could arise to depreciate the value of selling PC operating systems; however, the fact that these new paradigms already exist in embryonic or primitive form does not prevent Microsoft from enjoying monopoly power today. For while consumers might one day turn to network computers, or Linux, or a combination of middleware and some other operating system, as an alternative to Windows, the fact remains that they are not doing so today. Nor are consumers likely to do so in appreciable numbers any time in the next few years. Unless and until that day arrives, no significant percentage of consumers will be able to abandon Windows without incurring substantial costs. Microsoft can therefore set the price of Windows substantially higher than that which would be charged in a competitive market—or impose other burdens on consumers—without losing so much business as to make the action unprofitable. If Microsoft exerted its power solely to raise price, the day when users could turn away from Windows without incurring substantial costs would still be several years distant. Moreover, Microsoft could keep its prices high for a significant period of time and still lower them in time to meet the threat of a new paradigm. Alternatively,

Microsoft could delay the arrival of a new paradigm on the scene by expending surplus monopoly power in ways other than the maintenance of high prices.

G. Significance of Microsoft's Innovation

61. The fact that Microsoft invests heavily in research and development does not evidence a lack of monopoly power. Indeed, Microsoft has incentives to innovate aggressively despite its monopoly power. First, if there are innovations that will make Intel-compatible PC systems attractive to more consumers, and those consumers less sensitive to the price of Windows, the innovations will translate into increased profits for Microsoft. Second, although Microsoft could significantly restrict its investment in innovation and still not face a viable alternative to Windows for several years, it can push the emergence of competition even farther into the future by continuing to innovate aggressively. While Microsoft may not be able to stave off all potential paradigm shifts through innovation, it can thwart some and delay others by improving its own products to the greater satisfaction of consumers.

H. Microsoft's Pricing Behavior

62. Microsoft's actual pricing behavior is consistent with the proposition that the firm enjoys monopoly power in the market for Intel-compatible PC operating systems. The company's decision not to consider the prices of other vendors' Intel-compatible PC operating systems when setting the price of Windows 98, for example, is probative of monopoly power. One would expect a firm in a competitive market to pay much closer attention to the prices charged by other firms in the market. Another indication of monopoly power is the fact that Microsoft raised the price that it charged OEMs for Windows 95, with trivial exceptions, to the same level as the price it charged for Windows 98 just prior to releasing the newer product. In a competitive market, one would expect the price of an older operating system to stay the same or decrease upon the release of a newer, more attractive version. Microsoft, however, was only concerned with inducing OEMs to ship Windows 98 in favor of the older version. It is unlikely that Microsoft would have imposed this price increase if it were genuinely concerned that OEMs might shift their business to another vendor of operating systems or hasten the development of viable alternatives to Windows.

63. Finally, it is indicative of monopoly power that Microsoft felt that it had substantial discretion in setting the price of its Windows 98 upgrade product (the operating system product it sells to existing users of Windows 95). A Microsoft study from November 1997 reveals that the company could have charged \$49 for an upgrade to Windows 98—there is no reason to believe that the \$49 price would have been unprofitable—but the study identifies \$89 as the revenue-maximizing price. Microsoft thus opted for the higher price.

64. An aspect of Microsoft's pricing behavior that, while not tending to prove monopoly power, is consistent with it is the fact that the firm charges different OEMs different prices for Windows, depending on the degree to which the individual OEMs comply with Microsoft's wishes. Among the five largest OEMs, Gateway and IBM, which in various ways have resisted Microsoft's efforts to enlist them in its efforts to preserve the applications barrier to entry, pay higher prices than Compaq, Dell, and Hewlett-Packard, which have pursued less contentious relationships with Microsoft.

65. It is not possible with the available data to determine with any level of confidence whether the price that a profit-maximizing firm with monopoly power would charge for Windows 98 comports with the price that Microsoft actually charges. Even if it could be determined that Microsoft charges less than the profit-maximizing monopoly price, though, that would not be probative of a lack of monopoly power, for Microsoft could be charging what seems like a low short-term price in order to maximize its profits in the future for reasons unrelated to underselling any incipient competitors. For instance, Microsoft could be stimulating the growth of the market for Intel-compatible PC operating systems by keeping the price of Windows low today. Given the size and stability of its market share, Microsoft stands to reap almost all of the future rewards if there are yet more consumers of Intel-compatible PC operating systems. By pricing low relative to the short-run profit-maximizing price, thereby focusing on attracting new users to the Windows platform, Microsoft would also intensify the positive network effects that add to the impenetrability of the applications barrier to entry.

66. Furthermore, Microsoft expends a significant portion of its monopoly power, which could otherwise be spent maximizing price, on imposing burdensome restrictions on its customers—and in inducing them to behave in ways—that augment and prolong that monopoly power. For example, Microsoft attaches to a Windows license conditions that restrict the ability of OEMs to promote software that Microsoft believes could weaken the applications barrier to entry. Microsoft also charges a lower price to OEMs who agree to ensure that all of their Windows machines are powerful enough to run Windows NT for Workstations. To the extent this provision induces OEMs to concentrate their efforts on the development of relatively powerful, expensive PCs, it makes OEMs less likely to pursue simultaneously the opposite path of developing “thin client” systems, which could threaten demand for Microsoft’s Intel-compatible PC operating system products. In addition, Microsoft charges a lower price to OEMs who agree to ship all but a minute fraction of their machines with an operating system pre-installed. While this helps combat piracy, it also makes it less likely that consumers will detect increases in the price of Windows and renders operating systems not pre-installed by OEMs in large numbers even less attractive to consumers. After all, a consumer’s interest in a non-Windows operating system might not outweigh the burdens on system memory and performance associated with supporting two operating systems on a single PC. Other such restrictions and incentives are described below.

I. Microsoft’s Actions Toward Other Firms

67. Microsoft’s monopoly power is also evidenced by the fact that, over the course of several years, Microsoft took actions that could only have been advantageous if they operated to reinforce monopoly power. . . .

VII. THE EFFECT ON CONSUMERS OF MICROSOFT’S EFFORTS TO PROTECT THE APPLICATIONS BARRIER TO ENTRY

408. The debut of Internet Explorer and its rapid improvement gave Netscape an incentive to improve Navigator’s quality at a competitive rate. The inclusion of Internet Explorer with

Windows at no separate charge increased general familiarity with the Internet and reduced the cost to the public of gaining access to it, at least in part because it compelled Netscape to stop charging for Navigator. These actions thus contributed to improving the quality of Web browsing software, lowering its cost, and increasing its availability, thereby benefitting consumers.

409. To the detriment of consumers, however, Microsoft has done much more than develop innovative browsing software of commendable quality and offer it bundled with Windows at no additional charge. As has been shown, Microsoft also engaged in a concerted series of actions designed to protect the applications barrier to entry, and hence its monopoly power, from a variety of middleware threats, including Netscape's Web browser and Sun's implementation of Java. Many of these actions have harmed consumers in ways that are immediate and easily discernible. They have also caused less direct, but nevertheless serious and far-reaching, consumer harm by distorting competition.

410. By refusing to offer those OEMs who requested it a version of Windows without Web browsing software, and by preventing OEMs from removing Internet Explorer—or even the most obvious means of invoking it—prior to shipment, Microsoft forced OEMs to ignore consumer demand for a browserless version of Windows. The same actions forced OEMs either to ignore consumer preferences for Navigator or to give them a Hobson's choice of both browser products at the cost of increased confusion, degraded system performance, and restricted memory. By ensuring that Internet Explorer would launch in certain circumstances in Windows 98 even if Navigator were set as the default, and even if the consumer had removed all conspicuous means of invoking Internet Explorer, Microsoft created confusion and frustration for consumers, and increased technical support costs for business customers. Those Windows purchasers who did not want browsing software—businesses, or parents and teachers, for example, concerned with the potential for irresponsible Web browsing on PC systems—not only had to undertake the effort necessary to remove the visible means of invoking Internet Explorer and then contend with the fact that Internet Explorer would nevertheless launch in certain cases; they also had to (assuming they needed new, non-browsing features not available in earlier versions of Windows) content themselves with a PC system that ran slower and provided less available memory than if the newest version of Windows came without browsing software.

By constraining the freedom of OEMs to implement certain software programs in the Windows boot sequence, Microsoft foreclosed an opportunity for OEMs to make Windows PC systems less confusing and more user-friendly, as consumers desired. By taking the actions listed above, and by enticing firms into exclusivity arrangements with valuable inducements that only Microsoft could offer and that the firms reasonably believed they could not do without, Microsoft forced those consumers who otherwise would have elected Navigator as their browser to either pay a substantial price (in the forms of downloading, installation, confusion, degraded system performance, and diminished memory capacity) or content themselves with Internet Explorer.

Finally, by pressuring Intel to drop the development of platform-level NSP software, and otherwise to cut back on its software development efforts, Microsoft deprived consumers of software innovation that they very well may have found valuable, had the innovation been allowed to reach the marketplace. None of these actions had pro-competitive justifications.

411. Many of the tactics that Microsoft has employed have also harmed consumers indirectly by unjustifiably distorting competition. The actions that Microsoft took against Navigator hobbled a form of innovation that had shown the potential to depress the applications barrier to entry sufficiently to enable other firms to compete effectively against Microsoft in the market for Intel-compatible PC operating systems. That competition would have conduced to consumer choice and nurtured innovation. The campaign against Navigator also retarded widespread acceptance of Sun's Java implementation.

This campaign, together with actions that Microsoft took with the sole purpose of making it difficult for developers to write Java applications with technologies that would allow them to be ported between Windows and other platforms, impeded another form of innovation that bore the potential to diminish the applications barrier to entry. There is insufficient evidence to find that, absent Microsoft's actions, Navigator and Java already would have ignited genuine competition in the market for Intel-compatible PC operating systems. It is clear, however, that Microsoft has retarded, and perhaps altogether extinguished, the process by which these two middleware technologies could have facilitated the introduction of competition into an important market.

412. Most harmful of all is the message that Microsoft's actions have conveyed to every enterprise with the potential to innovate in the computer industry. Through its conduct toward Netscape, IBM, Compaq, Intel, and others, Microsoft has demonstrated that it will use its prodigious market power and immense profits to harm any firm that insists on pursuing initiatives that could intensify competition against one of Microsoft's core products. Microsoft's past success in hurting such companies and stifling innovation deters investment in technologies and businesses that exhibit the potential to threaten Microsoft. The ultimate result is that some innovations that would truly benefit consumers never occur for the sole reason that they do not coincide with Microsoft's self-interest.

_____/s/
Thomas Penfield Jackson
U.S. District Judge