

1 MR. TULCHIN: Before you bring the jury back, if I
2 may, I think the Court may be interested in knowing that
3 although you asked Dr. Noll to leave the courtroom during
4 that discussion, it appears that he was extensively briefed
5 in the hall about what had occurred. I didn't listen to the
6 conversation, but I --

7 THE COURT: I'm going to assume that didn't occur.

8 MR. JOHNSON: Thank you, Your Honor. I didn't
9 talk to Dr. Noll at all.

10 MR. TULCHIN: No, I didn't see Mr. Johnson there,
11 but I did see another Novell lawyer speaking to him quite
12 animatedly about what had occurred.

13 MR. JOHNSON: My goodness, Your Honor.

14 THE COURT: I'm going to assume it didn't occur.

15 MR. JOHNSON: I would note, Your Honor, he's on
16 direct.

17 THE COURT: That is hardly an answer, since I
18 asked him to leave. I asked him to leave for a reason.

19 (Jury present)

20 THE COURT: Ladies and gentlemen, I'm sorry for
21 the delay. We're now in a portion of the case where the
22 evidence you are going to hear relates very much to legal
23 issues in the case about the whole antitrust aspect of this
24 case. I think the best way for me to understand all of this
25 is to hear what was said, but that runs -- you all may be

1 hearing things that I don't think you should hear. So just
2 be alert, follow this along. Then after the fact, I'll try
3 to explain to you all. But I frankly don't think I can
4 understand all of this until I hear all the testimony. And
5 I don't want to have the testimony given twice and then in a
6 two-hour hearing outside your presence have to hear it all
7 again. So this is just a very difficult area where we may
8 have objections, we may have problems if this gets into the
9 whole area of the antitrust law and antitrust facts. So
10 it's going to be very difficult.

11 MR. JOHNSON: Thank you, Your Honor.

12 May I proceed?

13 THE COURT: Please.

14 BY MR. JOHNSON:

15 Q Professor Noll, let's pick up where we left off. I
16 think there was actually a pending question, but I'll
17 obviously repeat it for you given the passage of time.

18 Focusing on the highlighted sentence in Mr. Raikes'
19 e-mail, from an economic prospective, can you explain why
20 owning the key franchises or applications would dramatically
21 widen the moat which protects Microsoft's operating systems
22 business?

23 A As a matter of economics, as I recall, I said
24 Microsoft's applications are not cross-platform. So if they
25 are dominant in the applications market, then the more

1 dominant they are, the higher the applications.

2 Q Now this e-mail that was written by Mr. Raikes -- I
3 think the date is on there, August 17th, 1997. Is this
4 e-mail consistent, if at all, with Mr. Gates' view in 1989
5 that having withdrawn applications strengthens Microsoft's
6 operating systems business?

7 A Yes.

8 THE COURT: The objection wasn't made, but it
9 should have been, sustained. That is asking -- he can
10 testify from an economic standpoint things of record, but he
11 can't say what's in Mr. Gates's mind or Mr. Raikes's mind.

12 MR. TULCHIN: Thank you, Your Honor.

13 BY MR. JOHNSON:

14 Q We see in this e-mail, Mr. Noll, that as of 1997 -- if
15 you look up a little higher in the portion that's
16 excerpted -- that Office enjoyed a 90-percent market share
17 earning over five billion of an 85 percent plus operating
18 margin. Do any of these facts have any significance to you
19 as an economist?

20 A The one that's significant is the 90-percent share, and
21 profitability is not important from the point of view of
22 competition in the operating system market. What's
23 important from the point of view of competition in the
24 operating system market is that this says that 90 percent of
25 the software being sold is not cross-platform. Therefore,

1 every one of these sales is increasing the applications
2 barrier to entry.

3 MR. JOHNSON: I would like to approach, Your
4 Honor, and provide Professor Noll with a copy of his report.

5 BY MR. JOHNSON:

6 Q And I just want to turn briefly, if you would,
7 Professor Noll, to table three of your report.

8 A I have it.

9 Q Can you tell us what this table is?

10 A It is -- this was the calculations of the market shares
11 of Microsoft in various applications programs.

12 Q Can you tell us from this chart what Microsoft's market
13 share in word processing was in 1994?

14 A Yes. About 65 percent.

15 Q What was their share in spreadsheets at that time?

16 A About 68 percent.

17 Q Having seen that by August of 1997 Microsoft's share of
18 Office productivity software had increased to 90 percent,
19 what significance, if any, do those facts have to you as an
20 economist?

21 A Obviously it increased the applications barrier to
22 entry. The shares by themselves are not the whole story
23 because, in addition to that, as I said earlier, the total
24 sales of PCs also had gone way up. So this is 65 percent of
25 a much smaller market versus 90 percent of a much larger

1 market.

2 So in terms of what's happening to the install base --
3 install base is the term that we use to refer to the total
4 number of people who use a personal computer that are using
5 a particular program. So the install base of WordPerfect is
6 the total number of people who own a personal computer that
7 are using WordPerfect as their word processor.

8 And install base is the most important concept because
9 that's about the applications barrier to entry. At a given
10 moment in time, there's a bunch of people using WordPerfect,
11 there's a bunch of people using Word. If a new operating
12 system is introduced, the ability to use that operating
13 system depends on the size of the install base on the
14 cross-platform software.

15 At the time this was going on, WordPerfect still has
16 about half of the install base in 1995. But because so many
17 personal computers are sold when the 32-bit processor is
18 introduced and Windows 95 is introduced as an operating
19 system to run on it, that there's a huge increase in the
20 number of PCs. So the install base of Word goes way up
21 because it's the dominant word processor being sold on this
22 new microprocessor.

23 MR. JOHNSON: Put that slide back up again,
24 please.

25 //

1 BY MR. JOHNSON:

2 Q If Novell, rather than Microsoft, owned the key
3 franchise running on top of Windows, would Novell's key
4 franchise applications widen the moat of protecting
5 Microsoft's operating systems monopoly power?

6 A No, it would be the opposite.

7 Q Why?

8 A Because WordPerfect is cross-platformed. That's the
9 difference is that a particular application increases the
10 barrier to entry if it's not cross-platformed, and then it
11 becomes dominant. But if the dominant application is
12 cross-platformed, then that reduces the applications barrier
13 to entry.

14 Q I would like to turn now to your third conclusion on
15 the board there which states, WordPerfect and Novell's
16 applications and middleware products as well as other
17 products threaten Microsoft's operating systems monopoly.

18 Do you know from personal experience whether
19 WordPerfect had a history of being a cross-platform
20 application?

21 A Personally, roughly this time, I was running it on
22 three systems. I was running it on OS/2 in my office,
23 Windows at home, and then I spent some time on leave where
24 we were running it on Novell's NetWare system. So I was
25 using WordPerfect on three different systems.

1 Q Do you know if during Novell's ownership WordPerfect
2 was released on operating systems other than Windows?

3 A Yes, it was.

4 Q Have you had on the opportunity to review the trial
5 testimony of Adam Harral, Greg Richardson, Gary Gibb and
6 Robert Frankenberg?

7 A Yes, I have.

8 Q Did their testimony support in any way your third
9 conclusion that WordPerfect and Novell threatened
10 Microsoft's operating systems monopoly?

11 A Yes, it did.

12 Q Have you prepared some slides identifying some of this
13 relevant testimony?

14 A Yes. This is -- I have prepared some slides of
15 testimony that goes into my analysis with the applications
16 barrier to entry.

17 MR. JOHNSON: If we could turn to the next slide,
18 please.

19 BY MR. JOHNSON:

20 Q This is an excerpt from the testimony of Adam Harral in
21 this case. How does Mr. Harral's testimony, if at all,
22 support your conclusion that WordPerfect threatened
23 Microsoft's operating systems monopoly?

24 A This is testimony about the cross-platform nature of
25 WordPerfect. The more cross-platform it is, the more a

1 threat to the operating system monopoly.

2 MR. JOHNSON: Let's turn to the next slide.

3 BY MR. JOHNSON:

4 Q This is some additional testimony both by Mr. Gary Gibb
5 and Mr. Adam Harral that the jury has heard. How does this
6 testimony from Mr. Gibb and Mr. Harral support, if at all,
7 your conclusion that WordPerfect was a threat to Microsoft's
8 operating systems monopoly?

9 A Once again, this is basically testimony pertaining to
10 how it became cross-platformed, which is -- if you recall
11 before, the idea was that you write a core program that
12 performs the function, the application is supposed to
13 perform. Then you write to the application's programming
14 interfaces of a bunch of operating systems. That's
15 basically what they are talking about. They are talking
16 about the division of labor, if you will. On the one hand,
17 there are people who write the core functionality of
18 WordPerfect and, on the other hand, there are people who are
19 making it cross-platform by allowing it to communicate with
20 multiple operating systems.

21 MR. JOHNSON: If we could turn to the next slide,
22 please.

23 BY MR. JOHNSON:

24 Q This is some additional testimony from Mr. Adam Harral
25 heard by the jury in this case. How does Mr. Harral's

1 testimony support your conclusion, if at all, WordPerfect
2 was a threat to Microsoft's operating systems monopoly?

3 A Again, it's the same story, the division between
4 PerfectOffice and WordPerfect, WordPerfect is basically a
5 word processor and some other software. In this case, it's
6 a word processor. PerfectOffice is a suite of things, other
7 things that go along with it. It's the same story, the idea
8 is that attempt is being made to make this cross-platform,
9 which would then have the effect of saying anybody who had
10 bought PerfectOffice would, in fact, have the ability to
11 switch platforms in the future while retaining the use of
12 the programs that are in PerfectOffice, or written to it.

13 MR. JOHNSON: Let's turn to the next slide.

14 BY MR. JOHNSON:

15 Q This is an excerpt from Mr. Robert Frankenberg's trial
16 testimony which was heard by the jury in this case. How
17 does Mr. Frankenberg's testimony support, if at all, your
18 conclusion that WordPerfect was a threat to Microsoft's
19 operating systems monopoly?

20 A This is simply an example of the cross-platform nature.
21 As it turns out, the significance of Linux is that it's the
22 second most important operating system beyond Windows in the
23 post 1995 period. This is basically saying yes, we're
24 writing for what's the second most important system.

25 MR. JOHNSON: Let's go to the next slide, please.

1 BY MR. JOHNSON:

2 Q This is some additional testimony from Mr. Frankenberg,
3 which has been heard by the jury, with respect to thin
4 client. How does Mr. Frankenberg's testimony here support,
5 if at all, your conclusion that WordPerfect was a threat to
6 Microsoft's operating systems monopoly?

7 A Yes. The crucial term is thin client, which is another
8 sort of Silicon Valley type word. Basically it's much more
9 apparent now than it would have been 15 years ago. The idea
10 here is you have a really inexpensive low functionality
11 computer sitting on your desk, and that computer accesses a
12 central computer that is a much bigger, a much more powerful
13 PC that actually does most of the work. That's where the
14 applications are. So if you are running an application,
15 it's actually being run on the server controlled by this low
16 cost, fairly low functionality personal computer sitting on
17 your desktop.

18 So what this is about is having the Novell applications
19 run on those systems as well, which is actually the system
20 that I was using when I was at the Brookings Institute. It
21 was a thin client system where the applications were sitting
22 on a server.

23 MR. JOHNSON: Let's go to the next slide, please.

24 BY MR. JOHNSON:

25 Q I think we've seen one like this. Can you explain this

1 slide again to the jury?

2 A Yes. This simply illustrates again the fact that
3 WordPerfect is cross-platform, so it does work on Windows,
4 Lunix or OS/2, which in 1995 that's all that's basically
5 left in operating systems. And so as a result, the presence
6 of WordPerfect reduces the application barrier to entry with
7 the magnitude of that reduction, depending upon the install
8 base of WordPerfect.

9 Q And for WordPerfect to have such an effect, to reduce
10 the applications barrier to entry, does it matter how
11 successful WordPerfect is on Windows?

12 A Yes. It has to be successful on Windows because the
13 whole point is to enable people who are running on Windows
14 today to be able to migrate to another operating system when
15 they buy their next PC.

16 Q We've just talked about WordPerfect as a cross-platform
17 threat. You've also talked about middleware as a threat to
18 Microsoft's operating systems monopoly. Did any of the
19 Novell products or technologies present a middleware threat
20 to Microsoft's operating systems monopoly?

21 A Yes, they did have such products.

22 Q Do you have some slides prepared summarizing that
23 evidence, supporting that answer?

24 A Yes. The first one is about PerfectFit.

25 MR. JOHNSON: Can we turn to that slide, please.

1 MR. TULCHIN: We have an objection to this, Your
2 Honor. This is a subject that goes back to our motion in
3 Baltimore.

4 THE COURT: I might strike it. I will allow it
5 now.

6 MR. JOHNSON: Thank you, Your Honor.

7 BY MR. JOHNSON:

8 Q We have excerpts again from Adam Harral and Robert
9 Frankenberg that the jury heard in this case. How does, if
10 at all, this testimony support your conclusion about the
11 middleware threat presented by Novell/WordPerfect's
12 products?

13 A Well, the relationship isn't about the name PerfectFit,
14 it's about the fact that once WordPerfect had been written
15 in such a way that it included software that enabled it to
16 run on multiple platforms, other application vendors could
17 access that same part of the programming of WordPerfect,
18 also to run cross-platform applications. That's why it's
19 middleware. WordPerfect contains in it this code, what they
20 call shared code, that if you simply tell people who write
21 applications programs how it works, what those -- what the
22 functions of that are, what kind of commands you have to
23 give it, then someone can write a program that uses that
24 shared code to gain access to multiple platforms.

25 Q Can such cross-platform middleware potentially reduce

1 the applications barrier to entry?

2 A Yes. Again, what it does, it says if any other
3 applications are written using that cross-platform feature
4 of WordPerfect, then those programs too will be
5 cross-platform and people who like those programs will use
6 those programs, will be able to move on to another operating
7 system should they want to. And that, of course, further
8 reduces the applications barrier to entry.

9 Q Would potentially reducing the applications barrier to
10 entry be a threat to the Windows monopoly?

11 A Yes. Anything that reduces the applications barrier to
12 entry increases the ability of an entity's operating system
13 to capture business from Windows.

14 MR. JOHNSON: Let's turn to the next slide.

15 BY MR. JOHNSON:

16 Q This is testimony that was actually read to the jury.
17 We didn't have this film from Mr. Silverberg when we read
18 this to the jury. They have heard this from Mr. Silverberg
19 in a deposition taken in 1994.

20 MR. TULCHIN: Objection to this one, Your Honor,
21 as well.

22 MR. JOHNSON: Your Honor, could they have a
23 continuing objection?

24 THE COURT: This is a different basis. Overruled.

25 MR. JOHNSON: Thank you, Your Honor.

1 BY MR. JOHNSON:

2 Q How, if at all, does this testimony support your
3 conclusion about the middleware threat of
4 Novell/WordPerfect's products?

5 A Well, again, AppWare is a separate piece of software
6 that is -- if we can analogize it to what I said about Java,
7 it is software that exposes applications program -- program
8 interfaces that then can plug into multiple operating
9 systems. So anybody who writes a program using AppWare,
10 therefore is writing a program that is cross-platform, and,
11 by doing so, reducing the applications barrier to entry.

12 Q Mr. Silverberg was the head of the Chicago development
13 at Microsoft at this time period. And he's testifying here,
14 during the time period of June in 1994, he states that
15 AppWare was an attempt by Novell to reduce Windows to a
16 commodity.

17 What, if anything, does it mean to an antitrust
18 economist to reduce a product to a commodity?

19 A In economics to say something is a commodity is to say
20 it's sold in a competitive market. The way -- the analogy
21 that I use to teach my students is number five red wheat.
22 It's the standard garden variety of wheat that's grown in
23 the northern part of the midwest. There are thousands of
24 farmers that grow number five red wheat. No farm is big
25 enough to have any effect at all on the total quantity or

1 the price of number five red wheat. It's a commodity.
2 Every farmer is producing exactly the same quality of wheat
3 as every other farmer. And so price is determined purely by
4 competition in the market for number five read wheat.

5 To commodify a product is to cause the number of
6 competitors to be sufficiently large that essentially the
7 price is determined competitively.

8 Q Let's take a look at one more slide discussing
9 AppWare. This is an excerpt from Mr. Paul Maritz's
10 deposition, again, taken in 1994. How, if at all, does
11 Mr. Maritz's testimony support your conclusion regarding the
12 middleware threat of AppWare?

13 A This is basically repeating the story that I gave you.
14 Again, if people begin to write applications programs using
15 AppWare, then the next time someone who currently uses
16 Windows buys a personal computer, they do not need to
17 install Windows as the operating system. They have their
18 choice among operating systems without losing the
19 functionality of those programs.

20 Q Mr. Maritz states that in the long-term point of view,
21 AppWare was one of their most serious competitors. From an
22 economic perspective, this long-term point of view was one
23 of Microsoft's serious competitors. What is the
24 significance of that, if any, from an economic perspective?

25 A The significance of it is that somebody will be using a

1 particular operating system today. So if someone writes an
2 application today using AppWare, it will be used on whatever
3 operating system they happen to be using at the time,
4 whether it's Windows or OS/2, or anything else. What the
5 significance of that application using AppWare is is that
6 when the consumer in the future changes personal computers,
7 they are not stuck with continuing to use the same operating
8 system. They could use any operating system.

9 And then to go back to the enterprise business,
10 businesses turn over their entire stock of personal
11 computers roughly once every three years. So that means
12 over the course of the next three years, a business that is
13 going to buy a new set of personal computers for its
14 employees is no longer tied in to using whatever operating
15 system it is using for supporting that application. It
16 knows it can just continue to use that application
17 regardless of what operating system is on the next wave of
18 personal computers that it buys.

19 Q Do you have a slide to help explain how PerfectFit and
20 AppWare as middleware could affect the applications barrier
21 to entry in operating system competition?

22 A Yes. We're back to our layer tape. This analogy
23 everybody basically uses in the computer industry, that now
24 we're going to replace middleware with the names PerfectFit
25 and AppWare, which are middleware, that is contained in

1 WordPerfect products -- or WordPerfect products that they
2 offer, or the Novell products that contain middleware. And
3 the story here is that on the one hand Novell is writing
4 applications that make use of these products. WordPerfect,
5 Quattro Pro and things like that are being written using
6 these products. But at the same time, they're
7 evangelizing -- same word, evangelizing, they are trying to
8 get other people to write applications as well because they
9 would like to commodify the operating system. The way to do
10 that is to encourage third parties to write their
11 applications using this middleware rather than writing
12 directly for Windows. What they can do is they can promise
13 people that their products will work on Windows from among
14 that set of people who are using these WordPerfect products,
15 or Novell products.

16 Q For PerfectFit and AppWare to potentially reduce the
17 applications barrier to entry, does it matter how successful
18 WordPerfect is on Windows?

19 A Yes. Once again, it's crucial because what matters to
20 the future degree of competitiveness of the operating system
21 market is at the beginning how many people are using these
22 cross-platform applications. If a lot of people are using
23 cross-platform applications, then there is more competition
24 in the operating system market. If only a few are using
25 them, there's much less competition in the market.

1 Q Drawing your attention to that third-party application
2 in yellow, maybe a bit of orange, is it necessary for that
3 application to be written solely to the middleware in order
4 to increase competition in the operating systems market?

5 A No, it just simply must be the case if it is written to
6 it. It could be written to other things as well. The
7 third-party application itself can be cross-platformed. It
8 just has to be one of the platforms is a Novell middleware
9 product.

10 MR. JOHNSON: Let's go to the next slide.

11 BY MR. JOHNSON:

12 Q The facts listed in this slide are binding in this
13 case. In fact, I think some of them were read to the jury
14 this morning.

15 THE COURT: Let me make clear, what this case is
16 about is Novell, not about Sun or Java. This evidence is
17 admitted solely for the purpose of understanding what, if
18 any, conduct was brought towards Novell. It may be in terms
19 of effect on competition, but that's something to decide
20 later. In terms of you all focusing on this case is not
21 about what was done to Sun, Java, and other antitrust
22 implications.

23 BY MR. JOHNSON:

24 Q As Your Honor mentioned, when we're talking about Sun
25 Microsystems' Java language threatening the application

1 barrier to entry, can you explain briefly again what Sun
2 Microsystems' Java is?

3 A It's a programming language, a set of programs that
4 enable you to write applications using that programming
5 language that connect to other Java programs that then also
6 connect to operating systems. So it's a way to make
7 cross-platform applications using the various Java products.

8 Q How, if at all, was Java a threat to Microsoft's
9 operating systems monopoly?

10 A It was exactly the same as we just discussed with
11 regard to PerfectFit and AppWare. It was offered on another
12 platform for writing applications that would enable you
13 those applications to operate on multiple operating systems
14 and thereby enable someone who is -- who owns a PC today to
15 buy another PC in the future that would have a different
16 operating without losing the ability to use those programs.

17 Q Can you explain for us from an economic perspective why
18 the third of these binding facts it states that Sun's
19 strategy could only succeed if it found a way into Windows?
20 Why is that significant at all?

21 MR. TULCHIN: Objection as to what the Court
22 meant.

23 MR. JOHNSON: I asked him to explain from an
24 economic prospective, Your Honor.

25 THE COURT: You can't say what the Court meant.

1 But if you can figure out what the Court meant by saying
2 what it means from an economic perspective, do it.

3 THE WITNESS: I would never try to say what the
4 Court meant.

5 THE COURT: I don't blame you.

6 THE WITNESS: That's a fool's error.

7 THE COURT: The Court sometimes doesn't know.

8 THE WITNESS: All I can say is why to me that
9 matters. And the reason it matters is Windows is a dominant
10 operating system. So the status quo is going to be that
11 most people are using Windows, which means that the
12 applications that run on Windows, the middleware that runs
13 on Windows is crucial. If that software is cross-platform,
14 then the next time someone buys a personal computer, they
15 don't have to buy Windows. But if it's not cross-platform,
16 then if they do buy another operating system, they are going
17 to face problems in using the same programs. They are
18 either going have to relearn a new program or hire someone
19 to write software that enables the old programs to run on
20 the new platform.

21 Q Is Sun's need to succeed on Windows similar or
22 different from what you have described earlier as Novell's
23 need to succeed on Windows?

24 A It's exactly the same for anybody. Everybody writing
25 middleware software or applications software has exactly the

1 same issue, which is you have to be on Windows. In the
2 middle 1990s, you have to be on Windows because it's the
3 dominant platform. If you can't operate on Windows, you
4 greatly reduce the scope of your potential market.

5 At the same time, the only way to defeat the
6 applications barrier to entry on Windows is with programs
7 that not only run on Windows but run on other things.

8 Q In your view, does the evidence in the case which you
9 reviewed support your conclusion that Novell's middleware
10 and applications threaten Microsoft's operating systems
11 monopoly?

12 A Yes, they did.

13 Q Have you prepared any slides containing some of this
14 evidence?

15 A Yes.

16 MR. JOHNSON: Let's turn to the next slide.

17 BY MR. JOHNSON:

18 Q Can you tell us what this slide is?

19 A Yes. This is, again, an internal Microsoft document
20 about the middleware products for Novell and Lotus
21 threatening the operating systems monopoly of Microsoft.

22 Q I notice you referenced Lotus. Did Lotus have a
23 middleware product at this time?

24 A Yes. Lotus also was producing cross-platform products
25 and had a middleware product in particular called Lotus

1 Notes that was, again, a cross-platform way to write things,
2 to write applications that would run on various systems.

3 MR. JOHNSON: Let's turn to the next slide.

4 BY MR. JOHNSON:

5 Q How, if at all, does this document support your view
6 that Novell threatened Microsoft's Windows monopoly?

7 A Again, notice the title, Novell Nightmare. This is
8 about -- this is actually written just before. So what is
9 talked about here, Ray refers to Novell, that they would buy
10 WordPerfect and Borland, which was a source of Quattro Pro
11 and PerfectOffice, and that they would then have this
12 combination of applications plus middleware that would
13 provide a threat to the Microsoft operating system.

14 MR. JOHNSON: Let's go to the next slide.

15 BY MR. JOHNSON:

16 Q Can you tell us what this slide is and how, if at all,
17 does this document support your view that Novell/WordPerfect
18 threatened Windows monopoly?

19 A Yes. This document is written just right after the
20 acquisitions -- the WordPerfect and Quattro Pro
21 acquisitions. It's again the same basic story, that this
22 enables Novell not only to have presence in these
23 applications markets, but also to be a cross-platform
24 threat.

25 MR. JOHNSON: Let me go to the next slide, please.

1 BY MR. JOHNSON:

2 Q Can you tell us how this document supports, if at all,
3 your view that Novell/WordPerfect threatened Windows
4 monopoly?

5 A Yes. This -- again, it's a document that refers to the
6 fact that the goal here is to penetrate their combination of
7 applications of middleware products as far as possible into
8 not only PC operating systems but also this network enabled
9 thin client system that I discussed before. Because that,
10 again, is a bigger penetration of these programs, that the
11 greater number of people are using cross-platform
12 applications and middleware software and, hence, more
13 competition in the operating system market.

14 Q Let's go back to your hard board demonstrative, your
15 summary of conclusions, and referring you to your third
16 conclusion, which states, WordPerfect and Novell's
17 applications and middleware products, as well as other
18 products, threaten Microsoft's operating systems monopoly.

19 We've now discussed the reasons why you believe
20 WordPerfect and Novell's applications and middleware
21 products threatened Microsoft's operating systems monopoly.
22 You also mentioned, however, in this conclusion that other
23 products threatened Microsoft's operating systems monopoly.
24 Have you prepared a slide listing those products?

25 A Yes.

1 MR. JOHNSON: Can we turn to the next slide,
2 please.

3 THE WITNESS: This is simply examples. I have
4 actually used some of these in the discussion. And the
5 first three are basically --

6 MR. TULCHIN: We object to all of this, Your
7 Honor.

8 THE COURT: Overruled. Overruled.

9 THE WITNESS: The first three are examples of
10 operating systems. So that talks about the presence in the
11 market of alternative operating systems. And the last three
12 are middleware products that would reduce the applications
13 barrier to entry.

14 So it's the combination here, the Unix, Linux,
15 OS/2 are fairly small relative -- very small relative to
16 Windows or its predecessor MS-DOS. But, nonetheless, they
17 are there. And if these middleware products succeed in
18 creating a group of cross-platform applications that are
19 popular on Windows, then these three other products become
20 much more effective competitors against Windows because
21 people won't have to pay -- face these switching costs
22 moving from Windows to these other operating systems because
23 their applications will be able to move with them.

24 BY MR. JOHNSON:

25 Q Is there evidence in this case that Lotus Notes was a

1 threat to Microsoft's operating systems monopoly?

2 A Yes.

3 Q Hold on.

4 MR. JOHNSON: Before we turn to that slide, let me
5 speak to Mr. Tulchin. He has a pending objection.

6 Would you like to see the exhibit, Your Honor?

7 THE COURT: No objection?

8 MR. TULCHIN: I'm just looking at it, Your Honor.
9 I was just given this a moment ago. If I could have just a
10 minute.

11 THE COURT: Of course you can.

12 MR. TULCHIN: Yes, Your Honor, there is an
13 objection. I would be happy to --

14 THE COURT: Approach the bench.

15 (Side-bar conference held)

16 MR. TULCHIN: Your Honor, this goes back to 1992.
17 It's about Lotus Notes and competition with Notes in 1992.
18 It talks about fiscal year '93 as well. But it's prior to
19 the time that the plaintiff in this case acquired
20 WordPerfect or Quattro Pro. I don't think this has anything
21 to do even with Professor Noll's testimony about the state
22 of competition during the period that Novell owned these
23 products.

24 MR. JOHNSON: This is indeed a precursor to our
25 ownership certainly of WordPerfect, but it demonstrates --

1 it's a business record of Microsoft. It demonstrates even
2 as early as 1992, if you look down in the first bullet point
3 there, number two, it states, Lotus is effectively using
4 Notes as a suite for desktop apps.

5 THE COURT: I'm going to overrule the objection.

6 (Side-bar conference concluded.)

7 BY MR. JOHNSON:

8 Q Professor Noll, how does this document support, if at
9 all, you view that Lotus Notes threatened the Windows
10 monopoly?

11 A The crucial features of Lotus -- first of all, Lotus
12 1-2-3 is an extremely popular and powerful spreadsheet
13 program. Secondly, because it's popular, it's on lots of
14 desktops. Lotus Notes is a piece of software that
15 accompanies application software that is written by Lotus,
16 including 1-2-3, or sold by Lotus, and the important fact
17 about Lotus Notes is that, first of all, it's
18 cross-platform. Secondly, it's being distributed with this
19 very popular Lotus program. And, third, it exposes APIs
20 that a software vendor can write to those APIs and therefore
21 run not only on Microsoft's operating system, but on other
22 operating systems that were in operation at the time.

23 This feature of Lotus Notes and the Lotus suite is true
24 not only in 1992, but it continues through into the period
25 that we're concerned about here with respect to Novell. So

1 what they are saying is basically these features of Lotus's
2 suite of programs, including Lotus Notes, is that they
3 reduce the application barrier to entry and thereby increase
4 the competition among operating systems.

5 MR. JOHNSON: If we could turn to the next slide,
6 please.

7 BY MR. JOHNSON:

8 Q How does this document support, if at all, your view
9 that Lotus Notes threatened the Windows monopoly?

10 A Yes. Again, this is -- again, it's not -- the
11 important fact here is that what Lotus is selling is not
12 just applications that are cross-platform, it's also selling
13 middleware that's cross-platform. That increases its threat
14 because it means not only are its programs reducing the
15 application barrier to entry, but other programs that make
16 use of it are reducing the application of barrier to entry.

17 MR. JOHNSON: Let's turn to the next document.

18 THE COURT: You have a continuing objection to all
19 of this.

20 MR. TULCHIN: Thank you, Your Honor.

21 BY MR. JOHNSON:

22 Q This document refers to both Novell and Lotus. How
23 does this document support, if at all, your view that Novell
24 and Lotus posed a middleware threat to Microsoft?

25 A Well, notwithstanding the characterization, what it

1 says is that it's well understood that these products, both
2 the Novell products and Lotus products, are not only good
3 products in and of themselves in particular markets for
4 applications, but in addition to that, because of their
5 middleware characteristics, they are not only competitive
6 threats to Microsoft's products that compete directly for
7 them as substitutes, but they are also competitive threats
8 to the operating systems.

9 Q One of the products that you identified earlier as an
10 additional threat was Netscape's Navigator. Have you also
11 created some slides which summarize this evidence?

12 A Yes.

13 MR. JOHNSON: Let's go to the next slide.

14 BY MR. JOHNSON:

15 Q This is one of the findings of fact that's binding in
16 this case. How does this finding support, if at all, your
17 view that the Netscape Navigator threatened the Windows
18 monopoly?

19 A What this finding of fact refers to is the fact that
20 Netscape's Navigator was released at a time when the PC
21 operating system and the telecommunication network could
22 really start supporting serious use of the Internet. There
23 was that constellation of events that caused Navigator to be
24 extremely popular because it was off scale the best browser
25 to use to access the Internet. And that ability to use the

1 Internet is a principal factor exploiting the huge increase
2 in demand for personal computers at the time.

3 So Navigator was really a big deal, a positive thing
4 for the personal computer industry and, indeed, the
5 operating systems industry because by increasing the
6 functionality of personal computers, it increased the
7 demand. It's a complimentary product that increased the
8 demand for both personal computers and operating systems by
9 allowing you to have a whole new range of uses of the
10 personal computer that weren't feasible -- or that were very
11 difficult before.

12 But Navigator had these other features to it as well,
13 which is that it exposed APIs, and it enabled people to
14 write applications that would be written for Navigator as
15 opposed to written for Windows. And because Navigator was
16 ubiquitous among everybody who wanted to use a computer to
17 access the Internet, that was an extremely important
18 potential platform for future applications.

19 So not only was it in and of itself a huge success and
20 something that increased the success of the PC business, but
21 it also threatened the Microsoft monopoly of operating
22 systems because it was cross-platform and it would dominant
23 on these new uses that were driving new PC sales.

24 MR. JOHNSON: Let's go to the next slide.

25

1 BY MR. JOHNSON:

2 Q This is an additional fact that is binding in this
3 case. It's all about Netscape's Navigator.

4 What aspects, if any, of your economic analysis of the
5 applications barrier to entry are supported by this finding
6 of fact?

7 A This finding of fact essentially puts into what I just
8 said, that it is referring to the fact that on the one hand
9 Navigator was popular and ubiquitous among a certain
10 category of PC users and, secondly, it exposes APIs and
11 therefore threatens the operating systems monopoly.

12 Q Did Novell's middleware or other software products like
13 AppWare have any of these attributes?

14 A Yes, they did. The key thing here is that they have a
15 large install base and they run on different operating
16 systems, which is sort of the underlying thing. They have
17 the same characteristic. Netscape obviously is an extremely
18 successful product, but having a large install base and
19 running on different platforms is the characteristic that
20 makes Netscape a threat. It's the characteristic that makes
21 Lotus Notes and WordPerfect a threat.

22 MR. JOHNSON: Let's take a look at the next slide.

23 BY MR. JOHNSON:

24 Q The jury has actually seen this finding of fact, which
25 is also binding in this case. It was used by Mr. Holley in

1 his cross-examination of Mr. Alepin.

2 What aspects of your economic analysis of the
3 applications barrier to entry are supported by this finding?

4 A Well, the first part of it is sort of similar to
5 everything I have said. The part that we need to take into
6 account is currently no middleware product exposes enough
7 APIs to allow independent software vendors profitably to
8 write full-featured personal productivity applications that
9 rely solely on those APIs.

10 This is something in progress. This is what it's
11 about, that a number of firms, including Netscape, Sun,
12 Novell, Lotus, and then IBM when it buys Lotus, have
13 precisely the objective to be, to write such platforms, and
14 they are beginning that process. So this is about the
15 potential in the period at issue in this case of the --

16 THE COURT: In which case?

17 THE WITNESS: In this particular case.

18 THE COURT: This is later, isn't it?

19 THE WITNESS: No, I'm giving you my answer, not
20 his.

21 THE COURT: I'm just -- when you say this case, I
22 think this finding relates to a time period afterwards. So
23 I just didn't know what you were talking about.

24 THE WITNESS: This finding is actually a
25 characterization --

1 THE COURT: It's in 1999, isn't it?

2 THE WITNESS: The case is decided later, but the
3 characterization of Netscape is true for the entire period.

4 THE COURT: Well, I think we've agreed that
5 currently means specific time.

6 MR. JOHNSON: The findings themselves were written
7 in 1999, Your Honor.

8 THE COURT: The findings were in 1999, but the
9 case involves things that happened between '94 and '96.

10 THE WITNESS: Yes, I know, but it would also have
11 been the case that middleware was in development in 1994 and
12 '95.

13 THE COURT: Had not been completely developed in
14 1999?

15 THE WITNESS: Yeah. So this is about the plans in
16 the future as opposed to the current reality.

17 BY MR. JOHNSON:

18 Q And you recall what this finding was in relationship to
19 in terms of what they were talking about here?

20 A Yes. This actually -- this finding of fact pertains to
21 how you define relevant market. That is to say the purpose
22 of this was to say these were not in a position yet of being
23 full-blown competing operating systems. That was the
24 context in which this finding of fact was written. It was
25 pertinent to the finding that operating systems for PCs are

1 a separate relevant market.

2 MR. TULCHIN: Your Honor, objection to that.

3 These findings are binding. They are binding on both sides.

4 THE COURT: The findings are findings.

5 MR. JOHNSON: May I continue, Your Honor?

6 THE COURT: Yes.

7 BY MR. JOHNSON:

8 Q Professor Noll, directing your attention back to your
9 summary of conclusions to bullet four, which states that
10 Microsoft engaged in an anticompetitive conduct, some of
11 which directly harmed WordPerfect and Novell.

12 Have you prepared a board summarizing Microsoft's
13 anticompetitive conduct which is relevant to your analysis
14 of harm in the competition of the operating systems market?

15 A Yes.

16 MR. JOHNSON: Let's put that board up now.

17 THE COURT: Before you do that, approach the
18 bench.

19 (Side-bar conference held)

20 MR. TULCHIN: This gets to the issue -- the second
21 issue Mr. Tulchin objected to. I thought your theory
22 throughout has been that the anticompetitive act was
23 withdrawing of the namespace extension APIs.

24 MR. JOHNSON: Of course with respect to the
25 causation, withdrawing of and damages to Novell, that will

1 be the act which we are talking about. But what Dr. Noll --
2 Professor Noll is addressing is not simply the fact that the
3 acts against Novell/WordPerfect caused harm in the operating
4 systems market, and contrary to what Mr. Tulchin said, he
5 will reach that conclusion in his testimony. What we are
6 talking about now, in accord with a line of cases stretching
7 endlessly back in time, is that when you're assessing harm
8 to competition in the market, you must look at the entire
9 picture of what was happening in the market at the time to
10 assess whether Microsoft was exercising its monopoly power
11 in order to maintain its monopoly in the operating systems
12 market.

13 Your Honor, I will say this very, very politely.
14 You have repeatedly tried to cabin this somehow in terms
15 of --

16 THE COURT: I could be wrong.

17 MR. JOHNSON: You could be.

18 THE COURT: No. No. No.

19 MR. JOHNSON: I urge you --

20 THE COURT: I've told you, I've got an open mind.

21 MR. JOHNSON: But let me say that, you know, you
22 continually want to cabin this to this period that we owned
23 this product. I will tell you, Your Honor, there is not a
24 case in the land that would stop looking at the question of
25 anticompetitive harm in the relevant market based upon

1 whether or not a particular product within this analysis was
2 sold or not sold. It doesn't work that way. That question
3 that -- may I, please? This question of anticompetitive
4 harm within the relevant market is, by its very nature,
5 looking at the entirety of what is going on in the market
6 and looking at the but for world but for the anticompetitive
7 conduct listed here. All of this conduct took place during
8 the relevant time period that you were talking about.

9 As I said earlier, the only one where we do go --
10 I don't think it's far afield, the only one where we do talk
11 about the Apple foreclosure is not with respect to the
12 anticompetitive impact of that in the operating systems
13 market, but simply to compare that foreclosure with what
14 occurred with respect to Novell/WordPerfect.

15 MR. TULCHIN: Your Honor, Mr. Johnson is
16 completely wrong about this point. The only act here that
17 is claimed to be unlawful is withdrawal of support for the
18 namespace extension APIs. By definition, if Novell is to
19 recover, it must show that that act harmed Novell and also
20 that that act caused harm to the competitive process here in
21 the operating systems market.

22 MR. JOHNSON: I agree with that.

23 We'll show that because, Your Honor -- because,
24 Your Honor, it's exactly as you stated in your opinion. If
25 you go back to your opinion, you will see that you stated

1 that Novell/WordPerfect has the burden of showing that the
2 conduct directed against it caused some harm. It's your
3 words exactly, caused some harm in the operating systems
4 market. That is the question of whether Novell is properly
5 here as a plaintiff in this case, causation and damages to
6 Novell. The larger question which you went on to address is
7 whether, given the state of the entire market and the
8 weakened state of other ISVs and applications, all this
9 stuff, whether, given that reality, Microsoft's conduct in
10 the market contributed significantly to harm the competition
11 in the operating systems market. That is precisely --

12 THE COURT: I'm going to allow it subject to a
13 motion to strike. We won't get to that before lunch.

14 MR. TULCHIN: Your Honor, if I may say,
15 Mr. Johnson monopolizes these conversations. It's just
16 wrong to say that one small tiny act of a large universe,
17 because that's what so far Professor Noll has been directing
18 himself to, the findings of fact in the case against Java,
19 the case against Netscape, that one act, which he says is
20 similar in nature to the acts which did harm competition,
21 that you can somehow piggyback your whole case on everything
22 else. The complaint here --

23 THE COURT: No. No. You can't, absolutely. You
24 cannot piggyback.

25 MR. TULCHIN: That's what's going on.

1 MR. JOHNSON: Your Honor, when you wrote your
2 opinion, you said that, and you said, but that is not what
3 Novell is doing here. You stated that, and you are
4 absolutely right.

5 MR. TULCHIN: This is the trial.

6 THE COURT: We'll see.

7 MR. JOHNSON: But you were looking --

8 THE COURT: Okay, looking. A lot of things have
9 changed since I ruled.

10 I'll overrule the objection.

11 (Side-bar conference concluded.)

12 THE COURT: We're going to go around quarter to
13 12:00. The important thing is pay attention. Be careful.
14 I'm overruling the objection. This is an area where so much
15 of the evidence relates to things I have to rule upon as a
16 matter of law that I may end up striking, or I may not.
17 We're in a treacherous area.

18 MR. JOHNSON: Thank you, Your Honor.

19 BY MR. JOHNSON:

20 Q Let's start right at the top, manipulation of Windows
21 APIs, and specifically with respect to the namespace
22 extension APIs.

23 MR. JOHNSON: Could we turn to the next slide,
24 please, Mr. Goldberg.

25 //

1 BY MR. JOHNSON:

2 Q What does this slide summarize?

3 A This basically summarizes what I have read in the
4 record about the episode regarding the namespace extensions
5 and their reliance of WordPerfect on those APIs for
6 constructing the version of WordPerfect and PerfectOffice
7 that would be released to run on Windows 95.

8 Q In terms of antitrust economics, what was the
9 anticompetitive harm, if any, caused by Microsoft's conduct
10 regarding the namespace extension functionality with respect
11 to the operating systems market?

12 A The direct connection is that -- remember, at this
13 time, there is a big install base of WordPerfect. Close to
14 half of all of the word processors on PCs are using
15 WordPerfect. The new 32-bit microprocessor with Intel PCs
16 vastly increases the usability of the personal computer,
17 plus we have the importance of access to the Internet, which
18 is just coming about.

19 So these events mean that a large number of people are
20 going to want to have a new PC with an operating system that
21 takes advantage of the characteristics of those PCs. The
22 people who have an install base of WordPerfect have a
23 natural tendency, because of the cost of switching
24 applications, to continue to use those applications on the
25 new platform, if they exist and if they take full advantage

1 of the new functionality.

2 The importance of namespace extensions is that because
3 the APIs were withdrawn, WordPerfect was unable to release
4 its products at the time Windows 95 was first released and,
5 in fact, was delayed a long time, almost a year. So,
6 consequently, people could not take advantage. People who
7 bought PCs with Windows 95 on them, from the time it was
8 released until the spring of 1996, had to decide not to use
9 WordPerfect if they were going to use those PCs. And so --

10 THE COURT: Do you want to clarify that,
11 Mr. Johnson with another question? I don't think that's
12 consistent with the evidence, unless I'm wrong. You could
13 use --

14 MR. JOHNSON: Your Honor, can we approach?

15 THE COURT: If you want me leave it, I'll leave it
16 for cross-examination, but that just isn't what the evidence
17 is.

18 MR. JOHNSON: I think I would like to leave it for
19 cross-examination then, Your Honor.

20 THE COURT: Fine.

21 MR. JOHNSON: Thank you.

22 BY MR. JOHNSON:

23 Q I'm sorry, Professor Noll --

24 THE COURT: Unless I'm wrong, but I don't think
25 that's what the evidence was, what he just said. I think

1 there is a modification, that's true, but not as stated. If
2 you want to leave it for cross-examination, we'll leave it
3 for cross-examination.

4 BY MR. JOHNSON:

5 Q I'm sorry. Professor Noll, were you finished?

6 A I don't remember where I was.

7 THE COURT: You said that you can't use
8 WordPerfect with Windows 95.

9 THE WITNESS: I said you can use the functionality
10 of the new -- the new functionality that was made possible
11 by the 32-bit processor -- microprocessor that was being
12 taken advantage of in Windows 95. That's the crucial thing.

13 THE COURT: Fine. I didn't hear you say that.

14 THE WITNESS: The motive for buying this huge
15 increase in demand for PCs were taking advantage of new
16 capabilities that had only just become possible.

17 BY MR. JOHNSON:

18 Q Did --

19 THE COURT: But you said -- I apologize. That's
20 not what I heard you say.

21 THE WITNESS: Okay. I'm sorry.

22 THE COURT: No. No. I might have --

23 THE WITNESS: I sometimes talk sloppy. So thank
24 you for --

25 THE COURT: I sometimes listen sloppy.

1 BY MR. JOHNSON:

2 Q Professor Noll, did Microsoft's conduct regarding the
3 namespace extension APIs by itself cause some
4 anticompetitive harm in the operating systems market?

5 A Yes, it did, because it meant -- it gave this extra
6 added incentive to switch from the Novell suite of
7 applications to a new suite of applications that would run
8 on Windows 95 that would take advantage of these new
9 capabilities.

10 THE COURT: Let's have the jury break for lunch.
11 We'll take a half hour today because I have a couple of
12 things I want to take up with counsel. We'll talk -- we'll
13 sit here, we have to work these out, and pick up with you at
14 ten after.

15 (Jury excused)

16 THE COURT: It's best if you step outside. Let me
17 make it explicit, but I think it was very explicit before,
18 nobody should talk to you.

19 (Witness excused)

20 THE COURT: Maybe I have misunderstood something
21 that may relate to what I've seen as a gap in Novell's case.
22 I could be just plain wrong. Again, you may all disagree
23 about this. It may be a question of evidence and maybe you
24 can't answer, but as I understood the professor's testimony,
25 if the shared code had been written and WordPerfect had been

1 able to delve into the shell of Windows, then all of the
2 functionality of Windows could have been easily ported to
3 other operating systems through the cross-platform process.
4 Is that what I understand?

5 MR. JOHNSON: No, Your Honor.

6 THE COURT: That's not what I understand
7 technologically. But up to this point, I thought you wrote
8 into the Windows shell and you could operate with the
9 Windows shell, but you could not, then, cross-platform that
10 functionality into another operating system.

11 MR. JOHNSON: You are absolutely right, Your
12 Honor. Professor Noll didn't state that. If you got that
13 impression, that would be incorrect. You are not getting --
14 Windows has features and things and other operating systems
15 have features and things, which are certainly not available
16 unless somebody builds them with respect to the other
17 operating systems. The point here is the question of
18 whether or not by making them cross-platform, by having the
19 ability to operate on other Intel-based operating systems,
20 does the presence of WordPerfect in this market lead to a
21 reduction in the applications barrier to entry protecting
22 Windows monopoly. What the evidence shows and what
23 Professor Noll testified to is that by delaying, and then I
24 think it's more important than functionality, but the delay
25 in the ability of Novell/WordPerfect to get out an

1 application that would work on Windows 95, that we weren't
2 present on the Windows operating system, which Professor
3 Noll has testified repeatedly, it was absolutely essential
4 for Novell/WordPerfect to be successful on the Windows
5 platform, to be there at the time Windows 95 came out in
6 order to continue to present a threat to the operating
7 system business that would reduce the applications barrier
8 to entry.

9 THE COURT: I understand that. I thank you for
10 clarifying. I had understood up until his testimony, and
11 then I somehow just got the wrong impression, it's probably
12 my fault, that the marriage of WordPerfect with Windows 95,
13 the reason Mr. Harral was so stated about it was because
14 Windows 95 was bringing in a new functionality, which, if
15 the marriage had occurred, then WordPerfect could have made
16 Windows better, Windows could have made WordPerfect better,
17 it would have been a married product that was the product.
18 I had understood the testimony, and, again, you just
19 clarified I did get a misimpression, that somehow through
20 cross-platform, this married product could then easily be
21 ported into another operating system.

22 MR. JOHNSON: No. No. Not at all. If you got
23 that impression -- and I would say, Your Honor, that, you
24 know, although Windows 95 was certainly nice and had nice
25 features, there were other Intel compatible operating

1 systems that also had nice features.

2 What Mr. Harral wanted to do obviously was to get
3 his word processor on Windows. And the significance of that
4 fact is not with respect to WordPerfect/Novell, at least for
5 purposes of this case, WordPerfect/Novell wanting a great
6 product on Windows. The significance of that fact that
7 harmed the competition is that without success on the
8 Windows platform, we were no longer a threat. Microsoft had
9 widened the moat protecting the operating systems business.

10 So your continual focus on what we were trying to
11 do with respect to Windows is really -- with respect to
12 competition in the operating system, is really only relevant
13 because we needed to be on that platform.

14 THE COURT: I get where I am because of language
15 in the case -- not from the statute, from cases that it is
16 lawful to acquire and maintain a monopoly by producing a
17 superior product. If, in fact, I understood Mr. Harral to
18 say Windows 95 was a superior product, that he wanted to
19 marry WordPerfect to Windows 95, I understand that the fact
20 that he couldn't do that may have had some ancillary
21 effects, but certainly within the short run and, frankly, up
22 through any foreseeable future, I still have a problem
23 because I don't see how you maintain or acquire a monopoly
24 unlawfully if the reason for what you've done -- is what
25 you're accused of not to have done, because, you know --

1 which was not to leave the APIs out there. If you leave the
2 APIs out there, would it have increased your share of the
3 operating system. That is the problem I've got. We'll talk
4 about that later. Thank you for clarifying what was
5 previously the testimony.

6 MR. JOHNSON: Thank you, Your Honor.

7 (Recess)

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