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Hanging, Drawing and Quartering – American Style: The Brutal Dissection of Microsoft

By Kevin McFarlane
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Microsoft Corporation is the world's largest and wealthiest software company, with billions of dollars of cash sitting in its bank account. Today it is under siege like never before. It is embroiled with the United States Department of Justice (DOJ) and several US states on a protracted antitrust case, which it has just lost.[1] Microsoft also faces a number of lawsuits from competitors. It is regularly slated in the IT press, especially by the more technically elite section of that press. Many of its competitors complain about its business practices, even if they do not always bring lawsuits against it. By contrast, most customers seem sufficiently satisfied with the company's product offerings. In short, Microsoft seems to be hell for competitors but heaven for consumers.

Many critics consider Microsoft to be merely a lucky upstart with a well-oiled marketing machine that churns out slick, but technically inferior, products on an unsuspecting public. I beg to differ on this opinion. Below I discuss several factors that I consider the principal reasons for its success. I then analyse the more serious charges of its critics and include a theoretical analysis of issues such as antitrust, competition and monopoly. I also provide a mini-glossary at the end of the essay that defines various technical terms I use throughout.

Why Microsoft is Successful

A widely held belief puts Microsoft's success down to a combination of luck and marketing. It is true that Microsoft was lucky in being awarded the contract by IBM to supply the operating system for its new personal computer at the start of the 1980s. It is also true that Microsoft has a very good marketing machine. However, "luck" can be interpreted as "preparation meeting opportunity." Microsoft must have been doing something right, from IBM's point of view, to even be considered by IBM a viable supplier. Secondly, although luck may have played its part at the outset, to maintain its position in the market must have required more than luck. In other words, had Microsoft rested on its laurels it would not be where it is now.

Also, good marketing is no guarantee of a product's success, just as bad marketing is no guarantee of a product's failure. The saying that "no amount of advertising will sell a bad product" does hold. And this is confirmed by the fact that not all Microsoft's undoubtedly heavily marketed products have been successful.

Quite apart from its controversial business practices, which I will discuss later, I think the principal reasons for Microsoft's success are, in no particular order of importance:

- The Bandwagon Effect
- Brand Name
- Persistence
- Lack of Complacency
- Low Cost
- Entrepreneurial Alertness
- Added Value
- Ease of Use
- Wooing of Independent Software Developers

The Bandwagon Effect

When Microsoft produced its first useable version of Windows it was first off the mark with a standard software package for the business office, Microsoft Office; and it produced decent versions of its word-processor and spreadsheet applications before companies such as WordPerfect and Lotus got their acts together.[2] Once a sufficient number of companies had bought Microsoft Office, others joined the

bandwagon for want of anything better to do. Consequently it has been able to ride on its own momentum. Although people seem to overlook how quickly this phenomenon can be reversed.

Brand Name

A former soap salesman, Rowland Hanson[3], hired by Microsoft in its early days, came up with the idea of including the Microsoft name in every product. Hence, not just *Windows*, *Word*, *Excel* but *Microsoft* Windows, *Microsoft* Word, *Microsoft* Excel. Simple, but effective. A glance at the IT press provides an indication of how often Microsoft products are referred to by their full names.

There is also a perception among end-users that Microsoft is more likely than others to produce better-designed applications for its own operating system. After all, as the creator of Windows it must know what it's doing!

There is some merit in this. Although it should be noted that, in the pre-Windows MS-DOS days, Microsoft's own applications were marginal. Most people hadn't even heard of Microsoft. In mainstream applications, the likes of Lotus, WordPerfect and dBase ruled the roost. Borland rode high in development tools. All this, despite Microsoft's owning MS-DOS.

Persistence

Quite often Microsoft's first attempt in a new product line results in a far from satisfactory product or in one that's far less successful than rival products. But it just plugs away until it gets it right, whereas most companies would throw in the towel. Some examples of poor initial versions are:

1. Windows.
2. Internet Explorer.
3. Excel (formerly called Multiplan).
4. Windows NT.

With the first two, Microsoft did not start to experience significant success until it reached version 3 of those products. Indeed, most people had not even heard of Windows until it reached version 3 and it did not really graduate beyond a platform for playing Solitaire until version 3.1 was released in 1992. Excel[4] was trounced by Lotus 123. The first version of Windows NT was something of a damp squib in terms of market acceptance, despite the efforts of Microsoft's much-vaunted marketing machine. It did not start to make serious headway until version 3.51, which (despite the numbering) was the third release of the product.

Lack of Complacency

Once Microsoft assumes domination of a sector, such as operating systems or office suites, it does not rest on its laurels. Microsoft could quite easily get by for a few years on sales of Office 97, without bothering to release a new version. But it doesn't do this. Instead, it releases Office 2000. It acts, in other words, as though it is not the market leader and must continually add impressive new features in order to catch up with the competition.[5]

Low Cost

Microsoft's products are relatively cheap. Microsoft Office was a way of substantially reducing the price for a decent spreadsheet or word-processor. Without such an innovation Microsoft would have found it quite difficult to take away Lotus's and WordPerfect's market shares.

Entrepreneurial Alertness

Microsoft is a world-class commercial organisation. Or perhaps, more precisely, Bill Gates and a handful of his colleagues are very astute entrepreneurs. The manner in which Microsoft Office, for example, chalked up sales by value that eclipsed those of Windows, almost destroying the likes of Lotus and WordPerfect as independent companies, was nothing short of astonishing. In effect this was made possible by a combination of branding, the bandwagon effect and low cost.

Added Value

Microsoft Office epitomises the phenomenon of *added value*. By packaging together several programs from widely used application categories (e.g., word-processing, spreadsheet, database) and selling the combined package for less than the cost of each program separately Microsoft was able to greatly increase its

sales both in number of seats and total value. For example, most businesses use word-processing, spreadsheet and database software. Microsoft Office includes all these programs so it was very convenient for customers to shell out once for this, rather than purchase each program separately from different vendors. Moreover, most businesses probably benefited from the so-called *competitive upgrade*.

I'm not entirely sure whether this was a Microsoft innovation but, if not, Microsoft certainly exploited it to the full. "Competitive Upgrade" means that a purchaser can buy a product for a discounted upgrade price, rather than the full price, provided that they are a registered owner of a competing product. Thus, suppose a user owns a copy of WordPerfect for DOS. Then a competitive upgrade would enable them to qualify for an upgrade to Microsoft Office, obtaining several new products for a comparatively low price. The list of competing products that Microsoft allows for Microsoft Office has historically been very large. This must be a good part of the reason why it has amassed its huge 80-90% market share in the integrated office suites market. Microsoft Office is its most famous example of an added-value product but added-value products are quite common from Microsoft. The Visual Studio suite of software development tools is a more recent example.

Ease of Use

Many of Microsoft's products, especially its applications software, are easier to use than competitors' products. Technical gurus often overlook this. They tend to promote technical proficiency as the only, or main, consideration when evaluating software. Ease of use is a very important feature for the average end user. Typically, they want to be productive as quickly as possible. Personally, I almost always favour a technically adequate but easy to use product over a technically superior but difficult to use one. Life is just too short.

A feature related to ease of use, though not being quite the same thing, is *usability*. Microsoft generally scores high here as well. Much of this may well be due to the Usability Laboratories that it tests its new products in prior to release. "Usability" refers to the intuitiveness or convenience with which certain tasks can be performed. Here are some examples.

Suppose you're using Microsoft Word 97 in Windows 95. You invoke the File Open dialogue box to open a document but the document you want is not in the current folder. So you have to change to the relevant folder first. You open the document and return to Word. The next time you do a File Open the folder that it looks in is the folder in which you just opened the document. Nine times out of ten this is precisely what you want, so this is very intuitive. However, not all programs work in this way.

Here is another example. If you select a word in Word 97 and drag and drop it to another location it automatically keeps the spaces on either side of the word. Again, this is almost always what you want. But not all word-processing software works in this way. Often usability can be a very small thing. Often it's something you take for granted and you don't notice how well a software application has been implemented from a usability point of view until you use something that's worse. Speaking from experience, much Unix software seems to fall into the poor usability category.

Wooing of Independent Software Developers

Microsoft has always established a good relationship with independent software developers by practices such as making available software development kits for its products prior to their release. Although one of the complaints against Microsoft is that it does not publish all its application programming interfaces (APIs), thus giving it an unfair advantage, it does nonetheless publish vast quantities of information for developers. An examination of the Microsoft web pages for developers or the online help for its development tools gives an indication of this. By providing lots of information for developers it was able to get large numbers of them to write applications for Windows rather than for competing operating systems, such as IBM's OS/2, thus further entrenching the Windows platform.

So much for the discussion of what I think are the principal reasons for Microsoft's success. Its critics, however, have repeatedly cited far less praiseworthy reasons for its success – reasons that are either bordering on the illegal or are actually illegal. These have culminated in the most serious accusations to date and have led to one of the biggest and most important antitrust lawsuits in recent years. Although there are a number of lawsuits currently being contested against Microsoft, the most important is the US Justice Department antitrust lawsuit. I believe this lawsuit is unjustified, not because Microsoft is *not* in breach of antitrust laws (it may well be) but because these laws are themselves unjust.

Microsoft and Antitrust: Introductory Arguments

The current US Justice Department (DOJ) lawsuit against Microsoft dates back to the early 1990s. Microsoft was originally the subject of a Federal Trade Commission probe into its business practices in 1991. The Commission did not reach a consensus but handed the case over to the DOJ. This culminated in the 1994 oxymoronic "consent decree" that Microsoft was forced to sign.[6] It is oxymoronic because it suggests "both agreement (consent) and compulsion (decree).[7]" On October 20th 1997 the DOJ launched an antitrust lawsuit against Microsoft alleging that it had violated this decree by bundling its Internet Explorer web browser with its Windows 95 operating system.

IT industry commentators and other critics commonly level the following charges:

1. Microsoft is a monopoly.
2. It has behaved badly.
3. It deserves to be dismembered.

One, Microsoft is not a monopoly. It has a very large market share (over 90%) of operating systems for IBM-compatible personal computers (PCs). Apart from the fact that there are PCs other than IBM-compatibles, such as Apple Macintoshes, Microsoft's "monopoly" is not like that of the Post Office's for delivery of first class mail. If I decide to go into competition with the Post Office tomorrow I will be shut down and arrested. If I decide to offer a competing operating system to Microsoft's tomorrow I will not be shut down and arrested. This is a profound difference and means that a monopoly established in the free market always has to act as if it has competition even if it hasn't. This is why the price of Windows has stayed low relative to its functionality. In other words, a monopoly, or near-monopoly, in a free market can only maintain this state by continuing to offer ever better and/or cheaper products. This applies to Microsoft.

Whatever one may say about Microsoft's "monopolistic" conduct vis-à-vis its competitors it does not act like a monopoly in servicing its customers. A 1998 survey cites 46 percent of respondents saying that Microsoft provides the best training to its customers. IBM came second with 14 percent, followed by Novell (8 percent), and Sun (4 percent).[8]

Two, Microsoft has indeed behaved badly by the standards of the antitrust laws. But so have many companies who have not been prosecuted under these laws. Prosecutions seem only to arise if the company has a sufficiently large market share of some arbitrarily defined market and/or enough of its competitors are politically connected and complain loudly enough.

The antitrust laws betray a fundamental misunderstanding of the free market. A free market does not require that there be some arbitrary number of competitors in a given area. It just requires that should anyone wish to compete in that area they may not be stopped from doing so by the government or by private criminals. If Microsoft chooses to offer its operating system or web browser for sale on terms such that if an Original Equipment Manufacturer (OEM) or Internet Service Provider (ISP) does not accept them it does not get the product this does not constitute a violation of the freedom of the market.

It is indeed true that with its near-monopoly on PC operating systems, Microsoft has enormous economic power. But this is not unlimited power and over time the market tends to evolve responses to such power. One such response is the Java programming language. Another, possibly more promising, response is the Linux operating system and the open

source[9] movement in general. If it were not for the fact that Microsoft is so dominant on the desktop, both in operating systems and mainstream desktop productivity applications, Java and Linux would not have attracted nearly the level of attention they have.

Three, even if we accept Microsoft's guilt, dismemberment seems disproportionate to the alleged crimes. Ordering Microsoft to be broken up is a manifestly unjust measure. It is a punishment that does not fit the crime. Such a punishment would be appropriate if it were considered that being a monopoly *per se* is a crime. However, the DOJ has insisted that Microsoft was not prosecuted for being a monopoly as such but for the manner in which it attempted to "protect and extend" that monopoly.

The major charges against Microsoft related to exclusionary business practices, product tying and the like. Any punishment should be appropriate to these "crimes" and not to the fact that Microsoft has a monopoly. Thus any punishment should consist of Microsoft's being fined, ordered to desist from such practices and, perhaps, to pay damages to the "victims" of such exclusionary practices. (Though I don't believe these actions of Microsoft's should be considered crimes, as I argue below.)

A Commentary on the Antitrust laws

The freedom of the market is the freedom to produce and to trade what one has produced. Free trade means that individuals are free to enter into mutually consenting exchanges, either singly or in cooperation, as business organisations.

Because the market recognises private property, people are free to cooperate as producers as a way of securing the cooperation of the consumers. Cooperation as producers results in independent productive units, that is, companies. *Competition* then typically emerges as an *outcome* simply because freedom implies that producers are free to associate in any manner they like and typically won't all associate within the same productive unit. Consequently there is nothing, legally, to stop many different companies providing the same type of service. They must then *compete* in order to secure the cooperation of the consumers.

In a particular market, one company may emerge as being better at securing the cooperation of the consumer than others and its products may become dominant. However, other companies remain legally free to challenge it. The question then arises as to what the dominant company should be allowed to do to continue to secure the cooperation of the consumers.

The fundamental characteristic of the free market is that whatever goods you wish to obtain you can do so only by securing the consent of others. This rules out the use of force and fraud. So outright theft should be illegal because you acquire a good(s) without the owner's permission. Fraud should be illegal because you acquire a good(s) in exchange for deliberately supplying something that the other party did not contract to be supplied with. There will also be intentional and unintentional contractual disputes, according to which the party that is in breach of contract should be obliged to repair the damage in some way. Other than possible harmful or dangerous third party effects on persons who are not part of a trade, anything else should be permitted in the free market.

This means that if a company becomes so popular with the consumers that it can price some of its goods so low that no one else can compete with it that's just tough on the competition. It does not matter whether the low price is due to sheer productive efficiency or whether the price is "below cost" or zero. As the owner of its own products it should be free to dispose of them as it sees fit provided only that customers are free to walk away from the trade if they do not like its terms.

Suppose I develop an operating system to compete with Microsoft Windows. Suppose further that this operating system is capable of running all Windows applications. What should be my goal as an operating systems vendor? It is this: in every case in which a potential consumer is in a position to choose my operating system rather than Windows I should want them to choose my operating system. Suppose I were able and willing to provide my operating system to OEMs for a price of $2 on condition that they do not sell Microsoft's. A large number of OEMs

accept my offer. If Microsoft were to go out of business as a result this would be no concern of mine. And it should be no concern of government bureaucrats either.

If a software company offers an operating system for sale to an OEM with certain exclusive conditions this is not a violation of the freedom of the market. The OEM is free to accept those terms or to go its own way.

Of course, this is precisely the kind of thing that Microsoft does and is what has got it into trouble. It can be objected that if a company, such as Microsoft, with 80 or 90% of the market for PC operating systems draws up exclusive contracts in this way then an OEM has to accept them or be faced with bankruptcy. Because any alternative operating system that it uses will not enable it to sell enough computers. However, this is to assume that an OEM has an automatic right to be supplied with the Microsoft operating system, despite the fact that the operating system belongs to Microsoft. It created it, not the OEM. Microsoft should be free to set the terms under which it supplies its own operating system.

The antitrust laws are supposedly designed to serve the interests of the consumer. But, typically, antitrust cases have been brought by disgruntled competitors of the accused company, or by politically mischievous politicians, not by the consumer.

Nevertheless, first, I think it is wrong to give primary importance to the demands of the consumers. Philosophically, production is primary. Without production, consumption can't take place. Consumers are able to consume only because prior production has enabled them to produce and to trade what they've produced with others. As Robert Levy writes:

> "Microsoft has a right to the operating system that it alone created. Consumers cannot demand that it be provided at a specified price or with specified features. Competitors are not entitled to share in its advantages."[10]

Second, the antitrust[11] laws are vague, non-objective and do not necessarily serve the interests of the consumer. For example, the Sherman Act section 1 outlaws "combination…or conspiracy in restraint of trade…" Section 2 talks about persons who "monopolize, or attempt to monopolize…" But all businesses "attempt to monopolize." All attempt to grow their customer base and this usually means at the expense of some competitors.

The Clayton Act section 2 outlaws price discrimination, allows for exceptional cases and then permits the Federal Trade Commission arbitrarily to overrule the exceptional cases. There are also a number of sections relating to price discrimination, price fixing and mergers where these are outlawed if their effect is "substantially to lessen competition" or to "tend to create a monopoly."

The Federal Trade Commission Act section (a) (1) states: "Unfair methods of competition in commerce, and unfair… acts or practices in commerce, are hereby declared unlawful."

Apart from the fact that the free market must necessarily include the things that the antitrust laws prohibit in order for it to allocate assets to their most productive and valued uses, their very vagueness is responsible for their being invoked arbitrarily. Sometimes companies with relatively small market shares (as low as 5%) have been successfully prosecuted, sometimes those with large market shares have not been. The laws are such that businesses cannot know in advance what is a "crime" and what isn't. Businesses can be prosecuted for charging prices that are too high ("intent to monopolise"), too low ("predatory pricing") or the same as those of competitors ("collusion"). It is no wonder that a former antitrust chief has described the antitrust laws as a system of tyranny.

As for serving the interests of consumers, politicians cannot know in advance what sort of market arrangements will do this. It does not necessarily follow that 10 companies with roughly equal market share is better than 10 companies where one has 80% market share and the other 9 have 20% between them. The dominant company's large market share may enable standardisation and low-priced and/or more integrated products. It may enable other related market sectors to be more productive, providing greater value to the

consumers. The best guarantor of the interests both of producers and consumers is the free market.

The great fear conjured up by the antitrust laws is that, without them, large and/or monopolistic companies will charge high prices and offer low quality. But in the hallmark case of Standard Oil, one which is held up to be the defining instance of a valid antitrust lawsuit, even the plaintiffs admitted that, as a matter of fact, Standard Oil actually always increased production and reduced prices. For example:

> "Much has been said in favor of the objects [products] of the Standard Oil Trust, and what it has accomplished. It may be true that it has improved the quality and cheapened the costs of petroleum and its products to the consumer. But such is not one of the usual or general results of a monopoly and it is the policy of the law to regard, not what may happen, but what usually happens."[12]

The above is not dissimilar to the verdict of Judge Jackson's *Findings of Fact,* and indeed it seems to apply to most of the historical cases - at least, it applies to the larger companies who were prosecuted. It also applies to Microsoft. The reason for this is freedom of entry, i.e., *actually existing* competition and *potential* competition.

A major error in looking at the market is to view it statically. The key thing is that its dynamic nature ensures that no dominant position is unchallengeable indefinitely. It can only be made so by government intervention that legally prohibits competitors. Though even in these cases it may be possible to find substitutes for the monopoly service. The dynamic nature of the market also means that a Microsoft that does not continue to innovate in its established market or to investigate complementary markets may, some years hence, wind up in the state of a Digital or IBM[13].

Also, Microsoft's very dominance - both fair, many of its products are considered by consumers to be better than those of its competitors, and "unfair", its exclusionary practices - lowers the barriers to entry of rival operating system platforms. The reason for this is that Microsoft is both an operating systems vendor and an applications vendor. To make and keep its operating systems popular it has to encourage lots of Independent Software Vendors (ISVs) to produce applications for them. But, as an applications vendor, it also competes with ISVs. To the extent that Microsoft's own applications outcompete those of its rivals, either by "fair" practices or "unfair" exclusionary practices this lowers the costs of those ISVs' developing for rival operating systems. Not being able to compete with Microsoft in the Windows market they must turn elsewhere to generate sales. This is why both Java and Linux have become as popular as they have. This also illustrates the fact that the market is self-regulating and is the more self-regulating to the extent that it is not interfered with by government.

Much is made of Microsoft's market power stemming from its operating systems dominance, which, incidentally, overlooks the fact that Microsoft earned its position. But its operating systems dominance is in turn sustained by the fact that plenty of applications are available for it and it is the applications that people use Windows for. The operating system is just a vehicle. Software developers are the key to Microsoft's power and Microsoft knows this. If OEMs observe that software developers are starting to produce sufficient numbers of applications, that sufficient numbers of consumers want to use, for a rival operating system they will then judge that the sale of PCs preinstalled with this rival operating system is a commercial proposition. As I write, this is already happening with the Linux operating system. The main reason that more and more ISVs are porting or writing applications for Linux is that they are hoping to be able to move into space that is not now dominated by Microsoft. Linux itself is a so-called "open source" and free operating system. That is, the user does not have to pay a licence to use it and is also free to modify its source code. But they are forbidden to make commercial gain out of any modification, i.e., to licence commercially the modified operating system. However, the applications developed to run on Linux need not themselves be free.

An Analysis of "Predatory Pricing"

What price a company chooses to supply its own products at is, and should be, entirely up to it. So long as it does not force the consumers at gunpoint to purchase those products there is nothing wrong with this. That is what freedom means. Most companies sometimes sell products at below cost. Sometimes this is when they introduce a new product or are trying to enter a new market and so need to entice the consumer. Other times it is when they need to get rid of unsold inventory and need to cut their losses. Consider the case of "remaindered" books, for example. These are often sold off at prices that are clearly below cost. No one complains.

In the software industry, Netscape effectively supplied Navigator for nothing well before Microsoft got in on the act. OK, technically, it was the beta[14] version that was free. Nevertheless, it was by supplying this for nothing that the Netscape brand name was established and made the company attractive to potential customers of its commercial offerings.

Although companies should be free to do it, the practice of selling below cost, or giving products away in order to drive out the competition and then increasing prices above what would have existed otherwise is a double-edged sword and is generally not worth it.

First, at the lower prices on offer for its products there will generally be an increase in demand for them. The predatory company must be in a position to meet this demand. If it is not in a position it will have to invest in additional capacity. If it does not do this then customers will be forced to turn to the smaller companies who may even be able to *raise* their prices to meet the increased demand. Obviously the opposite of what the predator wants.

If the predator does invest in the additional capacity then, once the competitors are destroyed and it raises its prices, demand will be reduced. But the predator must continue to maintain its additional capacity even though it is no longer used in production. A very expensive proposition.

Second, suppose a company does reduce prices below cost, thereby sustaining losses for a while, at least in the given line of business. After the competition had been destroyed it would have to raise its prices to a level consistent with a higher profit margin than that which it had when it had competitors, so as to recover its losses. But this action would then lower the barriers to entry of newcomers to the market. Any potential entrants waiting in the wings when there were many competing companies may have been deterred by having to meet the low costs of production required to sell at the former market prices.

But now, with the monopolist's having to charge at above market prices in order to recoup its losses, those new entrants can afford *higher* production costs. Because they can sell their products just below the now higher prices of the monopolist and cover their production costs, thereby making a profit - something they were unable to do under the previously prevailing market conditions.

Third, it is overlooked that any companies made bankrupt by the predator still have their productive resources, physical plant and people available, perhaps at knockdown prices. This makes them even more attractive to potential market entrants.

Predatory pricing, in the sense of pricing below cost, is generally more costly the greater is the market share of the predator. Its losses must necessarily be much bigger than those of its nearest competitor. If a dominant company wants to drive out its competitors by aggressive pricing, the best strategy is for it to drive down its own production costs below those of its competitors and to price its products *above* its own costs but *below* those of its competitors. If its competitors are destroyed in this way the predator is not under the same necessity to raise its prices above the previous market level because it has not been operating unprofitably. But, because it is now a monopolist, it could *choose* to. However, it would not be able to escape the effects described above.

This is why you will find that companies, such as Standard Oil in the nineteenth century, continually increased production

and lowered prices. And, in fact, it followed a policy of always striving to lower its production costs. If one examines the case of the A&P grocery chain in the 1940s it will be found that it too did not practice predatory pricing despite antitrust allegations to the contrary.

And it's why you find that the same applies to Microsoft. OK, you do find that people complain that some Microsoft products are too expensive compared to the competition. For example, Microsoft Office is now more expensive than most competing office suites. But, consider the historical context. Before Office became popular the norm was to buy standalone products such as Lotus 123 and WordPerfect and each of these, in their DOS versions, was more expensive than the entire Office suite, especially when you factored in the concept of competitive upgrades[15] It was Microsoft that was responsible for making all of these types of product much cheaper than hitherto. In the period 1988-1995 software which did not compete with Microsoft fell in price by about 12%. Software that did compete with Microsoft's fell in price by 60%.[16] Other commentators echo this. Prices rose 35% when WordPerfect was the dominant product and fell 75% after Microsoft Word took over. More generally prices have fallen 65% in markets in which Microsoft has a presence. They've fallen 15% in markets in which it doesn't[17]

Do Dominant Companies in a Market Require "Special Handling"?

A common belief is that certain "unfair" business practices should be excusable for companies with low market share but not for industry leaders. I believe that a Sun executive recently made a comment to this effect after the publication of Judge Jackson's *Conclusions of Law*.

The idea of making certain laws applicable only when companies are deemed to have sufficient market power is ridiculous. A look at the history of the antitrust laws clearly shows that there is no way for a company to determine in advance when it is doing something that will be deemed prosecutable and when not. The only way it can proceed under this scenario is to seek government permission before it undertakes any economic activity. That is, the creative, productive individuals, who make up business organisations and who engage in providing for the well being of the populace, must seek permission from bureaucrats who create and produce nothing. No company can thrive for long under such conditions.

Microsoft's industry dominance is, in any case, way overstated. In 1996 it had about a 4% share of world-wide software revenues.[18] Presumably this won't have increased massively in the past four years. Microsoft dominates the market for PC operating systems and desktop productivity suites. It has a large share of the market for development tools for Windows applications but not as big a share as it does for the first two categories. Also the last category is much smaller, as professional programmers are fewer in number than PC end users. But the Windows market as a whole is huge and there are plenty of important sectors where there is no Microsoft presence. The Enterprise Resource Planning (ERP) market is big and growing. No sign of Microsoft.[19] The scientific, technical, industrial and engineering software market is large. No sign of Microsoft.

Much is said about the unfair advantage Microsoft has in owning the operating system. But:

1. It is only with Windows that this advantage has seemed to bear fruit. In the MS-DOS days, Lotus, WordPerfect and Ashton-Tate ruled the roost, despite Microsoft's owning the operating system. Most people had scarcely heard of Microsoft.
2. Microsoft dominates the Apple Macintosh software market despite not owning the MacOS operating system. Also, Internet Explorer 4 for the Macintosh was rated higher than Netscape 4. It was considered to make better use of MacOS features and look-and-feel.
3. Not all Microsoft's Windows applications are spectacular successes. The Microsoft Network (MSN) was bundled with Windows 95, a supposed unfair advantage and anti-competitive by the DOJ's criteria. No one used MSN because it wasn't good enough. (It still isn't, judging by its market share.) Internet Explorer was also bundled. No one used it because it wasn't good enough. It was only

when it got to version 3 that people noticed it.

Although it might be difficult to purchase a PC without Windows installed, once purchased, there is nothing to stop anyone from ripping it out and loading OS/2, Unix, Linux or BeOS. Besides Linux there are a number of lesser-known free operating systems – FreeBSD, NetBSD and OpenBSD. (Ironically, Microsoft's own Hotmail web email service runs on FreeBSD and not on Windows NT.) No doubt there are other operating systems that I've not heard of.

Suppose the consumer sticks with Windows. Must they then purchase Microsoft Office? No. There's nothing to stop them buying Lotus SmartSuite or Corel Office or one of many integrated packages. They can now even have Sun Microsystems' Star Office, a Microsoft Office-like suite, for free. The German company, Star Division, which invented Star Office, was actually growing its revenues before its acquisition by Sun, despite Microsoft's supposed impregnability in this field. Note that Microsoft Office sales currently comprise 40% of Microsoft's revenues. So if we all stopped buying Office, which we can easily choose to do, this would be a major blow to Microsoft. If we all ripped out Windows, installed Linux and Star Office, which can import existing Office files then, given that most of the big ISVs are already writing Linux applications, Microsoft would lose its leverage over OEMs and possibly go bankrupt. This would be to assume no market response from Microsoft of course. But if the DOJ has its way Microsoft would not be able to make a market response, owing to its privileged monopoly position.

Sun, one of the most profitable computer companies in the world, claims to have thrown out all its Microsoft software. I see no sign of Sun's impending bankruptcy. (Actually, I suspect this is a piece of Scott McNealy[20] hyperbole but I wouldn't be surprised if there's a whiff of truth in it.)

A Commentary on Judge Jackson's "Findings of Fact"

The first major judgement in the antitrust trial of Microsoft was released on November 5th 1999. The second judgement, the *Conclusions of Law* was published on April 3rd 2000 and is really just a summary of the first judgement. Both judgements came down heavily against Microsoft, accusing it both of being a monopoly and of illegally abusing its monopoly position, that is, of trying to protect and extend that monopoly by illegal means.

I consider only the first of the documents referred to. The first part of this document consists of an attempt to establish that Microsoft is, in fact, a monopoly. By this, the judge means not only that Microsoft has a 90+% share of the PC operating systems market but that it holds so-called "monopoly power" in that market. By this he means that Microsoft could, if it chooses, substantially increase the price or decrease (or freeze) the quality of its Windows operating system without incurring any competitive threat. This is alleged to be because of factors such as the following:

1. Alternatives to Intel-compatible PC operating systems are more expensive, taking into account compatibility with existing applications and the cost of learning a new system.
2. There is an "applications barrier" to entry associated with the viability of any new Intel-compatible PC operating system. That is, consumers will not be interested in a new operating system unless there are already plenty of applications available for it and software developers won't be interested unless there is already a huge market of potential consumers willing to buy their applications.

Judge Jackson does not say that it is impossible for a new competitor(s) to enter the market. (Indeed, they already exist.) What he claims is that such competitors(s) will be unable to challenge Microsoft's dominance in "less than a few years."[21] He proceeds to dismiss the alleged competitive threat of various non-PC devices and also of PC operating systems such as Linux, BeOS and the non-Intel Apple Macintosh.

A couple of preliminary observations on Judge Jackson's findings are due here.

First, his findings amount to saying that it is very difficult to enter the PC operating systems market and hope to win a

substantial market share. This would be so regardless of any actions on Microsoft's part. Very few people would disagree with this and I certainly don't.

Second, Judge Jackson alleges, much more dubiously, that Microsoft could substantially increase its prices without incurring any cost. The obvious question to ask then is: why hasn't it? It hasn't because obviously it thinks that there is some price above which its revenues would decrease and/or above which it would attract competitors.

Concerning improvements to Windows, in paragraphs 43 and 44 Judge Jackson admits that Microsoft does continually make such improvements and that it devotes considerable sums to persuading independent software developers to write to the new functionality. This makes it even harder for alternative operating systems to succeed. But Judge Jackson claims that it would still be prohibitively hard even if Microsoft did not continually "evangelise" Windows.

Again, if Microsoft has it so cosy why doesn't it just stand still? Judge Jackson says that Microsoft's continual product innovations make life tougher for potential competitors and increase Microsoft's consumer market and profitability. The implication seems to be that he doesn't want it to act in this way. For example, he writes (paragraph 61):

> "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."

Why is it wrong for Microsoft to act in this way? Don't all great businesses aspire to this? The judge also seems to think that it is a sin for businesses to attempt to maximise their profits. He writes (paragraph 63):

> "…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."

Presumably, Microsoft had calculated that $49 would still have yielded the company an adequate profit and not merely enabled it to break even. In which case, the judge would no doubt have argued that, as Microsoft could still make money at this level, it could afford to charge less still.

Later, Judge Jackson admits that, as a matter of fact, it is not possible to say whether Microsoft charges the profit-maximising monopoly price. He thinks that it may be charging lower than it needs to, so as to make the Windows platform attractive to more and more users. This, of course strengthens further the so-called "applications barrier to entry" of competing operating systems. Thus it appears that no matter what price Microsoft charges for a Windows upgrade it is guilty of monopoly power.

In fact, the price of Windows has fallen in real terms in relative to its functionality. According to Richard A. Levy the price of Windows 3.0, which required the added purchase of DOS, sold for $205 in 1990. Eight years later, Windows 98, which does not require DOS, was sold for £169 for the full system and $85 for an upgrade.[22]

The remainder of the judge's findings is devoted to documenting various ways in which Microsoft imposes, and has imposed, burdensome restrictions,

exclusionary contracts, requirements and differential pricing on OEMs, and on other software partners, in such ways that they receive the most favourable terms only if they fully comply with Microsoft's wishes. Essentially, this boils down to the fact that Microsoft wants to do all that it can to keep consumers using its operating systems and applications rather than those of its competitors. So it will naturally drive as hard a bargain as it can to maintain its position.

This behaviour of Microsoft is perhaps the most widely condemned of its practices but these critics overlook one simple fact. Windows is Microsoft's product. It created it. It owns it. It should have the right to set the terms under which it is sold. OEMs who do not like those terms are free to seek better terms elsewhere. Consumers who do not like those terms are free to use another operating system, such as the free Linux, or another type of personal computer, such as an Apple Macintosh.

It should also be deemed significant that if Microsoft feels the need to resort to such behaviour, it might be because the applications barrier to entry is not so high after all and that a kinder, gentler Microsoft would soon face significant competition.

Tying

The dominant theme of Judge Jackson's *Findings of Fact* is the relationship between Microsoft and Netscape, and the alleged harm done by the former to the latter. The two principal "anti-competitive" actions by Microsoft are its bundling (and subsequent integration) of Internet Explorer with Windows and its promotional agreements with Internet Service Providers and related companies. The latter refers to practices such as Microsoft's referring business to ISPs in return for their not promoting Netscape, or for their offering Internet Explorer as the default browser.

Microsoft's bundling of Internet Explorer with Windows is a practice known as "tying," one that is commonplace in business. However, tying only seems to incur the wrath of the US government when you're a ruthless monopolist such as Microsoft.

Now Microsoft in fact merely insisted that PC manufacturers (OEMs) take Internet Explorer with Windows 95. This in itself was not exclusionary. OEMs could still offer Netscape. What they could not do is remove Internet Explorer. According to the DOJ this gives Microsoft an unfair advantage owing to its dominance of the operating systems market.

However, Microsoft also bundled software for the Microsoft Network (MSN) with Windows 95 from the outset. Prior to the launch of Windows 95, online service providers, such as CompuServe and America Online (now both part of America Online, known as AOL), feared that Microsoft's operating systems monopoly would enable it to crush them. What has been the result to date? Up until about 1999 MSN was losing about $200 million a year serving 2 million customers. AOL was very profitable with about 15 million customers. I do not think this picture has changed very much in the last few months.

Internet Explorer too was bundled with Windows 95 from the outset and, about a year later, was also bundled with Windows NT, Microsoft's business-oriented operating system. Yet Microsoft was unable to dent Netscape's 90% market share until about Internet Explorer version 3 onwards. Why? Because earlier versions of Internet Explorer were not good enough. The same applied to MSN. The fact is that, for all its market power, Microsoft has to offer products that are good enough in order for it to defeat its rivals. Tying and exclusive contracts in themselves are insufficient. Ironically, in the past, technical commentators criticised Microsoft for its *lack* of tying. They used to complain that customers had to resort to third-party software, such as disk compression and defragmentation tools, rather than being able to use software already supplied with the operating system. But when Microsoft eventually includes such utilities it is accused of shutting out the competition. So it is damned if it does and damned if it doesn't.

An interesting fact to explain for those who think Microsoft has been successful with its applications purely on account of its operating systems dominance is why Microsoft Office also dominates in the Apple Macintosh market. This is even

more astonishing given that many Apple Macintosh enthusiasts hate Microsoft.

In his Conclusions of Law Judge Jackson does admit that Microsoft did not foreclose Netscape. Tying is not the same as exclusion. Microsoft has certainly resorted to exclusionary tactics with other products. But, *in regard to the bundling of web browsers*, it is Netscape that has resorted to exclusionary behaviour, not Microsoft. It offered payments to OEMs if they agreed to ship PCs without Internet Explorer. Netscape also resorted to tying when it was the dominant browser. It tied its email program to its browser, almost destroying a competing email program from Eudora. I have no objection to such behaviour. But it's a bit rich for Netscape to now run to the government.

Exclusionary Contracts

Microsoft put in place a series of arrangements with Internet Service Providers, Internet Content Providers and Online Service Providers which all entailed some sort of restriction on the extent to which Netscape could be offered or promoted as an alternative browser. For example,

> "Originally, in return for referring business to fewer than a dozen ISPs (of more than 4000 firms offering ISP services), Microsoft required that they use Internet Explorer as their default browser…"[23]

This means in effect that "If Microsoft refers a customer to you, don't give that customer our competitor's browser." Microsoft subsequently relaxed this requirement. Even so, even under the most restrictive of these deals, ISPs were allowed to distribute Netscape to 25% of their customers and were even able to exceed this limit without retribution from Microsoft.

In another type of contract, with Internet Content Providers, Microsoft had "Active Channels" which guided users to the specific web sites of the Internet Content Providers. They were not allowed to promote Netscape on the page to which Microsoft directly linked but they could do what they liked on all the other pages.

AOL also struck an agreement with Microsoft to have its icon displayed on the Windows opening screen in return for AOL's using Internet Explorer as its default (but not exclusive) browser. It was obviously advantageous for AOL to leverage Microsoft's operating systems dominance in order to promote its services. But there were also technical reasons for its preferring Internet Explorer. AOL provides a customised version of Internet Explorer. At the time Netscape was not customisable enough, and still isn't, to meet AOL's requirements.

Other companies supposedly harmed by Microsoft's aggressive practices are IBM, Apple, Compaq, Gateway, Intel and Sun. IBM was threatened with retribution if it continued to offer competitive products such as its OS/2 operating system and its Lotus SmartSuite office application. IBM ignored the threat and continued regardless. A pattern which seems to have been repeated by others. A couple of interesting cases are Apple and Compaq. At one point there was an allegation that Microsoft had sabotaged Apple's QuickTime multimedia program. However, the cause turned out to be buggy software from Apple. A similar incident happened with Real Networks' RealPlayer multimedia program. It's almost as though, if an ISV's application goes wrong when run on a Microsoft operating system, it must automatically be due to Microsoft subterfuge.

Microsoft supposedly pressured Compaq into dropping support for QuickTime. However, Compaq denied this, saying that this was due to Apple's decision to charge for a product that they had previously supplied for free.

The relationship between Sun and Microsoft is rather different. For a start there is an ongoing court battle between the two companies, which has nothing to do with the antitrust case. Nonetheless, Microsoft's actions in regard to Sun feature in the main antitrust case. And, after Judge Jackson's *Conclusions of Law*, Sun may formally raise its status to an antitrust issue.

Sun invented the Java Programming Language and licensed it to other software companies, including Microsoft. Sun continues to develop the language and, as

it adds new versions, licensees are expected to implement these versions according to Sun's specifications or, if they do not, they should not be able to advertise their implementations as compliant.

Microsoft, however, has done two principal things. First, it chose not to implement some aspects of the Java Language. Second, it added its own platform-dependent extensions. (Java is a platform-independent programming language, i.e., it can run without alteration on a variety of operating systems.)

According to Microsoft its license with Sun allowed it to do this. Sun denies this. Clearly, this is a contractual dispute and should be settled on contractual grounds. It seems obvious that Sun did not intend Microsoft to be able to use Java in this way. But there may have been loopholes in the contract it drew up with Microsoft. If Microsoft *is* guilty of breach of contract it should, of course, be made to pay the appropriate penalties (compensation to Sun). Of all the charges I have seen against Microsoft, related to this antitrust case, this is the only one that is valid (assuming Microsoft to be in breach).

But, *regardless* of the merits of the case, the DOJ views Microsoft's actions as part of a larger pattern of anti-competitive behaviour - protecting the "applications barrier to entry." Interestingly, one charge relates to Microsoft's Visual J++ software development system, which provides a Windows-only implementation of Java. Judge Jackson claims that Microsoft hid this from developers. Presumably, the justification for this was motivated by quotes such as the following from Thomas Reardon, a Microsoft executive, in 1996:

> "[W]e should just quietly grow j++ [Microsoft's developer tools] share and assume that people will take more advantage of our classes without ever realizing they are building win32-only java apps."[24]

However, months before this software was released (in late 1998) Microsoft in fact made it *crystal clear* in technical articles and interviews that Visual J++ was a Windows-only implementation. (*Though, strictly speaking, this is not true*. *Visual J++'s "natural" mode of operation is Windows-only but developers can choose to write so-called "pure Java" code if they choose to. But they must make do with less help from the development environment and make do with a slightly out-of-date version of Java. It is also possible to extend the development environment in such a way that it is as Sun-compatible as other Java development environments. Though developers have to look elsewhere for the extensions.)*

My own view of Microsoft's behaviour is this. If Microsoft is not in breach of contract no penalties should be forthcoming. On the other hand, I happen to disagree with Microsoft's strategy on Java, *regardless* of whether it is legally in the right or not. I think it should either implement Java according to Sun's specifications or abandon it altogether.

Conclusion

The DOJ claims that Microsoft has harmed consumers. But its definition of harm is defined almost exclusively as damage to competitors. It does not say that Microsoft sold consumers shoddy goods or that it defrauded them. On the contrary, Judge Jackson's *Findings of Fact* actually *praises* Microsoft for its innovations and the benefits it provides, and has provided, to consumers. On the whole, the DOJ does not say that consumers were overcharged, except in so far as it says that Microsoft could afford to charge less than it does for some of its products and still make a profit. The DOJ's definition of harm means principally that Microsoft's aggressive business practices have prevented or severely hampered competitors' efforts at providing alternative products to Microsoft's. In short, it alleges that Microsoft has restricted consumer choice.

The DOJ recently ordered 55,000 copies of Corel WordPerfect Office, so its consumer choice has obviously not been harmed by Microsoft's aggressive practices. I have no quarrel with its choosing WordPerfect Office if it feels it is a better match for its requirements. But, no doubt, the decision was partly motivated by a desire to snub Microsoft. I don't know what's worse, the deliberate snub to Microsoft or the fact that the DOJ employs 55,000 unproductive bureaucrats.

Microsoft is condemned for taking steps to protect its dominant position in the market, for acting aggressively to protect the so-called "applications barrier to entry", that is, of making it as hard as possible for competitors successfully to offer anything that could threaten Microsoft's Windows dominance. What then does Judge Jackson want Microsoft to do? Allow competitors to challenge its dominant position while taking no actions to maintain its lead?

It should be noted that in virtually every case where Microsoft engaged in so-called anti-competitive exclusionary behaviour it offered some kind of value to its partners. That is, it almost always said: "If you do not trade with company A, we will offer you product X on very favourable terms." Microsoft may additionally have threatened to offer product X on *less* favourable terms (or not at all) but it was rare that it offered *solely* a threat. But even if all that Microsoft offered was a threat, that is, a *refusal to trade* on the terms offered by a partner, it was perfectly within its rights to do so. That is what free trade means.

Sure, Microsoft has heaps of economic power. But a fundamental fact that the antitrust laws overlook is the distinction between economic power and political power. Richard Salsman describes this distinction very succinctly:[25]

> "Economic power means the power of a dollar – how many you earn and how many you can spend determines the extent of your 'power.' Economic power involves trading benefits with whomever you choose to deal and with whoever chooses to deal with you. That is, it involves the power to harm *no one*…"
>
> "Political power is the power of a gun – of police, the military, the taxman and the jailer…"
>
> "For those of you still unclear about these distinctions, let me suggest an experiment. After you graduate from Harvard, during your first year in the workforce, don't buy or use any of Microsoft's products. That is, send the alleged "Robber Baron" no money. At the same time, send the government no money. That is, don't pay your taxes. Then wait. Watch who comes after you for your money and *how* and with what weapons."

Judge Jackson's and the US Justice Department's verdict on Microsoft is that it has damaged consumers by bludgeoning its competitors. But the view of competition they hold is this:

> "A free economy cannot exist without competition. Therefore, men must be forced to compete. Therefore, we must control men in order to force them to be free."[26]

Kevin McFarlane
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Glossary of Computing Terms:

Application Program: Software, such as word-processors and spreadsheets that perform certain types of task.

Application Programming Interface (API): Software that allows application programs to interact with the operating system.

Enterprise Resource Planning (ERP): Software that helps a manufacturer or other business manage the important parts of its business, including product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service, and tracking orders.

Independent Software Vendor (ISV): A company that writes application programs for operating systems. This usually refers to companies other than creators of the operating system itself (who themselves may also write application programs for their own operating system).

Internet Service Provider (ISP): A company that provides software that enables PCs to connect to the internet.

MS-DOS: Short for "Microsoft Disk Operating System." This is the character-based operating system that preceded Microsoft Windows. With such a system the user must enter commands at the keyboard to perform any useful functions,

rather than use "point-and-click" with a mouse.

Operating System: Software that controls the basic operations of the PC, such as managing files, printing and launching other programs.

Original Equipment Manufacturer (OEM): A personal computer manufacturer or
manufacturer of other computer hardware, such as printers.

Unix: An operating system, available in multiple variants, that competes with Microsoft Windows.

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[1] See Judge Thomas Penfield Jackson's *Findings of Fact*, *Conclusions of Law* and *Final Judgment*, United States District Court for the District of Columbia, 5th November 1999, 3rd April 2000 and 7th June 2000 respectively. These can be found at the following web address: http://www.microsoft.com/presspass/trial/. In the *Final Judgment*, Judge Jackson, following the DOJ's recommendations, ordered Microsoft to be split into an operating systems and applications company. He also mandated a number of conduct regulations on the company. The next stage is Microsoft's appeal, allowed for in the *Final Judgment*, which will be in the Court of Appeals and/or the Supreme Court.

[2] Microsoft had, in fact, being telling independent software vendors to port their applications to Windows for up to five years prior to the release of Windows 3. Everyone ignored them, probably because Windows was dreadful prior to Windows 3 and, at the time, Microsoft was a relative small fry compared to the likes of Lotus Corporation.

[3] Rowland Hanson was a former vice-president of marketing at Neutrogena Corporation. See James Wallace & Jim Erickson, *Hard Drive: Bill Gates and the Making of the Microsoft Empire*, John Wiley & Sons, Chichester, 1993, p242.

[4] Ironically, in view of what some think is Microsoft's extreme attachment to the Windows platform, one of the reasons that the first version of Excel was trounced by Lotus 123 was because Microsoft tried to make it available on multiple operating systems.

[5] For an excellent analysis of this phenomenon see Virginia Postrel, *Creative Insecurity*, Reason Online, January 1998, http://www.reasonmag.com/9801/ed.vp.html.

[6] The consent decree concerned its licensing practices, which were deemed unfair to competing operating system vendors.

[7] Richard M. Salsman, *The Injustice of Antitrust Laws as reflected in the High-Tech Lynching of Microsoft*. Adapted from a lecture presented to Harvard University, 6 May 1999. See http://www.moraldefense.com/microsoft/.

[8] "Annual Reseller Training and Services Survey," *Computer Reseller News*, April 6, 1998.

[9] "Open source" software is that for which the user does not have to pay a licence. The user is also free to modify its source code but is forbidden to make commercial gain out of any modification, i.e., to licence commercially the modified software.

[10] Robert A. Levy, *Microsoft Redux: Anatomy of a Baseless Lawsuit*, Policy Analysis 352. The Cato Institute, September 30, 1999, p2.

[11] For a scholarly analysis of the antitrust laws see Dominick Armentano, *Anti-Trust and Monopoly: Anatomy of a Policy Failure*, Independent Institute, Oakland, CA, 2nd Edition, 1996.

[12] From the Supreme Court decision breaking up the company; cited in George Reisman, *Microsoft and Its Enemies: Which is the Monopolist*, March 30, 1999. See http://www.capitalism.net.

[13] IBM (International Business Machines) and Digital (Digital Equipment Corporation) were the two most successful computer companies up until the PC era. Then both declared heavy losses. IBM soon returned to profitability. It is still the world's biggest computer company by sales but no longer calls the shots in the IT industry. Digital's demise was more protracted, culminating in its acquisition by Compaq Corporation, a PC manufacturer.

[14] A "beta" version of a program is a pre-release version that is made available to selected end-users, usually for free or for a nominal price, in order to shake out any remaining bugs in the program. Beta programs are necessary because it is impossible for a software vendor to capture all usage scenarios with its own testing.

[15] Word processing prices had been rising before Microsoft Word for Windows was released in 1989 after which they fell from about $300 in 1990 to around $50 in 1990. Personal finance software fell from about $100 in some cases to about $20 after Microsoft came on the scene.
[16] Thomas J. DiLorenzo, *The Gates-Rockefeller Myth*, Ludwig von Mises Institute. http://www.mises.org.
[17] Stan Liebowiz, "Bill Gates' Secret? Better Products", *Wall Street Journal*, October 20, 1988, p2.
[18] Adam D. Thierer, "The Department of Justice's Unjustifiable Inquisition of Microsoft", The Heritage Foundation, November 1997. See http://www.heritage.org/heritage/library/categories/regulation/fyi162.html.
[19] Since I wrote this statement Microsoft has announced Microsoft BizTalk Server, a business-to-business e-commerce package that looks as if it may duplicate some of the functionality of enterprise resource planning software.
[20] Scott McNealy is the chairman and CEO of Sun Microsystems.
[21] Judge Thomas Penfield Jackson, *Findings of Fact*, op. cit., paragraph 31.
[22] Robert A. Levy, *Microsoft Redux: Anatomy of a Baseless Lawsuit*, op. cit., p2.
[23] Ibid., p9.
[24] Judge Thomas Penfield Jackson, *Findings of Fact*, op. cit., paragraph 394.
[25] Richard M. Salsman, *The Injustice of Antitrust Laws as reflected in the High-Tech Lynching of Microsoft*, op. cit.
[26] Ayn Rand, *Atlas Shrugged*, New American Library, New York, 1957, p129.