COMPUTER CONNECTIONS

Microsoft and Intel take on the world.

JEFF HOLTZMAN

Computer operating systems have been a raging battleground for as long as there have been computers. The PC industry has been mostly immune to these battles ever since Microsoft introduced MS-DOS 1.0 back in 1981. However, rapid advances in hardware, along with corresponding increases in desired functionality, reliability, and security, have, in recent years, nudged PC-based operating systems closer and closer to proprietary mainframe and minicomputer operating systems. Skirmishes that have smoldered in the background over the past few years are on the verge of erupting into full-scale war. There are more than half a dozen participating companies and products in this battle. They are listed below in order of influence and likelihood of long-term survival:

- Microsoft: DOS, Windows, Windows for WorkGroups, LAN Manager, Windows New Technology (NT), and a full suite of applications programs
- Novell: NetWare, UnixWare
- IBM: OS/2, AIX
- Apple: System 7
- Other UNIX dialects from HP, DEC, and others
- Sun: Solaris
- Next: NextStep, NextStep 486.

Let's examine the contenders in reverse order, from the least to the most important.

Friday the 13th, part 79,482

UNIX is like the horror-flick creature that just won't die. No matter how many times you kill it, it keeps coming back for more. Despite its tenacity, UNIX never comes close to achieving the dominance to which it aspires. Every few years it comes back in some mutated form, threatening Microsoft's operating-system hegemony. The latest reincarnation arrives courtesy of Novell Corporation, of NetWare fame. We'll get to Novell in a minute. For now, let's just state that the UNIX market has consistently misunderstood the PC "message" (power, personal productivity, local control, low pricing, intense competition, and continual innovation). However, there is little reason to believe that, even if it has now finally learned how to compete, it will be able to either shake off the UNIX onus or deflect Windows' momentum. IBM suffers from a similar problem with OS/2, which may offer technical superiority over Windows, but no compelling, innovative applications. We'll get to OS/2 in a moment.

The UNIX market has consistently overrated its importance in the overall scheme of things. Its strongholds include CAD, manufacturing, financial analysis, and, thanks to Next, multimedia development. But past fragmentation of the UNIX market, because of bitter competition among IBM, DEC, HP, Sun, and others, has all but eliminated serious support by influential PC software vendors. Yes, you can buy character-based versions of WordPerfect and Word that run under some version or other of UNIX. But except for a few innovative products like Lotus' Improv for the Next, there's precious little truly compelling technology that would entice or seduce users out of the Intel-based world and into the proprietary CPU's and UNIX dialects that have been prevalent.

That's the way things have been in the UNIX market for the past decade. Recently, however, Novell purchased the rights to the official UNIX code from AT&T. To understand the significance of that purchase, let's first take a closer look at Novell.

NetWare and UnixWare

Novell is the premier vendor of local-area networking (LAN) software. The company's NetWare products together hold about 60–70% of the PC LAN market, which consists primarily of Intel-based PC's, but with connectivity to Macintoshes and UNIX systems running the TCP/IP protocol.

Despite its preeminent position in local-area networking, Novell is in dire straits because it is essentially a single-product company. Ten years ago, WordStar (then called MicroPro) dominated the word-processor market. The company is still alive today, but its market share is next to nil, and WordStar is hardly known for technological innovation. Lotus Development Corporation is in danger of falling prey to the WordStar syndrome, as is WordPerfect. But back to Novell.

To help shore up its withering position relative to Microsoft, Novell recently purchased from AT&T a company called UNIX Systems Laboratory (USL) for a reported $350 million. USL, in which Novell already had a prior investment, owns the rights to the UNIX operating system originally developed by AT&T.

Now Novell owns all code and all rights to future development of UNIX. UNIX industry analysts are reacting positively to this development, because it brings a glimmer of hope that the until now fragmented UNIX market can be unified, thereby providing a real economic incentive for innovative software development native to UNIX platforms.

Novell also owns a company called Digital Research, whose CP/M operating system was the first successful general-purpose operating system for 8080- and Z80-based desktop computers in the late 1970's. In the mid 1980's, the company marketed a nonmultitasking Windows competitor called the Graphical Environment Manager (GEM), whose only real success centered on its use by Xerox Corp. for Ventura Publisher.

GEM is now, for all practical purposes, dead. Also in the mid 1980's Digital Research developed several MS-DOS clones that provided multiuser and multitasking capabilities, none of which ever really caught on. Most recently, Digital Research focused its marketing on DR-DOS, a direct competitor of MS-DOS. DR-DOS has yet to catch on in a serious way; nonetheless, Microsoft has not been bashful about incorporating DR-DOS-like features into DOS 5 and the soon-to-be-released DOS 6. Microsoft has also angered Novell by including connectivity to NetWare networks in Microsoft's own Windows for WorkGroups.

95 million and counting

Microsoft, of course, owns MS-DOS, which is used on 95% of the 100 million Intel-based PC's worldwide. The remaining 5% is split among Digital Research and several smaller companies. Microsoft also owns Windows 3.x, which has catalyzed both software and hardware vendor activity to unprecedented levels, and has also incited intense user enthusiasm. Virtually all new hardware and software development in the PC industry is centered around Windows; products for other environments—DOS, OS/2, or UNIX—are ported from the Windows version, if at all. Upgrades to existing products often add Windows-like graphical features on a character-mode version, as witness recent versions of such popular programs as 1-2-3, Quattro Pro, Word, and WordPerfect.

Microsoft also owns a network product called LAN Manager that, in spite of significant technical improvement over the past few years, still plays a distant second fiddle to NetWare. This gap is the one serious chink in Microsoft's armor, and the one serious threat to the theory of the PC industry's future that will be outlined.

Then there is Windows for WorkGroups, a version of Windows that provides peer-to-peer networking to Windows (and DOS) PC's. WfW has Novell and Artisoft (of LANtastic fame) scared to death because it offers reasonable performance, easy installation, ease of use, compatibility, and a clear upgrade to LAN Manager. Novell's own NetWare Lite has mostly been ridiculed in the press as a very weak competitor to LANtastic. And there have been persistent rumors that both Novell and Microsoft will include built-in network connectivity with the next versions of DR-DOS and MS-DOS.

Next comes Windows NT, which Microsoft has from the beginning promoted as an all-inclusive operating system that can support Windows, OS/2, and POSIX (the IEEE standard form of UNIX) application programming interfaces (API's)—should the market so desire. NT is a full 32-bit preemptive multitasking operating system that is more like OS/2 and UNIX than Windows 3.x. The difference is that porting application programs from 3.x to NT will be relatively simple, compared with porting them to OS/2 or UNIX. And that fact guarantees availability of applications, which are what people really buy.

Sure, performance and features might be lacking in the first version of NT, but they will improve over time. The point is that NT will hit the market at full stride, with full support from major applications vendors, and without a major discontinuity with past products. Currently, there is a lot of griping in the computer trade press about the "vaporware" quality of NT, but history—at least recent history—suggests that when ready, Microsoft will deliver a quality product. IBM, by contrast, has a history of announcing and releasing products before they're ready for prime time.

IBM

Now let's look at OS/2 2.0. In spite of impressive technical improvement, OS/2 marketing is still grossly mismanaged. The cover date of this issue marks the sixth anniversary of the introduction of OS/2. After six years, IBM's operating system still has to demonstrate a single compelling application. (And UNIX? Well, you can forget about it.)

Why is it that IBM has a habit of introducing technologies that do not provide continuity with the past? The Micro Channel Architecture

DIGITAL VIDEO STABILIZER
ELIMINATES ALL VIDEO COPYGUARDS

While watching rental movies, you will notice annoying periodic color darkening, color shift, unwanted lines, flashing or jagged edges. This is caused by the copy protection jamming signals embedded in the video tape, such as Macrovision copy protection. THE DIGITAL VIDEO STABILIZER: RXII COMPLETELY ELIMINATES ALL COPY PROTECTIONS AND JAMMING SIGNALS AND BRINGS YOU CRYSTAL CLEAR PICTURES.

WARNING
THE DIGITAL VIDEO STABILIZER IS INTENDED FOR PRIVATE HOME USE ONLY. IT IS NOT INTENDED TO COPY RENTAL MOVIES OR COPYRIGHTED VIDEO TAPES THAT MAY CONSTITUTE COPYRIGHT INFRINGEMENT.

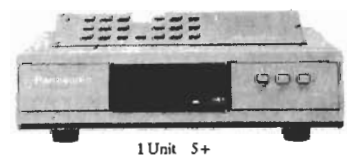
FEATURES
- Easy to use and a snap to install
- State-of-the-art Microchip technology
- 100% automatic
- Compatible to all types of VCRs and TVs
- The best and most exciting Video Stabilizer in the market
- Light weight (8 ounces) and compact (1x3.5x5")
- Uses a standard 9 Volt battery (last 1-2 years)
- Fast UPS delivery
- Air shipping available
- UNCONDITIONAL 30 day money back guarantee
- 1 year warranty

(Dealers Welcome)
FREE 20P Catalog

To Order: $39.95 ea +$4 for p & h
Visa, M/C, COD Mon-Fri: 9-6 EST
1-800-445-9285
ZENTEK CORP. DEPT. CRE0493
3670-12 WEST OCEANSIDE RD. OCEANSIDE, NY 11572

CIRCLE 191 ON FREE INFORMATION CARD

CABLE TV DESCRAMBLERS
How You Can Save Money on Cable Rental Fees
Bullet Proof



	1 Unit	5+
BEST Super Tri-Bi Auto/ Var. Gain Adjustment	$119.95	$85
Jerrold Super Tri-Bi ...	$109.95	$79
Scientific Atlanta	$109	$79
Pioneer	$109	$79
Panasonic TZPC145....	$99.95	$79
Stargate Converter.....	$95	$69
Digital Video Stabilizer.	$59.95	$29
Wireless Video Sender..	$59.95	$49.95

US Cable'll Beat Anyone's Price Advertised In this Magazine!

30 Day Money Back Guarantee
FREE 20 page Catalog
Visa, M/C, COD or send money order to:
U.S. Cable TV Inc. Dept.KREO493
4100 N. Powerline Rd., Bldg. F-4
Pompano Beach, FL 33073
1-800-772-6244

For Our Record
I, the undersigned, do hereby declare under penalty of perjury that all products purchased, now and in the future, will only be used on Cable TV systems with proper authorization from local officials or cable company officials in accordance with all applicable federal and state laws. FEDERAL AND VARIOUS STATE LAWS PROVIDE FOR SUBSTANTIAL CRIMINAL AND CIVIL PENALTIES FOR UNAUTHORIZED USE.

Date:_____
Signed:_____
No Florida Sales!

CIRCLE 192 ON FREE INFORMATION CARD

(also on its sixth birthday) is a prime exampleof IBM's habit. After years of proselytizing, IBM never succeeded in convincing either add-on developers or the general market that MCA offered real technical superiority over the At bus, which is now called the Industry Standard Architecture (ISA).

Meanwhile, out of the blue (so to speak) in the past year have come several implementations of so-called *local buses* that provide direct 32-bit interfaces to the host CPU. Ignoring the battle among these implementations (which will take another 12–18 months to sort out), the point is clear: local bus provides a *readily apparent* speed advantage over the ISA, EISA, and MCA buses. Local-bus video and hard-disk adapters provide ripping-fast performance compared with even the best traditional interface cards. Competing local-bus implementations have sprung from Intel and the Video Electronics Standards Association (VESA)—not IBM. IBM spawned a revolution in color graphics when it introduced VGA (another six year old), but subsequently dropped the ball with the 8514 and more recently the XGA video standards. The latter is being squashed by the performance of local-bus video.

In software, there were the pre-2.0 versions of OS/2, which never garnered serious industry support, and, in fact, offended many. There was PC-DOS 4.0, a bug-ridden version of DOS that sorely damaged the company's already poor reputation in software. There was TopView, a DOS-based multitasker whose poor quality helped ensure the success of Quarterdeck's DESQview. There was the desktop software unit, which was simply disbanded about 18 months ago, due to its inability to identify, develop, and market significant applications programs. IBM's version of UNIX, called AIX, has been successful because of the price/performance advantage of the RISC-based RS/6000 platform it runs on. IBM's partnership with Apple involves a project called Taligent, an object-oriented operating system about which little is known at the present time.

In sum, IBM has had a few hits and lots of misses. The hits have all been hardware related. IBM has never developed nor marketed any significant software product for the PC market. OS/2 will probably hang on, but it will never overcome either its self-inflicted onus or Microsoft's inexorable momentum.

Apple

Until very recently, Apple scorned the PC market. However, the company's software subsidiary, Claris, recently released a Windows port of a classic Macintosh database manager. In addition, Apple has tacitly acknowledged the PC's growing importance in multimedia technologies with the release of a QuickTime player for Windows. (As discussed here in the past, QuickTime is Apple's architecture for time-variant data, particularly sound and motion video.)

Historically, Apple's forte was user-interface design, but through the use of usability testing and product iteration, Microsoft is improving in this area tremendously, as witness Excel 4.0 and the Access database manager. Apple's recent partnerships with IBM indicate the degree to which both companies fear Microsoft. Apple has a lot to offer, and is not simply going to go away. The Macintosh operating system will probably survive at a low level like DR-DOS and OS/2, but Apple will substantially reinvent itself around portable stylus-input handheld computers.

A few good vendors

The computer industry has gone through wrenching changes the past decade—but even greater changes lie ahead. IBM and Digital Equipment are in deep trouble. Microsoft's dominance continues to grow, and that dominance angers and challenges many people. I think we are heading toward massive industry consolidation that will leave only a few hardware vendors and only a few software vendors. Take it a step further. There will be only a few *computer* vendors.

The distinctions among hardware, operating system, networking, and applications programs exist for technical reasons; most consumers don't understand and could not care less. People buy cars, not engines, transmission, and chassis. Soon computers will be sold as complete units with CD-ROM's full of software. These CD-ROM's will be the equivalent of the Sears tool kit with so many different socket wrenches, screwdrivers, and pliers. The CD will have a basic set of software and many optional add-on modules for specific tasks. The add-on's will be encrypted; users will be able to gain access via an 800 telephone call and credit-card number—fonts are already sold that way.

Microsoft will have its own CD; another company will arise from the ashes of Borland, Lotus, WordPerfect, and Novell, which in concert might be able to cobble together something comparable to Microsoft's strengths in operating systems and applications. This new company's strong point will be networking. Microsoft and this other megacompany will outsource some modules, just as the big-three auto makers purchase tires, radios, and many other subassemblies from contractors.

IBM will team up with this megacompany to provide one leading computer brand. Microsoft will team up with Intel (which will merge with Gateway 2000 or Compaq or both) to provide the other. Hong Kong will produce a clone of the entire system, and quickly too, it is easier to copy an existing design than to invent a new one from scratch. Western Europe might even produce a version of its own.

The UNIX market will hang on for awhile, and eventually succumb to this emerging world order of mega-PC's. The shakeout will happen sooner than many people expect, due to increasingly rapid product innovation by Intel.

Like it or not, Microsoft is in control of the computer industry. Industry resentment of that fact will not change it. Recent FTC investigations of the company appear to be turning up irregularities in the way it markets DOS. But DOS is only a piece of the overall picture. The FTC never split up an auto company for having its hand in too many pots. I don't expect to see it in the computer industry either. Ω