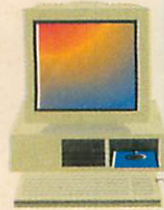


# THE FUTURE

Happy birthday, PC. Ten years ago, IBM's little computer brought revolution to your desktop. Here's what to expect as PCs enter their teens.

■ by Brenton R. Schlender



HISTORY is sprinkled with watershed products that arrive in an inchoate market and crystallize a whole new order in which business organizations instinctively alter the way they do things and society is smitten with a new sense of possibilities. These pivotal products often aren't the first, fastest, best, or biggest of their kind. They just make sense. The Model T Ford, the Boeing 707, and cable TV come to mind. Once they appeared, the planet was a different place.

A decade ago, IBM unleashed one of these marvels on a ready world. Its PC (for personal computer), a utilitarian, ivory-colored metal box of chips, wires, and motors, didn't look as *if it could* reshape organizations, build enormous personal fortunes, or redraw the rules of the computer industry. Television ads touting the little computer reinforced its gentle image: This was a machine even a bumbler like Charlie Chaplin could get his arms around.

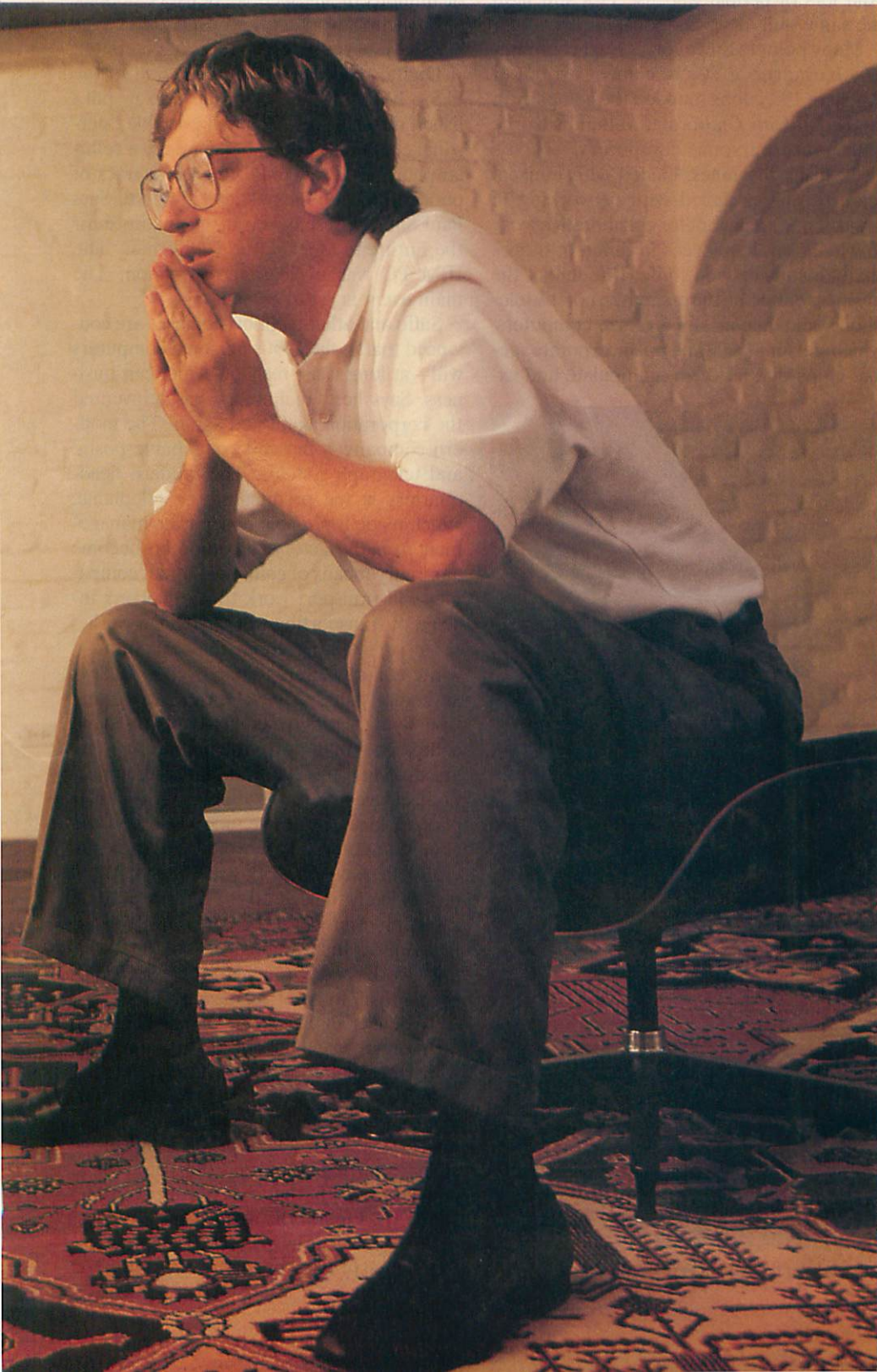
It turned out to be a steamroller. In ten years it spurred personal computing into an industry with annual sales of well over \$100 billion, according to InfoCorp, of Santa Clara, California. The PC rendered the typewriter nearly extinct, turned secretaries into word-processing experts, pulled small businesses into the information age, and inspired man-machine love affairs every bit as passionate as automobiles have.

Count on the 1990s to be more dramatic

**Steve Jobs and Bill Gates, longtime Wunderkinder of the PC industry, now have something else in common: Both have been jilted by IBM.**



# OF THE PC



still. As the August 12 decennial of the IBM PC neared, FORTUNE sought out more than a dozen pioneers and potentates of personal computerdom—and set up a rare, face-to-face encounter between Apple Computer co-founder Steven P. Jobs and Microsoft co-founder William H. Gates III (see following story)—to assess where this swashbuckling industry is headed next. Among their predictions for the 1990s:

■ **Razzle-dazzle technology will emerge faster than ever.** Coming soon: computers that can read handwriting and others that can display and edit video images. Semiconductor makers will be able to cram practically an entire personal computer on a single chip no bigger than a dime—making PC intelligence even cheaper and more ubiquitous than it is today.

■ **Data networks will come of age.** They'll bring you face-to-face video communication anywhere in the world through your PC and let you share drawings, photos, recordings, film clips, documents, and spreadsheets on the screen as you converse.

■ **Users could confront a bewildering array of choices.** Today the IBM PC and its clones and Apple's Macintosh dominate the market. (According to International Data Corp. of Framingham, Massachusetts, last year IBM and its clones accounted for 84% of unit sales, Macintosh 9%.) But feuds and shotgun marriages are roiling this highly political industry as powerful companies jockey to create new personal computer standards for the 1990s. The most astounding alliance: IBM and Apple themselves. Long bitter rivals, they have just formed a joint venture to develop a successor to both the PC and the Mac by the end of the decade.

■ **Japan's electronics companies will become more of a force.** In the 1980s they were big players only in portable PCs and as suppliers of components. Soon they will stake out whole new markets with novel de-

REPORTER ASSOCIATE *Alicia Hills Moore*

vices that bridge the gap between computers and inexpensive electronic gadgets.

■ **Computers will finally change the nature of organizations and office work.** As a result, white-collar workers, who have shown no improvement in productivity since the advent of PCs, may become more efficient and find their jobs more interesting.

**A**LMOST TO A MAN, the pioneers consulted by FORTUNE believe they have only half-finished the revolution they began. The technological advances have been spectacular: Adjusting for inflation, the \$2,665 that IBM charged for a bare-bones PC in 1981 today buys a computer with 35 times the processing power, 1,200 times the disk capacity, a high-quality color monitor, and more.

But, says Apple CEO John Sculley, "look at the labor statistics for office workers. There has been no measurable increase in productivity in the past decade. That's be-

cause personal computers in the Eighties mapped to the old way of working. To achieve the real payoff in the Nineties, computers have to force a complete reorganization of work." Adds Richard Shaffer, publisher of *Computer Letter*: "In some ways the PC has made things worse by giving us spreadsheet snow jobs and more junk mail. And lots of people who use PCs still have the same dull, dead-end jobs."

Many point to Steve Jobs's Next computer as a harbinger of PCs to come. Cast out of Apple in 1985, Jobs founded the company in Redwood City, California, to build what he calls "interpersonal computers." Next's sleek black machines, loaded with unusual features, are designed with networking in mind. They are meant for collaborative work in which, say, employees in different offices share documents and confer throughout the business day using the computer, not the telephone and fax machine. Next computers, which sell for \$5,000 and up, incorporate special chips that let them manipulate and ex-

change photographic images, video, and sound, as well as numbers and text.

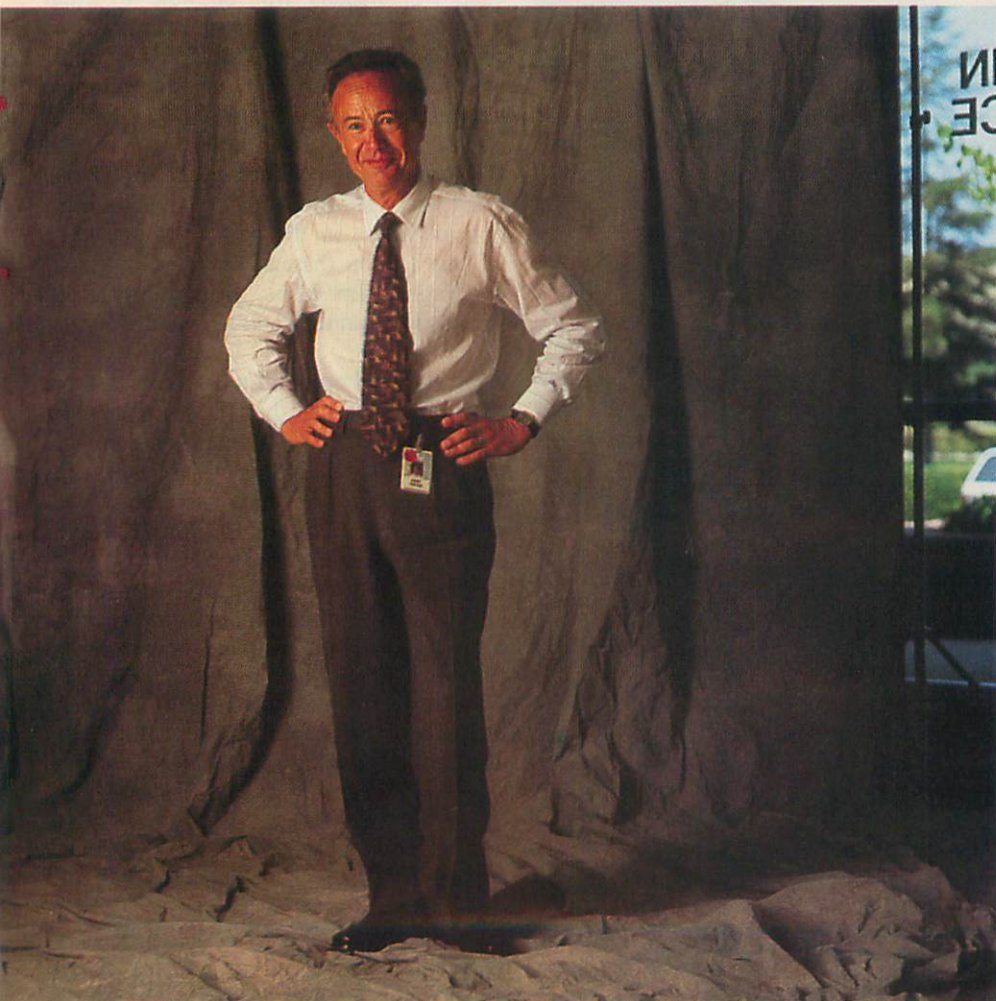
The PCs of the 1990s will come in many other forms. Just now hitting the market are notepads—clipboard-size computers that can read handwriting. (An early example: Tandy Corp.'s \$2,500 Gridpad.) They promise to put digital devices in the hands of tens of millions of salespeople, delivery people, construction workers, and even executives who have never before touched a computer.

Digital readers will show up soon in the U.S.—book-size devices that display published material. So will small portable "personal communicators" that combine a cellular phone, a fax, and a PC that keeps track of phone numbers, memos, and the like. Says Paul Saffo, a researcher at the Institute for the Future in Menlo Park, California: "The IBM PC was a pleasant distraction. The main event is yet to come."

Saffo and other technovisionaries are convinced that in the 1990s personal computers will—at long last—reshape American business. Says he: "Technology has reinvented the corporation again and again. The modern company is the child of reliable postal and telegraph systems. The modern headquarters is the product of the telephone, which made it possible to separate management from the factory. As computers become a primary means of communication, companies will transport work to the workers instead of transporting workers to the work."

He isn't talking about telecommuting—white-collar workers toiling over keyboards at home—but business travel, everything from flying across America to walking to the conference room down the hall. Computers are evolving into the ultimate communication device—beyond telephones, cellular phones, faxes, even live video hookups. As your computer takes over from such devices, the way you work will change. You'll be less likely to head for the airport, wait on a fax, or even leave your desk for a meeting—unless you want to. That could streamline work and bring a surge in office productivity to greet the new century.

To deliver all this, the industry will have to do more than climb out of the recession, which has knocked the wind out of sales growth, set off price wars, sapped profits, and sent computer dealers tumbling like so many dominoes. The primary agent of change, surprisingly: staid old IBM, where frustration with the industry is palpable. While IBM is still the world's largest maker of PCs—last year its machines accounted for \$9.6 billion of sales, or 14% of Big Blue's \$69



Intel CEO Grove faces more competition, including attacks by companies out to clone his chips.

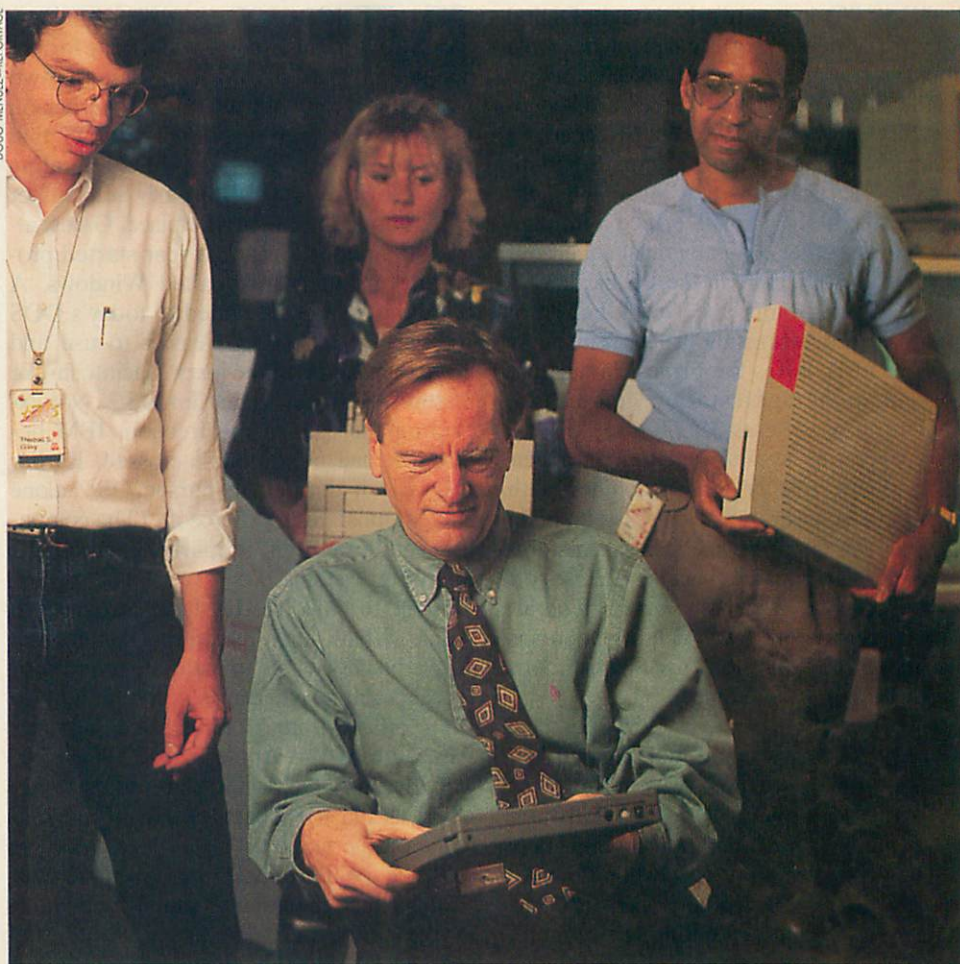
billion total—its market share has eroded steadily over the years, slipping to 17% in 1990. Worse, if true, is the speculation by Microsoft's Gates that IBM hasn't made money on PCs since the mid-1980s. (IBM does not disclose its profits by product category.)

In recent months the company has all but disowned Microsoft, its Redmond, Washington, software ally in establishing the PC as a standard. And its ambitious joint venture with iconoclastic archrival Apple stunned the industry. Why the sudden shift of allegiance? Chalk it up to experience, says IBM vice president Joseph Guglielmi, who worked on the team that developed the original PC and is now in charge of marketing IBM's PCs and workstations: "I don't think any of us had any idea how big an industry the PC would spawn. In hindsight, I wouldn't change how we did it. But we've learned a lot, and going forward we're going to do a lot of things differently."

IBM never intended to create a computer that would be so easy to copy. But it was in such a hurry to get the PC to market that it left the door wide open: Rather than build all the components and software for the PC itself as it did with its larger computers, IBM turned to outsiders, notably Intel and Microsoft. Intel provided microprocessors; tiny, privately held Microsoft provided DOS, the so-called operating system software that controls the interaction between the PC's hardware and application programs such as spreadsheets and word processors.

In a concession IBM came to regret, it let Intel and Microsoft market the same products to other companies. The first to figure out how to combine them into a PC-compatible machine was Compaq Computer of Houston. It launched a clone in 1982 and attained FORTUNE 500 status a scant four years later. After Compaq, literally hundreds of clone-makers, many of them from Asia, raced to cash in on the booming demand for PCs. The upshot: While IBM has devised one of the hottest products of all time, it now fights in a crowded market, even as Intel and Microsoft enjoy near monopolies.

Much of the turmoil in the industry today is a reaction to the phenomenal success of that duo. "The computer industry is trying to gang up to break two



CEO Sculley, in Apple's advanced development lab, says he has "bet the company" by linking with IBM.

monopolies," says newsletter publisher Shaffer. Even the federal government seems concerned. Recently the Federal Trade Commission started investigating complaints that each company uses its role as a standard-setter to bully the competition.

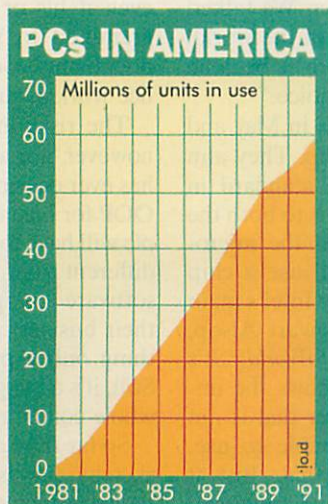
Industry veterans accuse Microsoft, and

Gates in particular, of ruthlessness. Complains Philippe Kahn, CEO of Borland International, a maker of spreadsheets, database programs, and other software in Scotts Valley, California: "When you deal with Gates, you feel raped." He cites Microsoft's abrupt changes in its operating system strategy, which can devastate small software companies whose programs can't sell unless they mesh with Microsoft's. Mitchell Kapur, founder of Lotus Develop-

ment, which makes the popular 1-2-3 spreadsheet program, and chairman of ON Technology, a Cambridge, Massachusetts, software startup, concurs: "Microsoft has set the tone—not IBM or Apple. This business is all about power and market share now."

**S**EVERAL COMPANIES, including Advanced Micro Devices, of Sunnyvale, California, are cloning Intel's best-selling microprocessor chips. Some of Intel's best customers, including Compaq, have teamed up to create a new design for a desktop computer called ACE—advanced computing environment—that is based on a competing microprocessor.

Meanwhile, some of Microsoft's rivals have merged in recent weeks to discourage the company from pursuing market segments it doesn't dominate. Borland agreed to acquire Ashton-Tate, the leading PC database maker. And Novell, a Provo, Utah, company that is the market leader in software



## COMPETITION

that links PCs into networks, bought Digital Research International, maker of the most popular clone of Microsoft's DOS.

The industry's biggest names are spending huge sums to weaken Microsoft's stranglehold on operating systems. So dominant is Microsoft now that Steve Jobs jokingly calls it the "small orifice" through which every other company must squeeze if it wants to participate in the PC market.

Sun Microsystems, the No. 1 maker of high-powered workstations for engineers and scientists, poses the biggest immediate challenge. Its Sparcstation computers, which cost as little as \$5,000, use AT&T's Unix operating system and link into networks more readily than machines with Microsoft software. Sun has lately been pitching Sparcstations to business customers. Says the company's puckish CEO, Scott McNealy: "We absolutely make general-purpose computers now. Dunkin' Donuts is a customer, and they don't use Sparcstations to engineer new doughnuts."

A dark horse is Next. In 1988 Jobs persuaded IBM that it could look beyond Microsoft for operating system help. It licensed his company's NextStep software, which makes Next computers unusually easy for programmers at corporations to customize for office workers' use. IBM has dragged its feet incorporating the program into its workstation product line. But privately held Next, which started shipping large numbers of machines only last fall, expects some \$200 million in sales this year.



Sun's McNealy wants to horn in on the PC market.

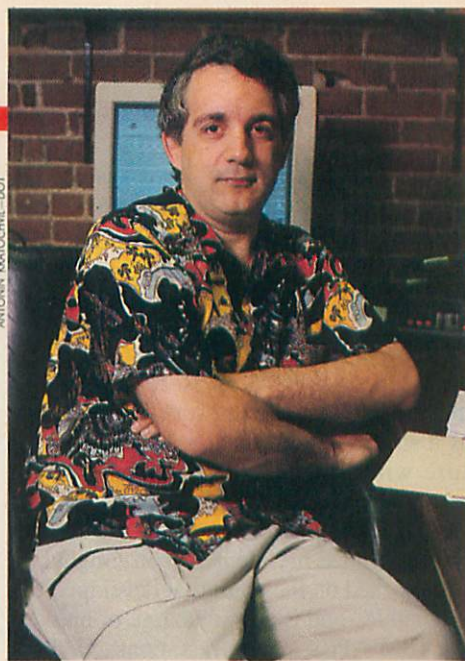
DOUG MENZIEZ-REPORTAGE

**M**ICROSOFT'S most fearsome rival is none other than former patron IBM. For years the two companies worked together on OS/2, a powerful successor to DOS that IBM was counting on as its PC operating system of the 1990s. But early versions of OS/2 flopped in the marketplace. Gates, always the opportunist, last year started promoting an alternative called Windows. A program that can be added to today's DOS software, it makes PCs easier to use and gives them some of the jazzy Macintosh-like features IBM was saving for OS/2. Not expecting the change in direction, IBM believed it had been double-crossed. Earlier this year it decided to pursue OS/2 alone and cut most ties to Microsoft. (The companies retain the right to market each other's operating systems.)

After the divorce, IBM got attracted to Apple. What caught its eye was the fact that Apple had been able to maintain juicy profit margins, largely because it has fought to keep others from cloning its computers. Also alluring was Apple's creativity in software design. The Macintosh is widely recognized as the friendliest, easiest-to-use machine on the market.

Apple could foresee that its lone-wolf strategy, though lucrative, would condemn it to the fringe of the industry. Sculley for years had prodded his engineers and board of directors to consider jumping into the fast-growing market for PC clones. But only this year, after Apple discovered that even drastic price cuts weren't enough to raise the Mac's market share much beyond its present level, did the company change course. Says Sculley: "We want to be a major player in the computer industry, not a niche player. The only way to do that is to work with another major player. We talked to every company imaginable in the world. The more we looked, the more it became clear that IBM was the only choice."

After a flurry of negotiations in May and June, IBM and Apple linked up. They aim to devise an entirely new PC standard in which they will control the rights to both the operating system software and the microprocessor. (The computers will use a chip engineered by IBM and built by Intel's main U.S. rival, Motorola.) Says Stewart Alsop, editor of the trade magazine *InfoWorld*: "It's a great combination. Apple knows the importance of making a computer that is not just practical but also pleasurable to use. IBM has never understood that. But it knows better than anyone what organiza-



Ex-Lotus CEO Kapor sees too much ruthlessness.

tions want from computers and computer suppliers."

The venture's technological linchpin is an arcane but important new method of writing software called object-oriented programming, or OOP. Next employs some OOP techniques to make it easy for users to adjust the way programs look on their screens. A frequently used set of commands, for example, can be made to appear onscreen as a row of push buttons that the user activates with a mouse pointing device.

The personal computers IBM and Apple envision will do much more. For example, users will be able electronically to send each other "living" documents—fascinating amalgams of images, sounds, numbers, and text that carry with them all the software needed to make them work. The recipient will not only view the material on his or her screen but will be able as well to fiddle with the spreadsheets, edit the text, and dictate comments that the computer will record—even if his or her own machine isn't programmed to perform these tasks. Living documents could change the nature of office work as dramatically as the fax.

The risks in developing such a product, however, are as vast as its promise. No one has ever designed an operating system using OOP for business computers; IBM and Apple will have to improvise. Finally, OOP is so different from traditional programming that software companies will have to relearn their business. Says Sculley: "This is something only Apple and IBM could pull off. Still, it's a big gamble, and we're betting our whole company on it."

So far IBM and Apple have disclosed only sketchy details of their venture, and many industry analysts are skeptical that two com-

## COMPETITION

panies with disparate corporate cultures and a history of mutual disdain can possibly work together. Sun's McNealy mockingly calls the alliance "Purple Applesauce." (That's what you get when Big Blue hugs Red Apple.)

Gates says he warned Apple's Sculley that working with IBM "has its challenges" and can lead to crippling technological compromises. But Big Blue claims things will be different in the project with Apple. Says IBM's Guglielmi: "We have learned a lot from other relationships. The joint venture structure allows us to position it as crisply and independently as we can. We'll put smart people in charge and let them run their own show."

**O**NE THING that hasn't changed as a result of the industry's struggles: American companies still call the shots. For the most part, Japan's powerful electronics manufacturers continue to be followers, although they likely will supply a growing share of crucial components such as screens, disk drives, and chips. Japanese companies, which have excelled in the market for portable PCs because of their prowess at miniaturization and manufacturing, also will be big players in the coming notepad-computer business.

Expect the Japanese to use these same skills to make a splash on the fringe of the personal computer market as they introduce special-purpose gadgets that incorporate PC smarts. Take Sony's Data Discman electronic reader. A computerized black plastic box the size of a paperback, it consists mainly of a display screen. It stores novels, dictionaries, and even encyclopedias on small optical disks and can display any page or passage at the touch of a button. Available now in Japan for about \$425, the Data Discman will hit the U.S. market this year.

In a sense, the personal computer industry has come full circle: It is nearly as chaotic today as on the eve of the PC's introduction in 1981. While customers may have difficulty making sense of the claims and promises of the contending camps, the ferment serves a purpose. Says Intel CEO Andrew Grove: "It may look ugly and bloody, but an invisible hand is moving resources in the PC industry to where they need to be, which is to take personal computers to the next level. Knocking this system is like knocking democracy. You might wish there was some centrally dictated five-year plan for all the industry's products, but in the end, this stumbling, messy process really works."

Investors, beware: Though the chaos may lead to good products, it is unlikely to produce billion-dollar businesses like Apple or Microsoft. So says newsletter publisher Shaffer: "Most of the money has already been made. PC companies, even software companies, have changed from growth opportunities to trading vehicles. You can still play the business cycles, but I can't think of many stocks you'd want to lock away for your kids' college tuition."

The company with the most at stake is Microsoft. Its stock has more than doubled in the past year. In its most recent quarter, Microsoft earned \$138 million of profits on \$527 million of sales—increases of 73% and 56%, respectively, over last year. William Lowe, the former head of IBM's PC operations who is now president of Gulfstream Aerospace, a maker of business jets, believes Gates is still in the driver's seat. Windows, which brings many of the features of the Macintosh to the PC, is the biggest software hit in years; other software makers, anxious to rewrite their programs to take advantage of its features,

must cooperate with Microsoft. As Lowe puts it, "If Bill is isolated, it's not like he's on a desert island."

Says Gates: "Sure, we're being attacked on all sides, but that's nothing new. Customers will vote on all of this. I think ours will thank us for preserving their current investments in PCs, while improving that technology. That has always been our strategy." He thinks that, despite all the new attempts to redefine the PC, the industry will stay much the same: "Five years from now you're not going to find business software for six different types of desktop computers. I would be stunned if you would find software for more than one overwhelmingly successful type of computer—probably ours—and maybe a couple of others."

That's not the view of the industry's other big players. They're finding new partners, exploring new technologies, and burning the midnight oil to make things turn out differently. Whatever happens, the next ten years in the PC industry will likely be more exciting, competitive, and unpredictable than the past decade. And that's saying something. **F**



Former IBM PC chief Lowe thinks that Microsoft can still pilot the personal computer industry.

# JOBS AND GATES TOGETHER

The boy wonders of computing, now thirtysomething, argue over where innovation comes from and where PCs will go.



The two college dropouts most responsible for unleashing the PC revolution rarely see each other anymore, though they say that they're still friends. At FOR-TUNE's invitation, Bill Gates and Steve Jobs met for a Sunday evening in late July to discuss the prospects for the tumultuous industry they shaped.

Gates, 35, left Harvard in 1975 to co-found Microsoft. His big break came in 1980, when IBM asked him to provide the operating system—the program that manages a computer's inner workings—for its now famous PC. Jobs, 36, who left Reed College to sojourn in India, is best known for co-founding Apple Computer. He led the development of the Macintosh, a computer much easier to use than IBM's somewhat nerdy PC. Gates has imitated many features of the Mac's software with a popular PC program called Windows.

Since the mid-1980s the men have taken dramatically different paths. Gates, who owns more than \$4 billion of Microsoft stock, remains a workaholic bachelor and an omnivorous reader—he has read several biographies of Napoleon. He has built Microsoft into the world's largest and most profitable PC software company. It hasn't all been rosy. Microsoft's relationship with IBM soured this year, mainly because the two couldn't agree on an operating-system strategy for future PCs. And the Federal Trade Commission recently began investigating Microsoft's practices.

Jobs has been less visible but just as busy. In 1985 he started Next, aiming to build the personal computer of the 1990s. Next's first machine appeared two years ago. Its basic software, NextStep, makes the machine unusually easy to customize; IBM was so impressed it licensed NextStep for its own computers. Despite the dazzling technology, the going has been slow at Next. For one thing, IBM never put NextStep on the market. But lately business has picked up—10,000 systems rolled out of Next's automated plant during the second quarter. Jobs has other reasons to smile. He and wife Laurene, who married earlier this year, are expecting their first child in September.

FORTUNE associate editor Brenton R. Schlender put the questions at the meeting. Beneath the conviviality, Jobs and Gates each had a business objective. Jobs lobbied for Gates to develop software for the Next computer. And Gates, whose company is being sued by Apple for allegedly pirating Macintosh software features, was hoping to learn more about the product's origin.

**What did you think when the PC appeared ten years ago?**

**Jobs:** When IBM entered the market, we did not take it seriously enough. It was a pretty heady time at Apple. We were shipping tens of thousands of machines a month—more computers than IBM was total. Even so, a lot of people think IBM invented the personal computer, which of course isn't true.

**Gates:** A lot of people think Apple did, and that isn't true either. Our first program was for the Altair [a mail-order kit sold in 1975].

**Does Microsoft's control of PC operating systems stifle competition in the industry?**

**Gates:** There's not one element of the industry that's not competitive. There are people who are cloning Intel's chips; there are people who are cloning my operating system; there are many, many people who make PCs; and for every software application there are lots of people competing. There is no competitive imperfection.

**Jobs:** How come nobody has successfully competed with you? I'm not accusing you or Microsoft of anything. I'm not even saying it's necessarily bad. I'm just saying it's an interesting contrast. When I zoom back and look at this, there are hundreds of people making PCs, and hundreds of people writing applications programs for them . . .

**Gates:** Right.

**Jobs:** But they all have to travel through

this very small orifice called Microsoft to get to one another.

**Gates:** It's a very large orifice! [Laughs.]

**Jobs:** But it's only one company.

**Gates:** Are you saying there's something wrong with our popularity? My approach to the PC market has been the same from the very beginning. The goal of Microsoft is to create the standard for the industry. Nothing has changed.

**What does the future hold for IBM and Apple? What do you think of their decision to collaborate on PC software?**

**Gates:** It's surprising to me.

**Jobs:** Yes, we are confused about that.

**Gates:** [Apple President] Mike Spindler has said they want to turn Apple into more of a software company. If that's your goal, you don't go and give the half of the company that is the future of Apple software to a joint venture. What is Apple getting in return? Here's the part I don't understand:



“Ultimately, I believe most PCs will come from off-shore. We're just not good enough at manufacturing.”

**STEVEN P. JOBS**  
Next President and CEO

## COMPETITION

What is the contribution from IBM? The IBM name? Did Apple feel so bad about their own work that they had to have that?

**Jobs:** I truly believe the challenge for IBM is that they can't survive by selling the same thing you can buy from somebody else for 30% less money. Their cost structure doesn't allow them to compete with companies that don't do massive amounts of R&D, that don't have twice as many employees as they need, et cetera, et cetera. So IBM has to do one of two things: One, suffer continuous erosion of its market share until eventually it goes out of business, which I hope doesn't happen. Or two, come up with some way to add value. In my opinion the way to make your machines unique is with unique software.

**Gates:** I said that back in the Seventies! [Laughs.] There's something else I don't understand. If IBM already held a license to your NextStep software, why did they get all this going with Apple rather than just come to you and expand their license?

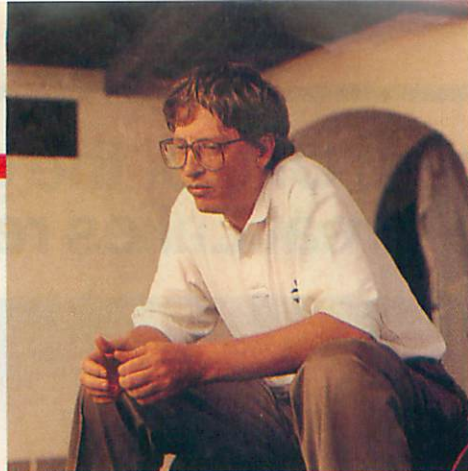
**Jobs:** I really want to answer this question, but I've got to be careful what I say. It's not my purpose to alienate anyone at IBM.

**Gates:** We share this interest. [Both laugh.]

**Jobs:** Somebody at IBM a few years ago saw our NextStep operating system as a potential diamond to solve their biggest and most profound problem, that of adding value to their computers with unique software. Unfortunately, as I learned, IBM is not a monolith. It is a very large place with lots of faces, and they all play musical chairs. Somewhere along the line this diamond got dropped in the mud, and now it's sitting on somebody's desk who thinks it's a dirt clod. Inside that dirt clod is still a diamond, but they don't see it.

**Is the PC industry, which until now has been dominated by American companies, liable to get overrun by the Japanese?**

**Jobs:** Computer companies fall on a spectrum of enthusiasm for manufacturing. On the left end are companies that look at manufacturing as a necessary evil, who wish they didn't have to do it. And at the far right you have people who look at manufacturing as a competitive advantage. Clearly a lot of the Japanese companies look at themselves that way. Unfortunately



GEORGE LANGE

"Are you saying there's something wrong with our popularity? The goal is to create the standard."

**WILLIAM H. GATES III**  
Microsoft Chairman and CEO

a lot of American companies look at manufacturing as a necessary evil.

You can say the same thing about the way they see software. My opinion is that the only two computer companies that are software-driven are Apple and Next, and I wonder about Apple. Most computer companies would rather that software didn't even exist.

**Gates:** Good!

**Jobs:** It's good for Microsoft today. But unfortunately all those companies could give way to Japanese companies a few years down the road.

**Gates:** I think you give up too easily on Americans. You pick one dimension . . .

**Jobs:** I focus on manufacturing because I care about it. I've seen IBM's. I built Apple's and Next's, and I know what Sun does. Ultimately, I believe that most of the PCs will come from offshore. We're just not good enough at manufacturing.

**Where will the key innovations come from? Established giants like Microsoft or upstarts like Next?**

**Gates:** I contend technology breakthroughs can happen by extending what we already have. Let's take handwriting computers. The hardware is coming from PC-compatible makers like Dell Computer [of Austin, Texas] and NCR and some Japanese companies. The software will come either from Microsoft or from a U.S. competitor named Go Corp. [of Foster City, California]. That's going to be a major breakthrough, and who do you give credit to?

**Jobs:** I think everybody gives credit to Go, but Go will be crushed.

**Gates:** That's one of the nastiest comments I've ever heard. I've been working on handwriting since long before there ever was a Go Corp.

**Jobs:** Really? I didn't know that. Most people would say that Go is the company that first tried to *commercialize* that technology.

**Gates:** Well, Go hasn't shipped anything yet, and I'll ship my stuff before they ship theirs.

**Jobs:** My experience has been that creating a compelling new technology is so much harder than you think it will be that you're almost dead when you get to the other shore. That's why, when you take big leaps, like the Mac, or object-oriented programming, or handwriting recognition, you have to leave old technology behind.

When Lindbergh was going to fly from New York to Paris, he had to decide what to take with him. There were a lot of demands. They fell into two categories—things that would make his journey safer or more comfortable, and things that would increase his chances of making it to Paris. Weight was a real problem. He could take more gas, which would increase his safety, or he could take a compass, which would increase his chances of getting to Paris. Every time he came down on the side of increasing his chances of getting to Paris at the sacrifice of safety or comfort. That's why he made it.

**Gates:** Smart people like Steve *ought* to try to build things from scratch. That's a worthy thing. But every time it should be a test. Right now there's a test in handwriting PCs, in object-oriented operating systems, in multimedia computers. Those are the big questions for personal computing in the 1990s, and I'm the one who has to prove the validity of the evolutionary approach.

**Jobs:** It's true, your evolutionary approach with Windows is *bringing to PCs great* new technologies that Apple and others pioneered. But in the meantime—and it's been seven years since the Macintosh was introduced—I still think that tens of millions of PC owners needlessly use a computer that is far less good than it should be. **F**