

Will Apple's Macintosh Beat IBM?

By Michael Rogers^[1] / January 30 1984 12:50 PM



Sitting in a vast, dingy auditorium, shaven-headed workers in gray uniforms stare glassy-eyed as a stern Big Brother harangues them from a giant video screen. Suddenly a brightly clad athletic woman bursts in, closely pursued by a phalanx of riot police. She halts, whirls around and hurls a huge hammer into the yammering image. As the workers look on in amazement, the screen explodes and fills the frame with smoke. Then text appears, promising that "1984 will be nothing like '1984,'" followed by the name: Apple Computer.

This frightening image of 1984, aired on national television over the weekend, was a bold prelude to Apple's introduction this week of the product on which its corporate future hinges: the Macintosh Personal Computer. The fantasy commercial parallels reality, for Macintosh is a dramatic and risky attempt to make a technological end run around

behemoth competitor IBM (page 56). Apple grew out of a suburban garage and became one of the country's leading computer makers in less than six years, only to collide head-on with a \$40 billion company in the most volatile marketplace of the 1980s. For key employees, the new battle with IBM is almost a holy war against Orwellian forces that seek to subvert Apple's cherished vision of the personal computer as a tool to save the world.

The collision with IBM has badly wounded Apple. In 1983 it lost as much as half its market share to IBM's personal computer, which became the industry standard almost overnight. Apple's stock dropped from a high of \$63.25 to close the year at \$24, and profits for the fourth quarter of fiscal 1983 fell 73 percent to a mere \$5.1 million. What's more, the much-touted Lisa computer, once Apple's hope for the future, was a commercial flop -- sending Apple chairman Steve Jobs scurrying to find a marketing wizard to tell him what the company was doing wrong. "The unfortunate thing about Apple," says Barbara Isgur, an analyst with Paine Webber, "is that they have yet to make a success of anything since the Apple IIe."

Wager: Apple hopes to change that. In an effort to revitalize the company and prevent it from falling victim to corporate bureaucracy, Jobs has launched a campaign to bring back the values and entrepreneurial spirit that characterized Apple in its garageshop days. In developing the Macintosh, he has tried to re-create an atmosphere in which the computer industry's highly individualistic, talented and often eccentric software and hardware designers could flourish. "We don't find role models for Apple at the Harvard Business School," says John Sculley, the marketing man whom Jobs lured away from Pepsi to the presidency of Apple. "We're inventing management concepts that will sooner or later be accepted by larger parts of American industry. What those are, I don't think any of us know yet."

What's clear is that Apple's wager on Macintosh is huge: well over \$100 million in development costs and \$20 million for a highly automated factory designed to build only that machine. If the company's now faltering Lisa was a frontal assault on the business market, then the \$2,500 Macintosh is a guerrilla action. Like Lisa, the machine is designed to be easy to use, and Apple expects that 70 percent of Macintosh sales will go to businesses. In fact, one of Sculley's main goals is to position the Macintosh and the revamped Lisa as a family of low-cost computers for corporations. "Many personal computers are going to gather dust on managers' desks," says Sculley, "because they're just too complicated to use."

But much of Wall Street believes that Apple, in targeting Macintosh for the business market, may be headed in the wrong direction. Many analysts think that the Mac is more likely to be purchased by individuals for use in their homes (chart). Such computer giants as Digital Equipment, Wang, Honeywell, Data General and Burroughs have either introduced, or will soon unveil, personal computers to complement their own large business systems. In addition, the Macintosh is not compatible with the IBM PC, the industry's de facto standard. Says Michele Preston, computer analyst for L.F. Rothschild, Unterberg, Towbin: "The question remains, is the technology so great that people will be willing to forgo IBM compatibility?"

If technology does carry the day, then much credit will go to Apple's "A-player strategy," a phrase that entered the company's lexicon shortly after Sculley's arrival last April. Macintosh was initiated by a very small team, handpicked by Jobs and organized so loosely that skeptics dubbed the project "Steve Jobs's back-to-the-garage fantasy." As manager, he protected his charges from normal corporate distractions. "It evolved as a group mentality," says team member Chris Espinosa, 22, who has worked with Apple since the age of 14, "like an endless cocktail party, with chips and software instead of drinks." In this new environment, C-players were no longer welcome in the scatter of low-rise buildings in Cupertino and B-players were advised to become A-players -- or else. While most survivors thought the belt-tightening was necessary, some say it added a "brutal" note to the long-touted humanitarian culture at Apple. "Now," says one employee, "the new people know you get job security at Hewlett-Packard, not Apple."

Jobs's "fantasy" proved to be a potent development technique. In 1979 Macintosh began as an entirely different computer, based on more traditional technology. Two years into the project, the team abruptly decided to design the machine around the Motorola 68000 microprocessor, then an exotic \$200 chip. Six months later IBM introduced its Personal Computer, based on the less-advanced Intel 8088 chip. "At first," says one team member, "the PC was laughable, then it was interesting, then it was terrifying. We let IBM have big computers; if we let them have personal computers, a creative human resource might have just been fizzled away."

Jobs kept his Macintosh team challenged and pampered. On regular retreats to isolated resorts, he entreated them with "quotes from Chairman Jobs," ranging from "It's more fun to be a pirate than to join the Navy" to "True artists ship," the practical reminder that a product cannot be forever in the design stage. In turn, the Macintosh team rented a billboard on the chairman's commuter route, wishing him a happy 28th birthday with another Jobs quote: "The journey is the reward." Jobs even had team members sign the

mold for Macintosh's plastic case; inside each computer (which can't be opened by owners) are 47 signatures.

Burrell Smith, the 26-year-old "hardware wizard" who single-handedly designed the digital circuitry of the machine, is an emblematic A-player. He arrived in Silicon Valley four years ago with one suitcase, no engineering degree and an obsession with microprocessors. Briefly, he lived in a single unheated room, warmed over the winter by the glowing vacuum tubes in his aged oscilloscope. Without a degree, the only job he could find was in the service department of Apple. Repairing broken Apple II's, he became entranced by "the spirit of Wozniak" (Stephen Wozniak, cofounder of Apple), as expressed in digital circuitry. "His designs," Smith recalls, "were like poems." The lowly repairman began hanging around the engineering labs, and he was gradually accepted into the elite fraternity of Apple designers, who scorn "Clydesdale engineers from Hewlett-Packard" and who can spot guys with the right stuff by the way they look at a disc drive.

'Halo Glow': Smith designed the unusually compact digital circuitry of the Macintosh in tandem with "software artist" Andy Hertzfeld, a right-stuff programmer who still recalls his first view of an Apple II: "It seemed to have this halo glow around it." Smith and Hertzfeld often work all night, in adjoining houses they recently purchased in pricey Palo Alto -- with cash, Hertzfeld notes, since both hold sizable Apple stock options. But Hertzfeld quickly adds that "Apple isn't just the money -- it's a giant magnifying glass that takes your great stuff and broadcasts it out to everyone."

That's a fair definition of Jobs's role. He is not an engineer -- much of the original Apple was designed by Wozniak, who was absent during the Macintosh project. Jobs is a strong-minded manager with a broad, almost intuitive understanding of computers. "I love products," he says, and enumerates some favorites: Sony Profeel monitors, Braun appliances, Mercedes-Benz automobiles. Team members recall Jobs returning from a shopping trip and insisting that Macintosh resemble a Cuisinart.

Jobs involved himself in every aspect of the Macintosh project. "Steve is like a good poker player," says one designer. "He'll go around to five or six people with the same idea, as if he's already made up his mind, but he's watching their eyes to see how they react." Jobs sometimes defends his ideas with highly vocal displays of temper that aren't always bluster; rumor has it that he has threatened to fire employees for insisting that his computers should have cursor keys, a feature that Jobs considers obsolete. But when he is on his best behavior, Jobs is a curious blend of charm and impatience, oscillating

between shrewd reserve and his favorite expression of enthusiasm: "Insanely great." Occasionally he muses on how a "six-month project," the first Apple computer, has now absorbed two-thirds of his adult existence in an industry where love affairs and bicycle tours around Italy always take second place.

Apple watchers had predicted an early collision between Jobs, the 28-year-old cofounder, and Sculley, 44, the imported marketing whiz. Thus far, while there have been disagreements (most recently, over the pricing of Macintosh), the relationship seems rooted in genuine respect. "Steve will be my age in the year 2000," Sculley says. He's one of those few people who can make a difference." Jobs claims that he enticed Sculley to Apple with a challenge: "If you stay at Pepsi, five years from now all you'll have accomplished is selling a lot more sugar water to kids. If you come to Apple, you can change the world." While there were other inducements (including a \$2 million cash bonus), Sculley agrees that Apple can change the world; part of the job, he adds, is "helping Steve grow up." The influence goes two ways; Jobs's Silicon Valley vocabulary has already colored Sculley's language, and both approvingly describe their conversation as "core dumps" -- computer jargon for memory transfer.

Jobs and Sculley both agree that if Macintosh is to succeed it must sell millions of units. Early this month, in Fremont, Calif. Apple completed the most automated computer-assembly plant in the United States, solely to produce the machine. Apple engineers studied more than 100 automated plants in Japan (Jobs's favorite: the factory where Canon produces \$995 copiers). The result is a nearly silent factory where computers control every function from inventory to quality control and battery-powered robot vehicles roam the floor, ferrying parts to workers. Fewer than 300 humans will produce one Macintosh every 27 seconds; less than 1 percent of the product's cost will be due to labor. Regarding the impact on less-skilled workers, the factory's human-resources director is blunt: "A plant like this is going to be the only way to keep any jobs at all in this country."

Educational Use: Two other elements complete the Macintosh strategy: software companies and universities. At the moment, Macintosh has very little software available, but Apple has actively courted more than 100 "third party" software companies, offering them prototype Macintoshes and technical assistance. The appeal is aptly timed: many software companies, growing dependent on IBM for their market, fear that the giant may soon move to recapture much of that business for itself. By contrast, Apple appears a safer bet -- and a profitable one if Macintosh sales boom immediately. Apple's most recent coup has been signing 24 universities -- including Harvard, Yale, Princeton and

Stanford -- to purchase \$2 million of Apple products each over the next three years. "We think it will revolutionize higher education," says Brian Hawkins, assistant vice president of Drexel University, where Macintoshes will be distributed to nearly 2,000 students next month. Carnegie-Mellon, with close ties to IBM -- including a research pact to develop a student computer by 1986 -- has also signed an agreement with Apple. "The machine changes the name of the game for universities," admits John Crecine, senior vice president. "We're trying to help IBM develop a product with similar abilities."

Macintosh isn't the only new product planned by Apple. The company is readying a \$1,000, seven-pound portable for this spring and later this year hopes to bring out a souped-up Apple II. But the company's central technology for the rest of the decade is now out on the table. "It is crucial that Macintosh be successful," says analyst Matthew Meehan of Salomon Brothers. "Mac deserves to be a success," says Esther Dyson, president of Rosen Research. "As a product, it's the best thing around." Analysts agree that individuals will love Macintosh, but no one is certain whether that emotion will translate into success in the larger business market.

Perhaps that's because Jobs has used the Macintosh to take Apple back to its roots -- a company building its own vision of the best computer. If Macintosh doesn't take off, says Jobs, then "we deserve to be an average computer company." It seems an unlikely fate, as long as Jobs cultivates his A-players. And apparently, they're ready. Last week a visitor to Apple asked hardware wizard Smith what he would like to do next, now that Macintosh is done. "I want to build the computer of the '90s," Smith said, without hesitation. "Only I want to do it tomorrow."

with Jennet Conant in New York

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