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By PHIL PATTON/29mhVzN

STEVE JOBS, SHIRT SLEEVES rolled up to his elbows, long hair over his collar, sits like a virtuoso at the keyboard of his new computer. Behind him, projected onto a huge screen, computer images -silvery letters and symbols - expand and shrink, leap and pop about as Jobs puts the machine through its paces. An audience of 200 business people watches as he demonstrates how, in seconds, the computer can find a reference buried in the complete works of Shakespeare or create a model of a bouncing molecule. Speakers boom out a message by way of the voice-mail system, and then broadcast a snatch of Bach - "synthesized," Jobs boasts, "from pure mathematics."

He has named this computer NeXT. "What we want," he tells the audience, "is to create the next computing revolution. We want to push the envelope." The name NeXT stakes his claim to the newest standard in the industry -a PC with unprecedented power and versatility and an innovative programming system - but it is also an undisguised reference to curiosity about the next chapter in the story of Steve Jobs.

In 1976, at the age of 21, Steven Paul Jobs co-founded Apple Computers with Stephen G. Wozniak, five years his senior, whom Jobs had known since he was a sophomore at Homestead High School, in California's Silicon Valley. Within five years, Apple had become a billion-dollar company. Then in 1985 Jobs was forced out - by John Sculley, whom Jobs himself had hired two years before to be the company's chief executive. Ever since, working in almost total secrecy, Jobs had been preparing a comeback. Now, at age 34, no longer the boy wonder of the computer industry, he was starting over.

IN SILICON VALLEY, A COMPUTER IS CALLED A "box," a sign that the guts may be less important than the skin. The guts of Jobs's new machine are housed in a ribbed black magnesium cube. Keyboard and monitor are separate, connected by cables, the 17-inch screen dramatically cantilevered over a swooping support.

"Computers," Jobs likes to say, "are the metaphor of our time. They should share a certain higher esthetic."

Not that what is inside the NeXT box is unimportant: a new optical memory system that uses a laser to store and read up to 250 volumes' worth of information on a single disk, a sound system of CD quality, a powerful array of sophisticated processing chips, and innovative software.

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"What other computer can you sit down to," he says, referring to the "Digital Librarian" feature of the NeXT machine, "and blast through the complete works of William Shakespeare in just a couple of seconds?"

Although it looks like a personal computer, the NeXT machine is much more powerful than any PC on the market. It has the capabilities of computers known as workstations, previously used mostly by engineers and scientists. Like most workstations, it employs Unix, an aging but powerful basic software system. But at \$10,000 it costs much less than most workstations of comparable power.

Business has traditionally eschewed the Unix system, and it still accounts for just 9 percent of the computer market today. But, thanks in part to NeXT, Unix is expected to more than double its share in the next five years. Jobs has encased its complexities in a new variation of the software, a "user shell" that will make it, he says, "usable by mere mortals." Called NeXTStep, the software employs a Tinker Toy approach that allows novices as well as experts to combine pre-existing sections of instructions, or "objects," to create the programs they need - an innovative technique known in the industry as "object-oriented programming."

What may be most revolutionary about NeXT, however, is not its technology but the fact that it is the first computer to be sold primarily on the strength of mystique.

Critics and champions alike - and Jobs has plenty of each - agree that he has always been at his best as a salesman and evangelist for the computer. Joanna Hoffman, who worked with Jobs at Apple and at NeXT, says, "In some ways, Steve gets philosophical the way the Greeks did. He always wants the best. He has these esthetic notions of perfect shapes and perfect sounds. It is almost Platonic."

Jobs's obsession with detail, with appearance, is part of his legend. When a small imperfection showed up on the first samples of the computer's cases, he flew to Chicago to work with the die maker. At NeXT's automated factory in Fremont, Calif., he had the machines repeatedly repainted to achieve the uniform gray he wanted.

Colleagues may use words like Platonic to describe his esthetic but for Jobs the technology is "neat" and "whizzy" - as opposed to "bozo" and brain-damaged. He has never claimed to be an in- (Continued on Page 52) ventor - creating computers, he has said, is a "collective art." It was his partner Steve Wozniak who worked wonders to pack performance into the few chips of the Apple II. Steve Jobs was the front man.

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"This is still a business of personalities," says Esther Dyson, a respected observer of the computer world. "Perceptions are important, but there has to be some fundamental value underneath."

Dyson compares Jobs's efforts to achieve credibility for NeXT to that of the party host who gets one prestigious guest to come by promising the presence of another. "It is a confidence game in the old sense of the word 'confidence,' " she says.

"Steve's an impresario," says Jeffrey S. Young, whose "Steve Jobs: The Journey Is the Reward" was recently reissued in paperback. "He goes out and finds new technologies like they were rock'n'roll bands."

THESE DAYS STEVE JOBS wears suits as dark and elegantly designed as his new computer. When I first met him, at Apple seven years ago, he had on a worn tweed sports coat, jeans and hiking boots. His talk was full of the cosmic significance of his "insanely great" computers. "At Apple," he said then, "we want to make computers that will change the world. We want to put a ding in the universe."

Computers were still ungainly machines with banks of flashing lights; Jobs's ambition was the personal computer, small machines for home or office use. It was an ambition born of the 60's counterculture. Jobs had sampled LSD, traveled to India and found a guru, lived on a communal fruit farm and studied Zen before he founded Apple.

Computer buffs routinely refer to Jobs as a "folk hero." Hollywood has optioned a film about his life. But he also has a reputation as a difficult and sometimes egotistical boss. Apple employees nicknamed him "the reality distortion principle." He made obstacles look like challenges, but he also made foolhardiness look like courage. He would dismiss a new idea and then come back a week later championing it as his own, now repackaged as "this neat idea I had." He consistently overestimated demand for the Macintosh - once by more than 90 percent - and just as consistently convinced his team he was right.

Jobs's management failures were compounded by design failures: the Macintosh was not compatible with other computers, nor could it be used with hard

disks or letter-quality printers. Jobs vetoed a hard-disk drive for the Macintosh because it offended his sense of esthetics: the fan necessary to cool the disk drive made too much noise. Letter-quality printers he perceived as old-fashioned, when compared to the laser printers Apple had in the works.

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This uncompromising vision, defiant and dramatic, served Apple well when the personal-computer industry was young, but as PCs became more common the need for communication between different machines became vital. Alan C. Kay, the computer scientist who developed many of the technologies on which the Macintosh and NeXT are based, once described the Macintosh, with its clean lines and crisp screen, as a model of Jobs's mind: "If you look at it from the front, it's fantastic. If you look at it from the back, it stinks. Steve doesn't think systems at all . . . about connectivity, about the ability to link up to a larger world."

By the end of 1984, Apple was in decline, its stock price depressed. In the second quarter of 1985, for the first time in its existence, Apple declared a (Continued on Page 56) loss. At the same time, Sculley pushed Jobs out. Many think he saved Apple -and the Macintosh - from Jobs. It was only after Sculley ordered the Mac's memory increased, a second disk drive added and the machine "opened up" to additional equipment that it began to enjoy its major success. After he was ousted, Jobs spent a summer traveling and thinking disconnectedly about what he would do next. By September, he had formulated a comeback strategy. The two biggest customers for computers are businesses and schools. I.B.M. and I.B.M.-compatible equipment dominated the former, but Apple was pre-eminent in the educational market. Jobs knew that he was still regarded as a prophet on campus. OVER A LONG LUNCH AT A PALO Alto coffee shop with the Stanford professor Paul Berg, a Nobel laureate and DNA expert, Jobs began to understand the need for more powerful, less expensive and easier-to-use computers to do genetic research and other scientific projects. Picking Berg's brain gave Jobs something like a rallying cry: he would give every student the theoretical equivalent of a DNA wetlab, put a model of a linear accelerator on every desk; he would deliver the power of a workstation in a PC.

That summer, Jobs began selling his Apple stock, which was worth more than \$100 million. He hired half-a-dozen key employees from the Macintosh team - provoking a time-consuming lawsuit by Apple - and invested \$7 million in his new company.

Long before Jobs tackled the engineering problems of his new computer, he was at work on esthetic ones. Characteristically, he decided to design his company's logo before anything else.

Four designers gave it a try before Jobs became convinced he had to have the grand old man of the business, then 72-year-old Paul Rand, who had created the logos for Westinghouse, ABC television, and, most significantly, for I.B.M.

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In the old days, I.B.M. had been the enemy, the symbol of big government, big business, perhaps even Big Brother. Apple salesmen were given T-shirts bearing the legend "Bluebusters," for Big Blue, I.B.M.'s nickname in the industry, taken from its blue logo. Rand said he had been under contract to I.B.M. for more than three decades and could not work for Jobs without I.B.M.'s permission. To the surprise of both Jobs and Rand, permission was granted. It was the beginning of a relationship vital to NeXT.

Rand flew out to Palo Alto, where Jobs briefed him, sharing his vision of a device in the shape of a cube - a crisp alternative to the table-top slabs or standing towers that he derided as "big, hot boxes." Before he left the office, Rand had the basic idea. It took him just a couple of weeks to bring the logo to completion.

After dinner at Jobs's sprawling stucco house in Woodside, the hill town where the Silicon Valley's most successful entrepreneurs live, Rand handed Jobs a book outlining his proposal for the logo.

The book traced the logic behind the logo's design, suggesting possible alternatives en route. Rand watched Jobs's face as he read, his smile growing as each possible logo was suggested page by page and then discarded in favor of the next. On the last page was Rand's final design - a black cube set at exactly 28 degrees from level, with the company's name broken in half, on two lines. When Jobs saw it, he was so pleased that stood up and embraced the somewhat startled Rand.

To Silicon Valley, it seemed like (Continued on Page 58) classic Jobs: he had just spent \$100,000 for a logo for a product that didn't yet exist.

TO TURN THE LOGO INTO THREE dimensions, Jobs, after several false starts, turned to an industrial designer he had used at Apple, Hartmut Esslinger, whose firm, called frogdesign, had designed products for Sony, General Electric and Kodak. Again Jobs had to get a rival's permission - this time Sculley's - before hiring the person he wanted; Sculley gave his assent only after Esslinger made a personal plea.

It took the designer a weekend to come up with the dramatic cube and theatrical monitor.

Meanwhile, the NeXT team was at work making a computer to go into the box.

The work went slowly. Jobs pushed employees almost as hard as he had at Apple; 90-hour weeks were common. Some of the old behavior resurfaced. When Jobs first looked at software produced by a British firm called IXI, he dismissed it

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out of hand. A few weeks later, NeXT signed a deal with the company. The work was less chaotic than it had been at Apple, recalls Joanna Hoffman, but the pressure was the same. He was "still the same energetic guy: it's him against the world."

By the end of 1986, the computer was far from ready. The valley buzzed with talk that Jobs needed venture capital. Whether or not he was looking for money - Jobs denies it - money found him.

In February 1987, after seeing Jobs on a PBS show, "The Entrepreneurs," the Texas computer innovator H. Ross Perot invested \$20 million in NeXT, for which he received ownership of 16.7 percent of the company and a seat on its board of directors. Important as the money was to NeXT, Perot's involvement was most significant as a symbolic connection to an older, mainstream tradition of American entrepreneurship. And he was a great defender of Steve Jobs, whom he compared to Thomas Edison and Henry Ford. At around the same time, both Stanford and the Carnegie Mellon University put in smaller amounts.

Even so, NeXT did not introduce the product in the spring of 1987, as it had planned, nor the following fall, when the company went on record as saying that the machine would be introduced by the end of the 1987-88 academic year. In June 1988, the introduction was delayed again.

The price of the machine was simultaneously creeping up, from the \$3,000 Jobs had originally announced, before the machine was designed, to, finally, \$10,000. As the date of its arrival kept slipping, the "window of opportunity" before NeXT's competitors would field rival machines was closing.

The jokes began: the name NeXT should be changed to Eventually. Someone at Apple created a button bearing a mock version of the logo. It read: NeVER.

ALTHOUGH VARIOUS ACCOUNTS have him angry and embarrassed at the delay, Jobs insists he never worried. "We knew that something magical was happening," he says, "and it was just a matter of wrestling it to the ground."

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periodically to Palo Alto, shrouded in an air of mystery. To their curious colleagues, they could say nothing.

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Then, in the spring of 1988, I.B.M. called. After getting permission to use Paul Rand, Jobs had had no other contact with I.B.M. In June 1987, he met John F. Akers, I.B.M.'s chief executive, at a social occasion - the 70th birthday party for the Washington Post owner Katharine Graham. Malcolm Forbes made the introduction.

The meeting paved the way for a call, some months later, from one of Akers's deputies, proposing a cooperative venture between the two companies. I.B.M. needed the kind of software system for its workstations that Jobs was developing for NeXT. The NeXTStep interface, which aims to make creating software as easy as the Macintosh made using it, will give NeXT something none of its competitors have: do-it-yourself programming for the amateur. In one early demonstration, a physics professor took just a few hours to create a map of changes in the earth's magnetic field over millions of years.

When I.B.M. called to discuss licensing the NeXTStep software, Jobs had not completely lost his suspicion of Big Blue. There would be no deal, he told I.B.M. executives in Armonk, N.Y., unless it was quick and simple. I.B.M.'s understanding of quick and simple was a 125-page contract, delivered by an executive to Palo Alto a few days later. Jobs dropped it on the table without reading it. "You didn't get it," he said, and walked out of the room.

Within hours, a senior I.B.M. executive was on the phone. "You write the contract and send it to us," he said. In a few days, a much smaller contract went to I.B.M. and the deal - for a figure industry analysts estimate at more than \$10 million - was completed.

When Jobs finally presented the NeXT computer, last October, the news coverage was overwhelmingly favorable. Almost obscured was the fact that the machines he was showing were prototypes, with a finished product not likely to be available for months and basic software still incomplete. But perhaps nothing about the machine was quite as surprising as the announcement of the I.B.M. deal. For Apple veterans who had followed Jobs to NeXT, it seemed almost a betrayal. But as

one industry analyst commented at the time, "The I.B.M. alliance catapults NeXT into a position as an industry leader."

DESPITE THE BACKING of Perot and now I.B.M., progress on NeXT still went slowly. By March of this year, only about a thousand test models had been shipped, with only the basic software they came packaged with.

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Sales projections were low - only 10,000 units in 1989, by the most optimistic independent estimates. (NeXT doesn't make its own projections public.) This would account for only a few weeks' production in the expensive robot-run factory Jobs had built in Fremont, where each computer circuit board was to be assembled "untouched by human hands," in just 20 minutes.

Perhaps more important, programmers could not afford to develop more sophisticated programs for a computer with this small a distribution. NeXT had announced that such major software firms as Lotus were working on programs, but until production reached a certain volume, the work would probably not be a high priority. The industry was buzzing with questions about where Jobs and NeXT were going.

Then, in March, Jobs signed an agreement with Businessland, the nation's largest retailer of personal computers. Businessland would distribute his machine to the general public. The idea of targeting universities was abruptly dropped. Businessland's CEO, David A. Norman, promised to take \$100 million worth of NeXT equipment - at wholesale - in the first year and predicted that he would sell more than that. Experts saw sales of a quarter of a million machines a year by 1992.

Jobs had one more rabbit to pull out of his hat. In June, he announced that Canon, the Japanese firm that developed the optical disk in the NeXT computer, had bought 16.7 percent of the company, giving Canon the same share as Perot owned, for \$100 million. The Canon connection meant financing for development of a second-generation machine, gave NeXT a Japanese distributor and, once again, provided a crucial boost to the company's credibility. If the value of the shares Canon bought is used as a yardstick, NeXT is theoretically worth \$600 million. The \$12 million Jobs has contributed to the company over the years is now worth \$300 million.

IN THE END, DESPITE the succession of deals, Steve Jobs is relying on the sheer elegance and drama of the NeXT computer to make it a success.



"This machine," says one analyst, "is for the executive who has to have the prettiest secretary and the fastest car." NeXT has been called "the BMW" of computers, and in fact Jobs has hired BMW's advertising firm.

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So sharp is NeXT's resolution that even hardened and skeptical observers of the computer industry were taken with the stunning, sharp images, designed to a high level of sophistication. The "icons," symbols for programs and functions, are animated cartoons, not just silhouettes, like the international road signs in earlier graphical interfaces. The symbol for deleting a file is a "black hole," a swirling whirlpool shape and cosmic witticism.

But there are dissenting voices. NeXT is not a breakthrough but simply a packaging of technologies, some say. Bill Gates of Microsoft, the most important figure in the world of software, who before the I.B.M. deal had called NeXT the most beautiful computer he had ever seen, emerged to blast it. It was nothing innovative - merely an assemblage of off-the-shelf technology. Gates has his own ax to grind: sales of Microsoft's software for I.B.M. machines could suffer if I.B.M. aggressively supports NeXTStep. Gates also doubted that NeXT would ever become commercially viable. Many others agree with Gates's assessments.

It is not a criticism that bothers Jobs.

"We spent a lot of time rummaging through laboratories," Jobs acknowledges. They were looking for the best new technologies. The sum of the parts, Jobs's defenders say, is greater than the whole. Even though he wishes Jobs has gone further technologically, Alan Kay asserts that "the NeXT machine will push others to innovate." Whether NeXT succeeds or fails in establishing itself as a practical industry standard like the I.B.M.-PC or Apple Macintosh, it has already become a standard of excellence - an esthetic model to aspire to.

FOR NOW, NeXT IS STILL A small player in a world of big ones. If it weren't for Jobs's reputation, one industry analyst says, NeXT would be just another start-up company. I.B.M., Digital Equipment and others are introducing new machines that, like NeXT, bridge the gap between PCs and workstations. Sun Microsystems has nicknamed its new Sparcstation computer a "NeXT killer."

The question, says Jonathan W. Seybold, publisher of a leading newsletter on desktop publishing, is whether NeXT can grow into a billion-dollar company without the crises even the best-run start-ups in Silicon Valley have faced. "So far," says

Seybold, "I've been impressed with the way they listen, and the quality of the decision making."

Now that the creation of Jobs's new machine is finished, he will be managing instead of developing, and that is where he got into trouble at Apple. NeXT machines at last are in retail stores, where people can see and touch them. And Steve Jobs, having made his connections, will now have to get along with his allies. He will have to depend on others to create the programs to fill his black box. NeXT is now able to boast that some 80 firms are writing programs for the machine. "Emotionally, programmers wanted to develop for NeXT," says Seybold. The Businessland deal, he says, gave them "rational justification."

When Alan Kay looks at the NeXT box, he sees something new about Jobs. It is, he says, a machine that reflects not just Steve Jobs but "a whole team behind him," and an ability to connect with other computers. Says Kay: "Steve has finally discovered networking."

By contrast to the Macintosh, a look at the back of the NeXT computer shows all sorts of connectors, neatly arranged. They represent what may be Jobs's solution to resolving his conflicting needs: an esthetic of connections.

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