The People, Power and Politics Behind the IBM Personal Computer

Blue Magic

James Chposky and
Ted Leonsis

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With love and gratitude, this book is dedicated to our wives:

Judith Witt Chposky
and
Lynn M. Leonsis

Any sufficient developed technology
is indistinguishable from magic.

—Arthur C. Clarke

All stories, if continued far
enough, end in death, and he is no
true-story teller who would keep that from you.

—Ernest Hemingway, *Death in the Afternoon*

Personal Dedication

My life and the lives of those on the PC team who were privileged to work with Don Estridge will be affected forever by the story of the IBM Personal Computer. It is to these people that I have dedicated my efforts on this book.

I participated in the telling of this story not for any personal gain, or to relate a one-sided version of the facts. For the truth is, during our individual and collective efforts on the PC team, we did many things right and many things wrong. But when we stumbled, we learned to pick ourselves up and try even harder the next time.

We never had to look over our shoulders to wonder if Don Estridge would be there to support us in our risks and efforts. He was there and he supported us. That was the magic in the man.

—Dan Wilkie

Acknowledgments

> We have always looked to a special few to give meaning to our common experience, to carry forth from the past something we haven't seen, could never have seen without first being shown, and having been shown could never see again without knowing, without remembering.
>
> —From the introduction by Alex Harris to *A World Unsuspected*

BLUE MAGIC is a sincere and unbiased attempt to tell the factual story behind the development of the IBM Personal Computer.

The text is based on interviews with senior members of the original team commissioned to do something that had never been done before at IBM: within one year, to design, develop and bring to market a singularly outstanding machine that would anchor IBM in what was for the company a new niche in its industry—personal computing. These scores of hours of interviews were supplemented by other interviews with major individuals connected with or close to the microcomputer industry.

Finally, we pored through general-interest, business and computer-trade newspapers and magazines that reported on IBM's microcomputer activities during the 1980 through 1985 time frame. Dozens of anecdotes and hundreds of facts were sorted and classified. Eventually, certain pieces of verifiable evidence emerged. From this evidence, we were able to establish facts that reveal why the original IBM PC was such a remarkable achievement.

These facts, of course, are only as accurate as the recollections of those who were actually part of the team during those heady days from mid-1980 until the PC was formally introduced in August 1981. In the majority of instances, there was substantial agreement on the facts surrounding particular episodes. When conflicts arose among individual accounts of what happened, we have reported this fact.

As the evidence accumulated, we were able to draw certain conclusions that, until the publication of this book, remained as

fragmented facts. The result has been what we intend to be a cohesive, sensible and simple narrative.

Throughout the book, conversations and episodes have been reconstructed according to what was often the vivid recall of those involved. The passing of time apparently did not dull their recollections of these memorable days.

*

While we choose not to present this book as "the unauthorized story behind the IBM PC," it is worth noting that IBM did not cooperate directly in the preparation of the text. The corporation refused to permit its executives to be interviewed and the only information it furnished was confined to documents that had been previously released to the concerned public. In other words, IBM neither endorsed nor authorized the publication of BLUE MAGIC.

When the text was completed, we submitted a copy to IBM for review. This copy was returned with such marginal comments as "not true" and "conjecture," but in no instance did the company offer to state its version of the points in alleged dispute.

This would have been a far different book than it is if IBM had managed to keep key members of the former PC development team on the corporate payroll. These men left the company in disillusionment because they had worked day and night and weekends to make the PC what it was and then the company attempted to fold them back into the IBM bureaucracy with only cursory recognition for what they had accomplished. So they left the company, went elsewhere, made important decisions, earned more money, and built up their estates. Now, free of the corporate procedures regarding speaking with the press, they took this opportunity to tell their inside versions of this fascinating story. The result is a book that is as true as can be possible.

As another attempt to enhance integrity, the text of this book was written on an early model of the original IBM PC.

*

Among those who left IBM and contributed significantly to the preparation of this book, we especially acknowledge Dan Wilkie, H.L. "Sparky" Sparks, Bill Sydnes, Joe Sarubbi and Jim D'Arezzo. Wilkie is named first because his contributions to this project were especially significant.

Many, many others eagerly cooperated by providing valuable insights and fresh information on the condition that they would remain anonymous. For reasons of their own, they did not wish to rile IBM.

When this project was still in its proposal stage, Reid Boates, our literary agent, convinced Ed Knappman at Facts On File that this was a book that demanded to be published. Without Reid and Ed, it is very likely there would not have been a book.

Kate Kelly, our editor at Facts On File, is a gifted professional and valued friend whose contributions to BLUE MAGIC were truly invaluable.

Among others who gave us their untiring support and steadfast encouragement during the research and writing of this book, we especially wish to acknowledge:

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James Chposky
Ted Leonsis
New York City

Prologue

On Friday August 2, 1985, at 5:43 PM, Eastern Daylight Savings Time (EDST), Delta Airlines Flight 191, bound from Fort Lauderdale, Florida, prepares to land and establishes contact with the Traffic Control Center at the Dallas-Fort Worth Airport.

The air traffic controller tells the pilot he has "a good area to go through."

Moments later, the pilot spots a thunderstorm cell and asks to go around it. Because the pilot had taken the plane aloft, the copilot routinely takes over the controls for landing as permission is received to fly around the gathering thunderstorm.

At 5:52, Delta 191 connects with the first of three air traffic controllers who will attempt to guide the plane into a safe landing at the airport. At this point, a recorded weather alert reports there are 10 miles of visibility, calm winds and no rain. Four minutes later, the weather report is invalidated; the control tower spots rain slightly to the north of a landing runway—but at this time of year the sudden change is not unusual in the Dallas-Fort Worth area.

At 16 seconds before 6 o'clock, an air traffic controller reports that he sees "a little bitty thunderstorm" in the path of Flight 191's designated runway. A passenger on the flight, who has been sitting in a window seat in the rear of the airplane, would later say the disturbance looked like a dust storm or heavy rain, "because it was solid black."

At four minutes after 6:00, the copilot of Flight 191 tells the pilot he sees lightning coming out of a cloud "right ahead of us." But there are still no warnings from the control tower. Earlier planes have been landing safely at the airport. So Flight 191 continues on its path.

At 6:05, the speed of the plane suddenly, inexplicably accelerates, as if it was being pushed forward by an unknown force. The airspeed races to 157 knots—then to 162 knots. Three seconds later, it is 173 knots. (It should be 150 knots.) When the plane is only 754 feet above the ground, it suddenly drops to 171 knots.

Then heavy rains buffet the plane. Now the airship is less than 700 feet above the earth and the airspeed slips to 137 knots—dangerously close to the point at which the airplane will cease to remain aloft.

The pilot loses his composure. "Push it up!" he screams. "Push it way up. Way up!" The airspeed miraculously increases. One second later, it plunges by 20 knots. The plane rolls, now out of control, and the left wing tilts 20 degrees toward the ground.

A device with a synthesized voice is automatically triggered in the cockpit. The voice sternly warns, "Pull up! Pull up! Pull up!"

The pilot shouts, "TOGA! TOGA!" (An acronym for Take Off and Go Around.) The plane is less than 200 feet off the ground. The warning device keeps repeating, "Pull up! Pull up!"

But the plane strikes the ground. It then bounces back into the sky, then bounces again to the ground. It grazes a highway and destroys an automobile. It skips along crazily, snapping off two light poles, and skims across the ground on the other side of the highway, until its left wing knocks down a huge water tank. The fuselage cartwheels into another water tank as the plane breaks in two, and its tail, set free, slides backward.

The tail of the plane sits alone, clear, safe—as flames from the ruptured fuel tanks engulf the front of Flight 191's fuselage. It is transformed into a crematorium, burning fiercely despite thousands of gallons of water soaking it from the toppled water tanks.

For a few moments all that can be heard is the crackle of the flames. Then all is quiet. Suddenly, the rains come, whipped by winds of up to 70 knots.

The few survivors—shocked, injured, traumatized—hear a metallic screech, then a creak, as the damaged tail of the divided plane settles on the soft earth.

More silence. Only the wind and the rain assure the survivors that they are still alive.

Faintly, then growing stronger, comes the whine of a solitary siren. Another siren sounds, and yet another and another.

Now the sirens surround the survivors with an earsplitting crescendo, until the air and the earth and the sky seem to shriek.

*

Near midnight on this day, 1,000 miles from the fall of Flight 191, a man sits alone, his head in his hands. He is stunned by the horror of the crash—yet still mercifully unaware of how the destruction at Dallas would change the way he would work and live for the rest of his life.

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1 The Vixen and the Rocket

· 1 ·

A rendering of a vixen was the first image to appear on the monitor screen of an IBM Personal Computer (PC). The next image depicted a rocket ship ejecting a capsule-like projectile across the screen and beyond its borders.

The suggestive imagery was not lost on the members of IBM's Corporate Management Committee (CMC) at Armonk, New York, on a morning during the dog days of August 1980. So the committee said "Go!" when their approval was sought to permit the innovative infant to find its own crib among the company's otherwise utilitarian family tree of computing machines.

But the infant (which matured to become *l' enfant terrible* of the IBM product family) was almost involuntarily aborted only hours before its birth. Everything had worked well when this prototype personal computer was born at IBM's small-systems facility in Boca Raton, Florida. The machine was thoroughly tested and apparently perfected and ready for its debut at the corporation's world headquarters in Armonk, a hamlet in the Hudson Valley about an hour's drive from New York City. The small machine was carefully coddled—but a couple of hours before its scheduled appearance at the CMC meeting, the unit went haywire.

It may have been an instance of science imitating life, but at least some quick rewiring saved the demonstration. This done, the machine performed admirably, and the development team returned to Florida with a mandate to build it. They also returned with only initial funding

and the backing to establish a development team that would lead to one of the world's most profitable industrial enterprises. The product did not even have a name, so for the time being, the embryonic machine was dubbed Acorn, under the aegis of an overall development project code-named Chess.

· 2 ·

That a corporation as straitlaced as IBM would deliver a mandate so cavalierly had a lot to do with the business climate around Armonk in those days. By mid-year 1980, the company was pulling itself together after a close brush with the federal government. The Justice Department had mounted an all-encompassing antitrust suit, accusing IBM of engaging in "monopolistic and anti-competitive practices." The suit dragged on for 13 years until the government admitted that the charges against IBM were patently "without merit."

According to *Time* magazine (July 11, 1983), Frank Cary, the company's chairman, stopped grinning long enough to say, "The suit was a tremendous cloud over the company. It couldn't help influencing us in a whole variety of ways. Ending it lifted a huge burden from management's shoulders."

The suit also caused IBM to proceed with so much caution that its share of the computer market dropped from 60 percent to 40 percent during the 1970s. As Cary explained, "This was a time of planning and consolidation."

Among the plans developed during this time was a concept the corporation calls Independent Business Units—referred to as IBUs (just as the International Business Machines Corporation is IBM). To this day, no one person at IBM takes sole credit for the phenomenon of the IBUs nor, for that matter, for the singular idea behind the development of the IBM PC. In fact, at IBM, concepts and ideas tend to evolve as a consequence of the corporation's collective reasoning process, rather than from the solitary inspirations of individual employees. At the time when the idea of IBUs was evaluated as a concept, Frank Cary was still chairman of IBM, though he confidently shared his authority with John R. Opel, who, almost a year to the day before the antitrust suit was dropped, became IBM's president and chief executive officer.

While Cary found great humor in noting that IBUs "might even teach an elephant [IBM] how to tap dance," John Opel simply said,

"You have to have people free to act, or they become dependent. They don't have to be told; they have to be allowed"—a remark taken as his way of saying that the management at IBM was, perhaps, as anachronistic as the keypunch card-tabulating machines on which the company built its reputation.

· 3 ·

John Opel spent his entire business career at IBM. He joined the company in 1949 after graduating from the University of Chicago School of Business. His first job was as a salesman in Jefferson City, Missouri, his hometown. During his first decade with the company, IBM shifted Opel around—but always upward. In 1959, the ultimate direction of his career was marked when he became administrative assistant to Thomas J. Watson, Jr., who was IBM's president and, upon his retirement, U.S. ambassador to the Soviet Union. Opel's final step up came when the board of directors approved his selection to the top spot at IBM, effective on the first day of January 1981.

Opel was philosophically and temperamentally cast in the IBM mold, yet he was not timid about using the power of his office to guide the corporate ethic into his vision of how IBM should present itself for the rest of the century. Accordingly, he set in motion a number of aggressive programs aimed at rectifying the imbalance between IBM's reputation for expertise in marketing and the general perception that the company sold reliable but technologically unimaginative products.

Even suggesting that the latter might be so invariably caused indignation at IBM. Its representatives pointed to the corporation's position as the leading computer company in nearly every one of the 130 countries where it maintained a presence. IBM even went so far as to mount a direct attack on the detractors who charged the company with being a technological laggard. The attack was based on a broad and aggressive advertising campaign calling attention to the more than 11,000 patents that the company's inventors acquired during the past quarter century. But the perception persisted that the company paid more attention to selling its products than it did to establishing itself on the technological leading edge of its industry.

Still, there was a grain of truth in such contentions. IBM would be the first to acknowledge that the foundation of its existence was based on a finely honed regard for customer relations. The company's business

was selling its products, but its founder, Thomas J. Watson, was canny enough to realize that its relationships with its trade only began when the customer signed the dotted line.

IBM was and is totally dedicated to servicing its accounts, and has no hesitation about dispatching platoons of its people to a customer's site. Sales plus service has been IBM's equation for success and—since its founding as the Computing-Tabulating-Recording Corporation in 1914 (renamed International Business Machines Corporation 10 years later)—the company has never veered from this fundamental approach to business.

For a while, this was enough. After all, once the basic electromechanical design of a keypunch card sorting machine was established, further evolution of the process was limited to cosmetic innovations (not unlike the internal combustion engine). IBM did establish itself at one time as the global leader in typewriter sales, but even here the company scarcely improved on the technology first developed for practical application by Frederick Remington in 1868.

Its commitment to efficient marketing was not altered when the company entered the data-processing industry in 1952. Within four years, IBM had captured 85 percent of the domestic computer market—not necessarily by creating better products, but rather by doing all it could to dispel its customers' fears of computers.

Before long, the company discovered that there is a lot more involved in developing computers than in building typewriters. As the established revenue leader in its field, IBM was naturally expected to produce a steady stream of technological advances. But a well-disciplined enterprise structured with high compensation and special rewards to attract and advance high-powered sales performers had scant appeal to the technological innovators motivated by independence and professional challenge as much as by money.

In other words, a typical computer person who might otherwise balk at an IBM job would jump at the chance to join a Project Chess and develop a product like the Acorn.

· 4 ·

IBM, in its subtly secretive way, tries to conceal what it's working on until a development project produces a market-ready product. To enforce this policy, IBM (like other companies in highly innovative, high-technology industries) requires that anyone inside or outside the

company privy to a project in development must sign a non-disclosure agreement. The agreement states, in effect, that the company can levy severe penalties on anyone who acknowledges IBM is working on a new concept.

So the episode of the vixen and the rocket remained tightly guarded when the PC team returned to Florida in August 1980 with their prototype. They had been commissioned to continue, which meant not only to perfect the machine but also to devise detailed marketing and distribution programs and to have the entire project completed and ready for introduction within one year.

At this particular time in mid-August 1980, Project Chess was headed by William C. Lowe, laboratory director of IBM's Entry Level Systems (ELS) Unit in Boca Raton. As manager of Project Chess (in addition to his other duties), Lowe directed a tight cadre of 13 project planning engineers. It was this group that, just a month earlier, had convened to assemble the prototype. Lowe had recruited the baker's dozen (known internally as "The Dirty Dozen") by phoning them at their homes over the July 4th holiday weekend.

Months later, Project Chess became one of seven IBUs chartered by the Corporate Management Committee under Opel's leadership. The others, which dealt with such concepts as robotics and medical systems, had their own reasons for existence.