

A REAL-LIFE STORY

# STEVE JOBS

THINKING DIFFERENTLY



by PATRICIA LAKIN

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# STEVE JOBS

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*For Lee, with love*

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—P. L.

Click. Boom. Amazing!

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—Steve Jobs (Macworld Expo, 2006)

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# CONNECTING THE DOTS

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HOW DID A YOUNG BOY who was a Little terror in elementary school, a first-class prankster, and college dropout grow up to become a man who not only led one of the world's most innovative companies but was also revered for his brilliant creations?

By following his passions, Steve Jobs created one world-famous company, Apple Inc., and nurtured another, Pixar Studios. Along the way, he revolutionized home computers and the music and telephone industries and helped bring computer-animated films like *Toy Story* and *WALL-E* to life. With a team of technical artists like himself, he produced the iPod, the iPhone, and the iPad.

Perhaps Steve would say it's because he connected the dots in his life.

As an adult, he said of those dots, "You can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something—your gut, your destiny, life, karma. . . . And most important, have the courage to follow your heart and intuition."

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# BEGINNINGS

GIVING UP A CHILD FOR adoption has to be an extraordinarily difficult and heart-wrenching decision. But in 1955, one particular couple felt they had no choice.

Abdulfattah “John” Jandali and Joanne Scheible were graduate students at the University of Wisconsin who wanted desperately to complete their education. They believed their studies would end their subsequent careers would be nonexistent, if they chose to keep their child. And so, in San Francisco, California, on February 24, 1955, when their baby boy was born, they put him up for adoption.

Joanne Scheible, the baby’s birth mother, felt strongly that the adoptive parents had to be college graduates. Her first choice was a lawyer and his wife. But that couple wanted a girl.

The next family on the adoption agency’s list was Clara and Paul Jobs. They were delighted to adopt either a boy or a girl and open their home and their hearts to this infant.

The Jobses—unbeknownst to Joanna Scheible at first—were not college graduates. Clara Jobs had only finished high school. She worked as an accountant. Paul Jobs hadn’t even completed high school. He had served in the coast guard during World War II and worked as a machinist.

When Joanne Scheible discovered that the Jobses weren’t college graduates, she revised her conditions: In order for the adoption to go through, they had to promise they would send the child to college. The Jobses simply wanted to nurture and love their baby boy. How they would pay for his education was a question they would tackle in the future. But promise they did. Papers were signed and the adoption became official. A family was born. They named their son Steven Paul Jobs.

At the time of the adoption, Paul and Clara lived in a small apartment in San Francisco. Soon after Steven came into their lives, they moved to an inexpensive rental home in South San Francisco. In 1958 the Jobses added to their family once again when they adopted a baby girl, whom they named Patty.

In 1960, when Steve was five, Paul’s job transfer brought his family to a modest three-bedroom rental house in Mountain View, California—a new suburban area south of San Francisco, where small houses and new businesses were quickly developing.

Steve was inquisitive, energetic, and imaginative. As a toddler, he often woke up at four o’clock in the morning. To make sure they could get their rest, his parents bought him a rocking horse to play with. They also put a phonograph in his room with records by Little Richard, a rock-and-roll singer popular in the 1950s. Maybe Little Richard was their favorite artist and that’s why they chose his music. But it was an interesting choice: Little Richard’s songs, from “Good Golly, Miss Molly” to “Tutti Frutti,” were fast-paced and *loud*—not exactly music to relax to. During those few early morning hours their son could safely “rock” in more ways than one.

Many women in the 1950s were stay-at-home mothers, and Steve was fortunate that Clara was able to spend a great deal of time with him, even teaching him to read before he started school. When not at work, Paul was a constant presence in Steve’s life too.

“I was very lucky. . . . My father, Paul, was a pretty remarkable man. . . . He was a machinist by

trade and worked very hard and was kind of a genius with his hands. . . . He . . . showed me how to use a hammer and saw and how to build things. It really was very good for me. He spent a lot of time with me.”

Paul had a workbench in his garage, and when Steve was about five or six years old, his father sectioned off a part of it for him. “Steve, this is your workbench now,” he said. He kept his tools and workbench clean and in perfect order, and while many parents might have been reluctant to let a young child “invade their space,” Paul welcomed Steve to share his tools, his space, and his own joy in creating.

Paul liked to buy old cars, fix them up, and sell them. Refurbishing those cars gave him some experience working with a car’s electronics parts and exposed Steve to the auto’s inner workings. Paul passed along not only his fascination with electronics but also his pride in workmanship. He often told his son that when building something, every part should be well made and put together with precision and care, whether the part showed or not.

Steve said of his father, “He can fix anything and make it work and take any mechanical thing apart and get it back together. That was my first glimpse of it. I started to gravitate more toward electronics and he used to get me things I could take apart and put back together.”

Even though Steve knew how to read and build things when he started at Monta Loma Elementary School in Mountain View, it was still a difficult time for him. “School was pretty hard for me at the beginning. . . . When I got there I really just wanted to do two things: I wanted to read books, because I loved reading books, and I wanted to go outside and chase butterflies. You know, do the things that five-year-olds like to do.”

It’s possible he didn’t have teachers who knew how to reach—or teach—him. And it’s possible that the controlled, structured environment—having to sit still at a desk from early morning until midafternoon—was uninviting and a challenge for Steve. He said of that time, “I encountered authority of a different kind than I had ever encountered before, and I did not like it. And they really almost got me. They came close to really beating any curiosity out of me.”

Also, Steve was a bit of a loner, used to getting his own way. When something didn’t go as he wished at home, he’d storm off and cry. Those qualities may have made it more difficult for him to fit in with his classmates at school. His way of dealing with the day-to-day life at school that he thought was boring and a waste of his time was to make mischief. Lots of it.

In third grade Steve’s partner in crime was his buddy Rick Ferrentino. They let snakes loose in the classroom and set explosives off in the teacher’s desk. With Rick, more complex pranks were possible.

Outside the school, all the kids’ bikes were lined up and locked in the bike racks. Steve and Rick found out who owned each bike and traded their own bike lock combinations for that person’s combination. When they amassed all the combinations for each of the bike locks, they went into action.

They opened every bike lock and reattached it to someone else’s bike. When school was dismissed and the kids went to open their locks, they couldn’t figure out why their locks weren’t opening. Steve recalled the outcome years later: “It took them until about ten o’clock that night to get all the bikes sorted out.”

In fourth grade the principal was determined to separate the two boys. By chance, Mrs. Imogene “Teddy” Hill, who taught an advanced fourth-grade class, volunteered to take one of the boys. She was assigned to be Steve’s teacher. He would later remember her as “one of the other saints of my life.”

Imogene Hill followed her own instincts growing up. At the age of three, she acted onstage and went by the name “Little Imogene.” She was part of a sister-and-brother dancing act and was described as being a bundle of energy. She kept up her love of acting even in college.

She was now a married woman and a dedicated teacher. Perhaps her love of theater and performing made her an unorthodox teacher. Or perhaps she was simply a passionate teacher who wanted to inspire every student in her classroom. Whatever it was, she must have been sizing up this particular fourth-grade boy to figure out how to reach him.

After the first few weeks of school, she approached Steve with a challenge: If he took a math workbook home, completed it all on his own, and got 80 percent of it correct, she'd give him a huge lollipop *and* five dollars. Steve responded. He accepted the challenge, succeeded, and got the candy and the five dollars. He said, "She got hip to my whole situation in about a month and kindled a passion in me for learning things."

As Jobs recalled, "She got me kits for making cameras. I ground my own lens and made a camera. . . . I think I probably learned more academically that one year than I've ever learned in my life."

Fourth grade with Mrs. Hill has to be considered a turning point in Steve's life. In a 1995 interview he said, "I'm a hundred percent sure that if it hadn't been for Mrs. Hill in fourth grade and a few others, I absolutely would have ended up in jail. I could see those tendencies in myself to have a certain energy to do something. It could have been directed at doing something interesting that other people thought was a good idea or doing something interesting that other people maybe didn't like so much. He went on to say, "When you're young, a little bit of course correction goes a long way."

At the end of the school year, Steve had done so well academically that the administrators had him retested. He scored so high that the school system wanted to advance this former troublemaker directly to high school.

Luckily for Steve, his parents thought sending an eleven-year-old to high school was a terrible idea. They agreed to have him skip one grade (fifth) but no more than that. So, in the fall of 1966, Steve entered sixth grade at Crittenden Middle School in Mountain View.

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# LEARNING IN A GARAGE

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MOUNTAIN VIEW GAVE STEVE A Plethora of educational opportunities outside of school. It was a place where Steve, with his intellect and single-minded interest in anything electrical and electronic, could feed his curiosity.

In order to understand how and why the Jobses' neighborhood and the surrounding area was so important and influential to Steve's development, it's necessary to go back to the year after Steve was born—1956.

This was the year that scientist William Bradford Shockley, along with John Bardeen and Walter H. Brattain, won the Nobel Prize in Physics “for their researches on semiconductors and their discovery of the transistor effect.” A transistor is the fundamental building block of modern electronic devices. It revolutionized the electronics field and paved the way for smaller and less expensive radios, calculators, and computers.

Shortly after winning the Nobel Prize, Shockley moved back to his hometown of Palo Alto, in the valley area south of San Francisco. He was to head a company called Shockley Semiconductor Laboratory, which was to be located in Mountain View. One of the products they worked on was the relatively new device—a transistor. Shockley was at the forefront of using silicon as a semiconductor for these transistors.

Shockley's company stood alongside other institutions and companies that were starting out or already based nearby. This northern spot in California was an ideal location for burgeoning industries. The United States government's space program, NASA (National Aeronautics and Space Administration), was also in high gear at this time. Lockheed, the aeronautics firm and a major NASA contractor, had a significant presence in this part of the country. And two famous local men, Bill Hewlett and Dave Packard (who started their business in a garage), located their electronics company, Hewlett-Packard, in Palo Alto.

As business boomed, young professionals—professors, engineers, designers, electricians, and scientists—were moving into the area in droves. A few years earlier, Mountain View and its surrounding valley communities had been blooming with apricot orchards. Now they were blooming with new businesses and new housing.

One young, newly married engineer moved onto Steve's Mountain View street, just a few houses away. His name was Larry Lang, and Steve gravitated to him when he was about twelve years old. Steve described their introduction: “There was a man that moved in down the street . . . with his wife, and it turned out he was an engineer at Hewlett-Packard and he was a ham radio operator and really got into electronics. What he did to get to know the kids in the block was rather a strange thing. He put out a carbon microphone and a battery and a speaker on his driveway, where you could talk into the microphone and your voice would be amplified in the speaker.”

Steve's father had taught him that in order for a voice to be amplified, an amplifier was needed. So when Jobs raced home to tell his dad what he'd just witnessed—an amplified voice *with no amplifier*. Father and son argued back and forth until Steve dragged his dad down the block so he could show him Lang

microphone. Even Steve's father learned something new that day.

After that initial introduction, Steve spent a great deal of time with Lang in his electronics-workshop garage. In a 1995 interview he recalled Lang's influence: "He taught me a lot of electronics too. . . . He used to build Heathkits. . . . Heathkits were these products that you would buy in kit form. You'd actually pay more money for them than you would if you just went and bought the finished product if it was available. These Heathkits would come with detailed manuals on how to put this thing together and all the parts would be laid out in a certain way and color coded. You'd actually build this thing yourself. I would say that gave one several things. It gave one an understanding of what was inside a finished product and how it worked, because it would include a theory of operation. But maybe even more importantly, it gave one the sense that one could build the things that one saw around oneself in the universe. These things were not mysteries anymore. I mean, you looked at a television set, you would think, 'Well, I haven't built one of those, but I could.'"

Jobs went on to say, "Things became much more clear . . . not these magical things that just appeared in one's environment, that one had no knowledge of their interiors. It gave one a tremendous degree of self-confidence, that through exploration and learning one could understand seemingly very complex things in one's environment. My childhood was very fortunate in that way."

Lang's influence went beyond what Steve learned by hanging out in his neighbor's garage workshop. The engineer was also able to arrange for Steve to join Hewlett-Packard's Explorer Club in 1967.

The Explorer Club was open to budding adolescent engineers and met every Tuesday evening in the company cafeteria. At that time, firms like Hewlett-Packard were only too happy to share with young people all the new technologies and products they were developing. Various engineers from Hewlett-Packard would describe their latest projects—calculators, lasers, holograms, and the like. Jobs remembered one particular meeting: "They showed us one of their new desktop computers and let us play on it. I wanted one badly. . . . I just thought they were neat. I just wanted to mess around with one."

It's important to remember that when Steve Jobs was growing up, computers weren't found in people's homes. The first computers were originally created to produce error-free, speedy mathematical calculations, for use in laboratories and universities. They were massive contraptions, and they generated so much heat they had to be stored in designated rooms, kept cool so that the computers wouldn't overheat.

Desktop computers began to be developed in the early 1950s. Heathkit even created a kit to build one toward the end of the decade. In 1972 Hewlett-Packard introduced a desktop computer, which was considered a programmable calculator and was marketed to scientists and engineers.

Unfortunately, what was intriguing to Steve in the "outside" world was not in the curriculum at Crittenden Middle School. His sixth-grade classroom was nothing like Larry Lang's garage or Hewlett-Packard's cafeteria with scientists and engineers.

His new school wasn't a happy place for eleven-year-old Steve. He was now officially called "gifted." But instead of being placed with similarly gifted kids his own age, he was put in a classroom with kids far older. The school system didn't offer any help in trying to ease his adjustment, and to make matters worse, there was an element of kids at school who were serious troublemakers. According to one Steve Jobs biographer, "The police were often called to the school to break up fights. The situation was basically out of control. For Steve, who was extremely bright but also a little wild, an environment where his wildness went unnoticed in all the commotion, as did his intelligence, was a prescription for unhappiness."

Jobs was so bullied and miserable at Crittenden that one summer day before he was to enter seventh grade, he told his parents he refused to return to that school. He'd have to change schools or he'd simply stop attending any school.

Legally, Steve wouldn't have been allowed to quit school. But Paul and Clara Jobs knew his threats could cause them problems—not least of which was their promise (when they adopted him) to send their son to college. The obvious choice was to change schools. Changing schools meant changing communities.

Since Steve's birth, Paul and Clara had already moved from San Francisco to its southern suburbs on two separate occasions. Would they consider moving yet again?

They did, and for two reasons. First, they were used to taking their son's threats seriously. Second, Patty (who was three years younger than Steve) would soon be attending Crittenden Middle School. Steve's experiences influenced his parents' decision to find a better school environment for both children.

In 1967 the Jobs family moved farther south to another San Francisco valley suburb, Los Altos. Their three-bedroom home brought the family closer to Paul's job. And it put Steve into the Cupertino school system, a district that at the time had a far better reputation than Mountain View. Los Altos was also considered to be part of the booming high-tech area.

In January of 1971, just five years after the Jobs family moved to Los Altos, this California valley area was given a nickname by Don Hoefler, a writer for a weekly trade paper, *Electronic News*. Thinking of the element that Shockley used in his transistors, he dubbed the area Silicon Valley, the name by which it's still known today.

Now that he was enrolled in a better school—Cupertino Junior High—Steve's school life should have been better. It wasn't. Steve was a year younger than the other kids in his grade. Although he was grouped with kids who were on his same intellectual level, he still didn't mix easily with his classmates.

He wasn't very interested in sports or being part of any team, which can be ways to make new friends. His only physical activity was swimming at his old community's Mountain View Dolphin Swim Club. But swimming isn't really a team sport, and Steve remained a loner—at least with kids his own age.

Fortunately, he did make a friend—Bill Fernandez. He was also a bit of a loner and older than Steve, but in the same class at Cupertino Junior High. He too was uninterested in sports. His garage, like many in this neighborhood, was a well-stocked electronic workshop. Bill's house was on Steve's route home from school and was a frequent after-school stopping place for him.

With their shared interest in electronics, Steve and Bill became close friends. On one occasion, Bill introduced Steve to a family that lived across the street from the Fernandez family—the Wozniaks. Jerry Wozniak had been teaching Bill what he knew about electronics. Jerry shared his technical knowledge with not only his own children but other interested children in the neighborhood. That was a common practice of engineers in the Los Altos area.

Bill told Steve about Jerry's oldest son, an electrical and electronics whiz kid who was also named Steve. Eighteen-year-old Steve Wozniak was born in 1950, five years before Steve Jobs. "Woz," as he was known, was already deeply involved in electronics; he'd been making drawings of computer designs for a while and hung out at the Stanford University library poring over technical books.

Woz recalled their meeting: "I remember Steve and I just sat on the sidewalk in front of Bill's house for the longest time, just sharing stories—mostly about pranks we'd pulled, and also what kind of electronic designs we'd done. It felt like we had so much in common. Typically, it was really hard for me to explain to people the kind of design stuff I worked on, but Steve got it right away. And I like

him. He was kind of skinny and wiry and full of energy.”

~~Bill and Steve were more involved in projects such as working with lasers and bouncing their beams off mirrors. They enjoyed watching the mirrors reflect those beams of light onto the walls.~~

Steve continued to attend Hewlett-Packard's Explorer Club on Tuesday nights. At one point, when he was about twelve or thirteen, he decided he wanted to build a frequency counter, a device that would track how often a certain electrical frequency occurred in a circuit. But Steve discovered as he was building that he needed some very specific parts.

What he did next was nerdy, bold, ingenious, and for Steve, perfectly logical and reasonable: he picked up the phone and called Bill Hewlett—he was listed in the Palo Alto phone book. He answered the phone and he was real nice. He chatted with me for twenty minutes. He didn't know me at all, but he ended up giving me some parts, and he got me a job that summer working at Hewlett-Packard on the line, assembling frequency counters. Assembling may be too strong. I was putting in screws. It didn't matter; I was in heaven.”

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# HIGHER EDUCATION

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STEVE STARTED AT HOMESTEAD HIGH school in 1968. It was a time of major social, cultural, and political change in the United States: Civil rights leader Martin Luther King Jr. was assassinated in April, and two months later presidential candidate (and brother of the late president John F. Kennedy) Robert F. Kennedy met the same fate; thought-provoking films like Stanley Kubrick's *2001: A Space Odyssey* and the Beatles' *Yellow Submarine* played in movie theaters, while irreverent shows such as *Rowan & Martin's Laugh-In* and *The Smothers Brothers Comedy Hour* were on network television. Top songs were the Beatles' "Hey Jude" and Simon and Garfunkel's "Mrs. Robinson," and the war in Vietnam, which was costing American troops casualties and deaths, touched everyone's life and led to increasingly vocal public criticism. Antiwar protest groups were organized on college campuses and high schools.

Along with these events, young people were exploring new ways of thinking about life and the world around them. A generation gap between parents and their children was emerging, as kids began questioning what their parents and the established society believed.

San Francisco became a destination for free-thinking young people (some called themselves "hippies") who were part of this counterculture.

For Steve, following one's dream (or doing one's own thing) wasn't considered quite so weird anymore. And in this community, filled with so many technical businesses, being caught up in electronics wasn't considered so weird anymore either.

At Homestead High, there was a popular class for just such "wireheads" (as these dedicated electronic fans like Steve were called): John McCollum's Electronics 1 course. McCollum had been Steve Wozniak's teacher, and Woz encouraged Bill and Steve to take the class together. McCollum was a former navy pilot who was probably accustomed to having his students follow his strict rules.

In his class, Steve may have felt that sense of the unbending authority figure coming back into his life. Despite the fact that he could have benefitted from the knowledge McCollum provided, he wasn't happy, and McCollum didn't seem happy with Steve, either. He later said, "He kind of faded into the background. He was usually off in a corner doing something on his own and really didn't want to have much of anything to do with either me or the rest of the class."

By the end of his sophomore year, Steve decided not to take McCollum's course the next year. He was becoming more interested in his classes in literature. He spent time reading poetry, listening to music, seeing movies, and paying more attention to girls. "I discovered Shakespeare, Dylan Thomas, and all that classic stuff. I read *Moby-Dick* and went back as a junior taking creative-writing classes."

During that school year, once again, Steve took advantage of his neighborhood to make things happen for himself. This time it was in the form of Haltek, a huge electronics supply store in Mountain View. Haltek bought much of their inventory from the discontinued or excess parts sold off by the many local technical companies. Wireheads combed the store to find just the right piece or parts needed to create their own electronic devices. (Bill Fernandez and Woz were frequent customers who searched the store's bins and aisles.) For anyone into electronics, Haltek must have been like the best toy and

candy stores wrapped into one and under one roof.

~~Steve loved spending time there. “Over time, Steve came to learn what all the parts were used for, how much they cost, and how to recognize good quality.”~~ On his own time, he would buy parts for a low price and sell them for a higher one, which echoed his own father’s passion for fixing up old cars and then selling them for a profit.

In Steve’s determined way, he convinced the people managing Haltek that they should hire him to work on weekends, which he did, starting in his sophomore year. Bill was now helping Woz build a computer (they called it the “Cream Soda Computer” because they drank Craigmont cream soda while they worked on it), so they made frequent trips to Haltek.

Steve was intrigued, not only by the computer Woz was building but also by Woz himself. “He was the first person I met who knew more electronics than I did.”

Besides their passion for electronics, the two Steves had a lot in common. Both were considered outsiders. They were extremely bright and interested in subjects that many people didn’t have the patience to understand. They both liked music. Steve was a Beatles fan. And thanks to Woz, he came to share Woz’s passion for anything relating to Bob Dylan—his lyrics, his songs, his unique singing style, and his way of thinking: “Steve and I were into listening to Bob Dylan and his lyrics, trying to figure out who was better, Dylan or the Beatles. We both favored Dylan because the songs were about life and living and values in life and what was really important. . . . To us, Dylan’s songs struck a moral chord.” And best of all, Steve discovered that Woz had the same inclination to be a serious prankster.

When Woz was about ten or eleven, he figured out how to connect his house to his friend’s nearby with an intercom system created with simple wiring and switches. Without either set of parents knowing, the boys could call each other up and plan late-night activities. They’d sneak out of their bedroom windows to ride their bikes or even decorate a neighborhood girl’s house with toilet paper.

One prank landed Woz in the custody of the police. He had built a metronome, a device that marks time with an adjustable regular ticking noise. It allows musicians to keep time with the music. But Woz realized it sounded like a ticking *bomb*. He took it to school and placed it inside the locker of a boy whose combination he knew. When a teacher heard the ticking, he opened the locker and bravely ran out to the football field, where he “disarmed” what he thought was a deadly device. The police were called, and Woz spent one night in juvenile detention. Woz’s aptitude and talent for pranks made Steve feel that he’d met a like-minded person.

In 1971 Woz read an article in *Esquire* magazine, “Secrets of the Little Blue Box.” It discussed the current fad among some electronic wizards, who were creating and using an electronic device to “trick” the phone company into making free long-distance calls. This brand of techies were called “phone phreaks.” Today’s computer hackers and phone phreaks require similar traits—a willingness to take risks (hacking and phone phreaking are both illegal), and expert technical skills.

Woz’s earlier intercom wiring was similar to telephone wiring. When he read the article, he realized he wasn’t alone in seriously fooling around with electronics. “These people were able to figure out that . . . they could make telephone calls within the Bell phone system for free.”

Woz was fired up. He told Steve about the article, and they headed to the Stanford University library, where they found a manual detailing exactly how the phone system worked. After careful planning, Woz began to build a Blue Box. For years he had been designing and drawing prototypes of devices he wished he could build. Now was his chance.

When Woz told Steve about his plan to build a Blue Box, Steve realized they could sell the device—something that had never occurred to Woz. Woz simply wanted to build his own Blue Box and have fun making free calls (mainly to Dial-a-Joke lines) around the world.

Once, Woz *really* expanded his reach and actually called the Vatican in Rome. Pretending to be the Secretary of State Henry Kissinger, he used a phony accent (Kissinger was born in Germany) and asked to speak to the pope. The pope was sleeping, but Woz requested a return call when he awoke!

Steve kept telling Woz of the financial potential of these Blue Boxes. He encouraged Woz to make more of them so they could create a business and sell them. They knew the device cheated the phone company and was illegal, but they went ahead anyway. It was risky, but they hoped their prior pranks would give them the skills they needed to avoid detection.

At the time, Woz was attending the University of California, Berkeley, about forty miles from Los Altos. Steve's car—paid for by earnings saved from Haltek—was essential for getting the two together. They spent hours in Woz's dorm room designing these boxes. They also concocted what they felt was a surefire plan to sell the illegal devices: "We'd knock on a [dorm room] door . . . and ask for someone nonexistent." They claimed that person had wanted a Blue Box. Then they'd describe what the Blue Box could do, and if the student didn't express any interest, they'd leave. But if the student did show an interest, the two Steves knew they had a possible customer—and most likely someone who wouldn't run them out.

As for the pricing, that's where Steve's skills at Haltek came in. They bought parts at the lowest possible price and could assemble a box for forty dollars. Steve decided that the price should be one hundred fifty dollars. Over the next year, they actually made some money. But one time, when Steve's car broke down and the police pulled over to help them, the Blue Box posed a real problem. The police questioned them, and the two Steves talked themselves out of a possibly serious legal situation by convincing the police that the Blue Box was actually an electronic music synthesizer. That incident, coupled with a few more risky deals, brought this particular business partnership to an end.

Selling Blue Boxes wasn't Steve's only interest. He was spending less and less time attending Reed Homestead and taking classes at nearby Stanford University. And he had a girlfriend, Chrisann.

When his car worked, he'd drive to the fully flowered "hippie" section in nearby San Francisco to hear the Beat poets. Steve, like Woz and many other young men at this time, had long hair. He wore worn blue jeans that Chrisann described as having more rips than pants.

A book from that time that held deep meaning for Steve was *The Whole Earth Catalog*, which complemented and expanded Steve's own philosophies. Originally published in 1968, the catalog's creator, Stewart Brand, believed that people needed to take control of their own lives, their own education, and their environment. But instead of living a far simpler life, Brand felt people should embrace modern technology, especially computers. The information he provided was far-ranging, from his personal philosophy to discussions of well-made products that would simplify and empower people's lives.

In 1972 Steve was ready for college. If he chose one of the state colleges or universities close to home, it would have meant less of a financial burden for Paul and Clara. However, he had known some older kids who attended Reed, an expensive liberal arts college in Portland, Oregon, more than six hundred miles away. After a visit to the school, he had decided that Reed was the only college he wanted to go to. The financial obligation on his parents had to have been enormous—but Paula and Clara had made a commitment seventeen years ago. Steve was prepared to leave California and Chrisann behind. The family piled into the car and drove the almost twelve-hour trip to Reed College—Steve's new base.

When Steve left for college, he joined many people his age who used those years to explore: new ways of thinking, new ways of living, new ways of viewing the world and their place in it. The only problem? He wasn't doing that exploring in his scheduled classes. His grades were poor, and his parents

were very upset with him. They urged him to apply himself, but instead, right before Christmas . . .

~~“After six months, I couldn’t see the value in it. I had no idea what I wanted to do with my life and no idea how college was going to help me figure it out. And here I was spending all of the money my parents had saved their entire life. So I decided to drop out and trust that it would all work out okay. It was pretty scary at the time.”~~

However, he didn’t leave Portland or Reed. He was determined to let his education continue—in any way possible. He’d made two strong friendships at Reed: Dan Kottke and an older student, Robert Friedland. Instead of renting a dorm room or a local apartment, Steve either camped out in his friends’ dorms or found empty dorm rooms that had been vacated by other dropouts. When he’d exhausted those free sleeping arrangements, Steve worked odd jobs so he could rent a cheap room close to Reed’s campus.

Now all he needed was money for food. Food and diet were other areas Steve explored. He read many books on different theories of diets and how each affected one’s body. He was eager to experiment with whichever diet he was studying at the time. He stuck to very specific foods—like eating a diet only of fruit. On some occasions, he decided to fast and not eat for hours, or even for days—all as a way, in his mind, to find a better, healthier lifestyle.

Steve subscribed to the belief that if he ate very specific foods, he wouldn’t sweat or have body odor. No body odor meant he could eliminate the need to shower. It wasn’t a theory that worked: His body odor was evident to Dan’s girlfriend, Elizabeth Holmes.

Body odor or not, he and Dan became close friends. They were both bright, considered outsiders in their hometowns, and they were exploring life’s meaning together. Since money was tight for Steve, he and Dan would walk or get a ride to a totally different section of Portland on Sunday nights, several miles from Reed. There, at a Hare Krishna temple, any and all comers were served free and strictly vegetarian dishes. When he wasn’t fasting, or eating at the temple, Steve’s diet consisted of oatmeal and milk from the Reed cafeteria. It was around this time that Steve became a vegetarian, a diet he was to follow for the rest of his life.

Steve and Dan were both close friends of Robert Friedland, who walked around campus wearing a style of dress more commonly seen in India—long, draping cloth robes. He spoke often of his trip to India, his studies of Zen Buddhism, his Indian guru (or spiritual teacher), and how it all influenced his life. Robert’s experiences, conversations, and ideas lit a fire for Steve and Dan. India had to be the next destination.

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# CALLIGRAPHY + ZEN BUDDHISM + ATARI

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STEVE'S INTERESTS AT REED AND in Portland were varied and widespread. Diets, Zen Buddhism and traveling to India were not all that he thought about: "Throughout the [Reed College] campus every poster, every label on every drawer was beautifully hand-calligraphed. Because I had dropped out and didn't have to take the normal classes, I decided to take a calligraphy class to learn how to do this."

The word "calligraphy" (from Greek) combines two words: "beauty" and "write." It is the art of writing by hand with pen or brush in a beautiful and distinctive style.

The calligraphy program at Reed was started in 1949 by Lloyd Reynolds, a freethinking, philosophical, self-taught, highly popular professor. In his calligraphy class, Reynolds constantly made connections between the art of beautiful writing and the works of great artists like Michelangelo; he also related calligraphy to the beliefs of Zen Buddhism.

When Steve dropped in on this course, Reynolds had already taken a leave of absence from Reed. However, he'd carefully selected his replacement: a talented, like-minded calligraphy teacher, Friedland. Robert Palladino. This former monk, who had once taken an eighteen-year vow of silence, was Steve's teacher. Palladino described his teaching style: "We would concentrate on one style of writing at a time. I would lecture not only on that particular style of writing, but what was going on in the world at the time that conditioned the kind of art that evolved. All those things are very important." Palladino also gave his definition of his cherished art. "Calligraphy is graphic music moving with rhythmic gesture across a field of silent space which surrounds it."

In the class, Steve "learned about serif and sans serif typefaces, about varying the amount of space between different letter combinations, about what makes great typography great. It was beautiful, historical, artistically subtle in a way that science can't capture, and I found it fascinating."

It's no wonder that this inspired instructor with his spiritual linking of life and letters made a strong impression on Steve. The concept of beautiful details making graphic music was the kind of nonconformist or "outside the box" thinking that captured Steve's imagination.

This class proved to be a significant experience for Steve. Remember, he had been taught by his father to pay close attention to the tiniest of details, as it was those very details that made one's creation something truly valuable. The beauty of lettering with swirls, lines, and perfectly planned spacing spoke to Steve in a very profound way (and today can be seen in the lettering on Apple's signs, ads, products, and packaging).

Besides the classes Steve audited, his friendships with Dan and Robert continued to be meaningful influences as well. Friedland was often found on a relative's thirty-five-acre farm in nearby rural Oregon. Named the All-One Farm, it had a large apple orchard. Friedland helped to maintain the farm with a group of friends. Steve and Dan visited frequently and would pitch in, tending to the orchard on the property.

When not working the farm, they listened to Friedland sing the praises of his guru, Neem Karoli Baba, and of India. Friedland boasted that with the teachings of this guru and a trip to India, one could find the answers to the meaning of life. Steve felt that if he wanted to learn and discover more about

himself, including his spiritual side, he would need to travel to India. Dan felt this same pull as well. Steve and Dan now had a common goal, but it was a goal that would have to wait. Neither one had the money to travel halfway around the world.

Steve continued to drop in only on the classes that interested him (even a modern dance class, whose choreographed moves he felt compared to the movement of objects in computer video games). But he was getting tired of finding places to sleep and food to eat, and scraping by with very limited money. After eighteen months of living hand to mouth, he decided to head home and live with his parents. He knew he needed a job, especially because going to India was now his primary goal and a costly one.

Steve moved back home to Los Altos in 1974. In those days, the best place to hunt for a job was looking through want ads in newspapers. One that caught his eye said, "Have fun and make money. What could be better? But would he get the job? That uncertainty never crossed his mind. When he showed up at the address listed, Steve was just as forward and persistent as he had been when he called Bill Hewlett years earlier. The office he entered was a two-year-old video game company called Atari. He was hired that same day.

The man who hired him, Al Alcorn, had developed the video game Pong, which was a huge success for Atari. Years later, Alcorn recalled the day Steve applied. "One day the personnel director came by and said, 'We've got this weird guy here. He says he won't leave until we hire him. We either call the cops or we take him.'" Alcorn went on, "He [Steve] was determined to have the job, and there was some spark, some inner energy, an attitude that he was going to get it done." Alcorn assigned Steve to work with one particular employee, who complained, "What are you giving me this guy for? He has Bob and he's different, a . . . hippie."

Alcorn sensed Steve's abilities and drive and wanted him to stay. Atari was a fast-growing company and they needed a "hippie whiz kid" like Steve. He was asked to work at night with one other person. Steve worked hard and saved money for his trip. But then he thought, why not have Atari make the trip happen? Steve asked Alcorn to pay his way to India so Steve could see his guru. Alcorn thought the idea ridiculous, but he came up with a plan that would help them both: Technicians in Germany were having problems with Atari equipment that he thought Steve could fix. He agreed to send Steve to Germany, where he'd work, earn some money, and then take a leave of absence to travel to India.

Steve accepted Alcorn's offer and called Dan Kottke. After Steve's work was done in Germany, the two planned to meet in India, where they'd first see Robert's guru and then explore the country together.

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For many generations India had been a place to discover "inner peace." In the late 1960s and early 1970s, it was a popular destination for people seeking "enlightenment." They would often stay in ashrams, centers of spiritual learning that offered meditation, yoga, and other teachings—all paths to personal transformation. Adding to India's allure for westerners was the Beatles' pilgrimage to Rishikesh, in February of 1968, to study transcendental meditation with Maharishi Mahesh Yogi.

Steve arrived in New Delhi, India's capital, a few weeks ahead of Dan. In 1974 India had the second largest population in the world: six hundred million people. To understand just what Steve may have seen when he came to New Delhi that summer, picture a huge city at night—semidark streets, thronged with people, honking cars, bikes and scooters, all moving aside for the many wandering sacred cows that freely roamed the city.

For all its historical and cultural attractions, this capital city was also overcrowded—lacking enough

jobs, homes, and food for its millions of residents. There were signs of poverty all over: in buildings that needed repair, in the garbage-strewn streets, and in the eyes of those who had no home at all. One could see it in their worn, threadbare clothing, their bare feet, and their outstretched hands, asking for some little bit of food to eat.

Steve had worn ripped jeans as a teenager and went barefoot by choice. He had gone for days without food by choice. Now he was witnessing many who wore torn clothing and no shoes and who went hungry because they had no choice.

While he waited for Dan's arrival, he decided to take a trip north of New Delhi, following the Ganges, India's most sacred river. This 1,569-mile-long river springs from the Himalayas, then ribboned its way south and empties into the Bay of Bengal in the east.

Hinduism is the dominant religion of India, and many of its followers regard the Ganges as sacred. Its waters are thought to rid people of any sins or sickness. It is a place to bath, to wash one's clothes, and also a place to seek comfort when ill or near death. Families bring their dead to this river.

As Steve walked along the Ganges's banks, he saw small, giggling children brushing their teeth and splashing joyfully, people his age beating clothes clean along the river's edge, and the sick and dying. The effect these observations had on him was profound. He was, after all, someone who thought deeply and carefully. Knowing that in the course of one minute, one easily sees all phases of life in India, his experiences must have been at the same time heart warming, heart-wrenching, and heart-stopping.

One heart-wrenching experience came when Steve and Dan discovered that the very guru (Neem Karoli Baba) they had come so far to see had died the previous fall. Despite the disappointment, they found a spot in India where they stayed for a month: reading, thinking, meditating, and walking in the nearby villages. But it was summer, and summer in India is brutally hot.

Eventually they heard of another guru. Since meeting a guru had been their mission, they decided to walk the many miles to his village. The road was a narrow, rock-strewn, difficult path to climb. Their feet were rubbed raw, even though they wore sandals. Their cotton clothing didn't block out the sun's rays beating down on them. When they finally reached the guru, they found him uninspiring. His answers to their questions didn't show any thought, intelligence, or depth. As they left the guru's village, it grew dark and the skies opened up with a driving rain—they could see only when lightning lit up the sky. Scared, tired, and sick from dysentery, they knew it was time to leave India.

When recalling that trip, Steve said, "We weren't going to find a place where we could go for a month to be enlightened. It was one of the first times I started thinking that maybe Thomas Edison did a lot more to improve the world than Karl Marx and Neem Karoli Baba put together."

What did he mean? Thomas Edison is known for inventing the lightbulb and the phonograph—two inventions that positively altered people's lives and well-being all over the world. Neem Karoli Baba was a spiritual teacher and thinker who imparted wisdom to his followers. Karl Marx, a German philosopher and intellectual, wrote about social and economic issues in the mid-1800s. Steve's point was that Edison actually "made" something as his way of contributing to the world. The other two men, important as they were, produced thoughts, not things.

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After returning from India, Steve's quest for self-discovery continued closer to home. The tenets and practices of Hinduism (including karma) and Zen Buddhism (seeking enlightenment through meditation, which he had already been doing in Portland and in India) influenced his thinking more

than ever. He decided to find his own guru.

~~While searching, Steve bounced between California and the All-One Farm in Oregon. At the farm he rigged up a vast electrical system in one of the barns to create a workplace where they could make and then sell wood-burning stoves, a style of stove recommended in the 1971 *Whole Earth Catalog*. When Robert saw what Steve had accomplished, he was amazed; he hadn't realized that Steve was capable of this sort of technical work. They were close friends, and yet Steve had never shared his expertise in and passion for electronics with Robert.~~

In California, Steve found a Zen teacher and center right in Los Altos. Kobun Chino Otogawa was in charge at the Haiku Zen Center. Steve began spending more and more time with Kobun, both at the center and at Kobun's house. He also accompanied Kobun on meditation retreats at a Zen Buddhist monastery in California—Kobun was the teacher, and Steve drank in the knowledge that he offered.

For the rest of his life, Steve felt meditating was of utmost importance. Through the practice of meditation—once he soothed his fast-thinking mind and his ever-moving body—he found he was able to achieve an inner sense of calm. It was then that he felt he could notice things more clearly. Essential inner truths and paths he should choose in life were finally able to emerge.

Two major issues surfaced for Steve at this time. The first, since he was still trying to discover just who he was, focused on finding who his biological parents were. His own personality quirks could be explained if he knew more about them. But then, not wanting to appear disloyal to his parents, Paul and Clara, he dismissed the idea of tracking them down.

The second was when Steve asked Kobun Chino Otogawa whether he should go to Japan and enter a monastery. Kobun advised Steve that he could be in touch with his spirituality *and* still work in the business world. Had Kobun Chino Otogawa picked up on Steve's great desire to create something new as Edison had done? What did Steve want to create?

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# SEEDS OF APPLE

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STEVE WAS TWENTY YEARS OLD at the start of 1975. Whatever creative path he planned to take, he knew he needed a job. He returned to one place where he'd worked before—Atari.

As someone who always operated on his own terms, Steve headed to Atari's offices dressed as he chose. It never occurred to him to comb his hair, put on shoes, and wear a clean shirt. He entered the offices dressed as if he were an Indian wise man, barefoot and in a flowing orange robe. The company welcomed Steve back, not surprised by his attire.

Steve also reconnected with Woz, who since 1973 had been working at Hewlett-Packard, his dream job as an engineer now a reality. While Steve had been off in India, Woz also continued doing what he loved: designing various electronic projects and trying to build his own computer. He'd figured out a way to hook up an inexpensive TV to his computer to serve as a monitor. He also attached a cheap typewriter keyboard so that information could be easily entered. Woz's main objective: build an *affordable* computer with a minimum number of parts but one that could do a maximum number of things. With other computers of that era, the only way to enter data was to use the front panel switches, turning them off or on in a particular pattern. It was a considerable nuisance.

While Woz was immersed in Hewlett-Packard and his after-hours interests, Steve approached him to do freelance work at Atari. Steve was working on a new video game called Breakout, which Atari founder, Nolan Bushnell, had designed. It was like Pong, but it required the player to "break out" of a brick wall.

Woz agreed to help, but since he was employed at Hewlett-Packard during the day, he toiled alongside Steve at night. Added to that pressure was that they had only *four days* to complete the project and had to use as few silicon chips as possible. Woz worked tirelessly designing, while Steve concentrated on wiring and installing the chips needed for the game. (They finished the job, but Woz recalled, "Steve and I both ended up with mononucleosis.") As they worked, they talked: Steve told Woz that Atari wanted to eventually use the newly created microprocessors in their video games.

In 1974 the computer world was overflowing with new developments and breakthroughs that would forever change the landscape. One of the most significant came in the summer of 1974, when Intel's creation of the microprocessor was announced. Microprocessors allowed computers to grow in speed and capability but shrink in size. This small and powerful chip was "command central" for a computer. And it meant home computing was more of a possibility than ever before.

Woz wasn't 100 percent sure what microprocessors were capable of. But he did know that a microprocessor was like having a tiny computer *inside* a game—and the potential capabilities of this excitement inspired him.

The rest of the world was not particularly interested in the world of computers. The average person didn't know—and didn't care—that any of this was happening. Even the companies that made the tremendous mainframe computers firmly believed that business and industry were the only markets for these smaller machines and doubted that people would actually ever want a computer in their home.

But the wireheads living in Silicon Valley believed otherwise.

With all the recent technological advances, a group of California-based computer enthusiasts formed a club to share and trade ideas with other hobbyists and engineers who dreamed of building their own computers. They called themselves the Homebrew Computer Club and had their first meeting in March 1975 at the Menlo Park garage of Gordon French.

What started with thirty members soon grew to several hundred attendees, who now met at the auditorium of the Stanford Linear Accelerator Center in Menlo Park.

Some hobbyists were simply interested in the field and the new developments. At meetings, they discussed the newly formed companies that were actually making home computers (these machines didn't have many functions, unless they were add-ons purchased separately), which were still too expensive for the average person.

Steve wasn't as initially enthralled as Woz was with Homebrew. From the start, Woz fit in and shared the same goals: "We thought low-cost computers would empower people to do things they never could before. . . . In this, we were revolutionaries. . . . How people lived and communicated was going to be changed by us, changed forever, changed more than anyone could predict exactly. . . . As I said, almost all of the large computer companies were on record saying that what we were doing was insignificant. It turned out they were wrong and we were right—right all the way. But back then, even we had no idea how right we were and how huge it would become."

Two months earlier, in January 1975, a home computer called Altair had been introduced.

Jobs said of the event, "It was so amazing to all of us that somebody had actually come up with a way to build a computer you could own yourself. That had never been possible. . . . But now, for the first time, you could actually buy a computer. The Altair was a kit that came out around 1975 and sold for less than four hundred dollars."

People could buy the computer assembled or in a kit. While the company sold far more than they ever imagined, even the Homebrew members felt that the Altair left a lot to be desired. The Altair was a computer in a metal box. On the front were switches and lights. Monitor? Keyboard? Memory capabilities? These small computers had none of those features.

However, all these computer breakthroughs gave Steve an idea for the path he wanted to take. All he had to do was convince Woz. Why Woz? For Steve, Woz was a logical and clever choice to be his partner. Both Steves had the same goal—creating an inexpensive computer for the average person. And Steve thought of people like Woz, the ever-growing members of the Homebrew Computer Club and devoted *Whole Earth Catalog* readers. He saw a way to give all of them exactly what they wanted.

Steve also realized that these techies had little time or money to design and build their own computers. But if they could buy a *predesigned* and printed circuit board—the board that held all the internal components of a computer—they could eliminate a time-consuming first step.

Woz's beautifully designed circuit boards would be an easy sell.

Steve knew that Woz was a perfectionist who slaved over making the labor-intensive wire circuit boards so compact and as efficient as possible. He soldered the wires instead of wire-wrapping his boards so that no unsightly wires stuck out. Going into business to print and sell Woz's circuit boards had to be the next right step.

During January and February of 1976, Steve kept talking to Woz about the idea of starting a business. He assured Woz that he could still work at his beloved Hewlett-Packard, and Steve would continue to come and go at Atari. He told Woz that they could do this business on the side. The very shy Woz was concerned about selling the product himself, but Steve would make the necessary phone calls and sales calls and they'd split the profits fifty-fifty.

One day, as they zipped along Route 85 in Steve's VW van, Steve knew just how to approach his

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