



STEVEN P. JOBS

1955–2011

Elected in 1997

*“For contributions to creation and development
of the personal computer industry.”*

SUBMITTED BY THE NAE HOME SECRETARY

STEVEN PAUL JOBS was born February 24, 1955, and died October 5, 2011, at age 56, his life cut short by pancreatic cancer. Only a handful of National Academy of Engineering members have had so much written about them or been so well known to the general public. His life was portrayed in a biography by Walter Isaacson published in 2011 and dramatized in a 2015 movie, both titled *Steve Jobs*, and he has an extensive Wikipedia page, all of which were sources for this piece. It may seem unnecessary to write yet another account of his life, except to acknowledge in this space that he was, in fact, a member of the NAE, elected in 1997.

He had no formal training as an engineer but tinkered with his father on electronics, took an electronics course in high school, read a lot about science and technology, had some early hands-on experience as a technician at both Hewlett-Packard and Atari, and helped Steve Wozniak create and sell a “blue box” to spoof the phone system to allow free long-distance calls. All of this gave him some feel for the technology creation and commercialization processes before he and Wozniak launched Apple in 1976, establishing themselves as pioneers in the personal computer revolution.

Steven Jobs was born to Joanne Schieble, an unmarried mother who put him up for adoption. His original adoptive

parents, acceptable to his mother, backed out and he was adopted by Paul and Clara Jobs. His birth mother was not happy with their selection and launched a protracted lawsuit to have him returned, before eventually relenting. According to his biography, this was an origin story that continually troubled Jobs and may have contributed to his relentless drive to succeed. He was loyal to his adoptive parents and considered them his true parents. He eventually learned from his birth mother that she and his father had subsequently married for a time and had a daughter, named Mona Simpson, who became a successful novelist. Jobs eventually met her and they remained close until his death. He chose not to meet his biological father.

Jobs grew up in Mountain View and Los Altos, California. He attended Homestead High in Cupertino, where he nurtured an interest in electronics and his classmate and friend, Bill Fernandez, introduced him to Fernandez's neighbor, Wozniak. After graduation Jobs attended Reed College in 1972, but dropped out the same year in the belief that it was a waste of his parents' money.

In a series of steps one would not necessarily recommend as training for a future industry titan, he dabbled in hallucinogenic drugs, made an extended pilgrimage to India, lived in a commune in Oregon, and acquired both a lifelong appreciation for Zen Buddhism and a lifelong interest in strict dietary regimens, so much so that he opted for dietary control instead of surgery when confronted later with a cancer diagnosis.

The legend of Steve Jobs began in 1976 when he and Wozniak launched Apple in the garage of his parents' Los Altos home. Their first offering was the Apple I, of which only 200 were sold. This was followed by the Apple II in April 1977, featuring high-resolution color graphics, ample memory, and eight expansion slots. It was one of the first commercially successful microcomputers.

Over the next few years, as Apple was sustained by the great success of the Apple II, the company developed the Lisa and Macintosh computers. The Lisa was not a commercial success and was discontinued in less than 2 years. Steve led the

development of the Macintosh computer, which, introduced in January 1984, was the first easy-to-use, affordable personal computer featuring a graphical user interface. The Macintosh was successful in the education market and pioneered new markets like desktop publishing, but was hampered at launch by an initial lack of applications.

By 1985 Apple was faltering and Jobs and CEO John Sculley, whom Jobs had brought to Apple as CEO, were in bitter disagreement about the company's future direction. Sculley favored the open architecture of the Apple II, whereas Jobs favored the complete control of a closed architecture. The Apple Board chose Sculley over Jobs, who left the company he and Wozniak had created, setting the stage for what would be one of the greatest comebacks in business history.

Following his resignation from Apple, Jobs founded NeXT Inc., which created a workstation aimed at the higher education market. The NeXT workstation was introduced in 1988 but was expensive, and after having sold only 50,000 machines, in 1993 NeXT transitioned to become a software company. This would appear to be yet another setback for Jobs, but the NeXT operating software was a modern UNIX-based system that would be his leverage to return to Apple, where it became the foundation of most of Apple's products. In 1996 NeXT introduced WebObjects for web application development; it was subsequently used to build and run the Apple Store and iTunes Store.

At the same time he was developing NeXT, in 1986 Jobs acquired the graphics group of Lucasfilm for \$10 million, \$5 million for company capital and \$5 million for technology rights. His original interest was in the computer system that the group had developed, but he eventually embraced the artistry of the animated films that the company, renamed Pixar, would produce. Beginning with *Toy Story* in 1995, Pixar created a series of commercially successful films, distributed in partnership with Disney, several of which won Motion Picture Academy Awards. Even as he was reviving Apple, Jobs continued his involvement with Pixar, culminating in January 2006 when he sold it to Disney for \$7.4 billion in Disney stock.

In December 1996, flirting with bankruptcy and with a sense of desperation, Apple announced plans to buy NeXT for \$427 million, basically to get NeXT's technology, most notably NeXTSTEP, which evolved into the operating system Mac OS X. The deal was finalized in February 1997 and on September 16 Jobs was named interim chief executive ("interim" at his insistence). He became permanent CEO in 2000.

Just keeping Apple alive probably would have cemented Jobs' legacy, but, under his guidance, the company increased sales significantly with the introduction of the very successful iMac, characterized as unlike any personal computer that came before, and other highly successful new products, which restored Apple to the legendary status of its earliest days. With the releases of the iPod portable music player, iTunes digital music software, and the iTunes Store, the company made forays into consumer electronics and music distribution, spectacularly leveraging its computer expertise to break loose from the confines of being "just" a computer company.

The iPhone, introduced January 9, 2007, and released June 29, was described as "revolutionary." Started in 2004 with a team led by Scott Forstall, Tony Fadell, and Jony Ive, the iPhone was unlike any other phone or smartphone in existence, with a touchscreen and no keyboard. It defined the design and form factor for all smartphones to come, and changed the meaning and use of the smartphone from a business object into an essential personal one. More than 2.2 billion iPhones have been sold. The iPad was introduced January 27, 2010, and by April 2015 more than 250 million had been sold.

Jobs was skilled at orchestrating technological innovation, product design, marketing, and entrepreneurship. He had an eye for talented individuals and was deeply indebted to those who provided critical contributions to his success, including Wozniak for the original Apple designs, John Lasseter and Ed Catmull for animation creativity at Pixar, Joanna Hoffman for product marketing, Avie Tevanian for software management, Jony Ive for product design, Tim Cook for his overall leadership, manufacturing, and supply chain management, and many others, even occasionally his rival Bill Gates (NAE

1996). But it was Jobs' incredible creativity, passion, foresight, and tenacity that pulled it all together.

While the biography and the movie celebrate his accomplishments, an underlying theme in both was that Steve Jobs was not an easy man to work with or for. He believed that a company could excel only if it was populated by "A" players and he was apparently completely unforgiving of what he saw as less than an A performance. He always had a vision of what he wanted, and it sometimes flew in the face of what experienced people around him thought possible. His ultimate success is undeniable, but its toll in human terms for the Apple staff is unknown.

Jobs didn't just run companies, he created the canvas on which engineers could create masterpieces, which is an apt description of many Apple products launched by Jobs. He had avid interests in technology, literature, and music (especially Bob Dylan), and said he wanted to operate at "the intersection of humanities and science," which likely contributed to his success in making products that were so user-friendly and eagerly adopted by consumers who never knew they needed them. This is not to say that every product Jobs touched turned to gold, but many did, eventually making Apple the most valuable company in the world.

In October 2003 Jobs was diagnosed with pancreatic cancer and his health and ability to lead Apple waxed and waned from then on. He underwent a liver transplant in April 2009, but succumbed to the disease 2½ years later. He is survived by his wife Laurene Powell, whom he married in March 1991; their son Reed and daughters Erin and Eve; and his daughter Lisa from an earlier relationship.