

ELON MUSK

Tesla, SpaceX, and the Quest for a Fantastic Future

ASHLEE VANCE

ASHLEE VANCE is a technology writer. He spent several years writing about Silicon Valley and technology for the *New York Times*, *The Register* and *The Economist*. He then went to *Bloomberg Businessweek* where he has written dozens of cover stories and features. Like Elon Musk, Ashlee Vance was born in South Africa but grew up in the United States and graduated from Pomona College.

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1. The early days

Elon Reeve Musk was born in Pretoria, South Africa, on June 28, 1971. His father Errol was an engineer and serial entrepreneur and as a child, Elon would sometimes accompany his father to Zambia where Errol owned part of an emerald mine. Elon's mother, Maye, was a dietician and well-known fashion model. Elon's family expanded with the birth of his brother Kimbal and soon thereafter his sister Tosca.

Blessed with a photographic memory and a prodigious appetite for reading, Elon did well at high school although the other students didn't take well to his academic prowess. Unfortunately, his parents divorced during his teenage years and at age seventeen Musk left South Africa for Canada. His mother Maye was a Canadian citizen and Elon was able to get a Canadian passport thanks to that. He arrived in Montreal unannounced and spent about a year traveling around Canada, working odd jobs and looking up distant family members.

Eventually, Elon ended up enrolling at Queen's University in Kingston, Ontario. He chose Queen's because Elon considered it had more good-looking women than other universities. By the time his brother and sister joined him in Canada, Elon and Kimbal would get into the habit of cold-calling interesting people and asking if they would be available to meet at lunch. They got to meet all kinds of influential people that way including the head of marketing for the Toronto Blue Jays baseball team, a business writer for the *Globe* and a top executive at the Bank of Nova Scotia.

Elon Musk studied business and competed in university speaking contests with a brand of intensity and competitiveness that would become his trademark later in life. He also started selling computer parts and fully built PCs in his dorm to make some extra cash. He was beginning to excel academically and after two years at Queen's, Musk was able to transfer to the University of Pennsylvania on a scholarship. He decided to pursue an economics degree from Wharton School and a bachelor's degree in Physics.

Musk did even better at Penn. He and Adeo Ressi, his roommate, left the dorm and rented a ten-bedroom house near the campus. During the week they would

study but on the weekends, they transformed their house into a nightclub where they would charge five dollars admission for all-you-can-drink. It was not unusual for as many as five hundred students to turn up on a Friday or Saturday night – allowing Elon and Adeo to make an entire month's rent in one night. The parties became legendary around campus.

While at the University of Pennsylvania, Musk wrote a paper detailing "the power station of the future" which consisted of giant solar arrays in space transferring power to Earth via microwave. (His professor gave him a 98 for that paper). He also wrote a second paper which talked about putting all the world's information in a single database and a third which talked about the commercial potential of ultracapacitors as energy storage devices. (He got a 97 for this paper.)

"Musk's clear, concise writing is the work of a logician, moving from one point to the next with precision. What truly stood out, though, was Musk's ability to master difficult physics concepts in the midst of actual business plans. Even then, he showed an unusual knack for being able to perceive a path from a scientific advance to a for-profit enterprise."

– Ashlee Vance

Musk briefly toyed with the idea of getting into the videogame business after college but didn't feel he would be able to make much impact if he went down that path. Instead, he wanted to do something important in one of the three areas which he believed were right on the cusp of significant technology breakthroughs – the Internet, renewable energy and space. Musk vowed to pursue projects in all three areas simultaneously which most of his acquaintances viewed as crazy at the time. He wasn't so much consumed by the idea of becoming rich – instead Elon Musk wanted to make a difference in the world and believed he could.

"I really was thinking about this stuff in college. It is not some invented story after the fact. I don't want to seem like a Johnny-come-lately or that I'm chasing a fad or just being opportunistic. I'm not an investor. I like to make technologies real that I think are important for the future and useful in some sort of way."

– Elon Musk

2. Start-up

In the summer of 1994, Elon Musk and his brother Kimbal set off on a road trip across the United States driving a beat-up 1970s-vintage BMW 320i. They started at San Francisco where Elon had an intern for the summer and ended up back at Pennsylvania. Along the way, the brothers discussed all sorts of ideas including starting an online network for doctors.

Elon's internships had been with two Silicon Valley companies, Pinnacle Research Institute (which was exploring ways ultracapacitors could be used in electric and hybrid vehicles) and Rocket Science Games (who were just starting to work on moving video games from cartridges to CDs.) The fact Musk was in effect holding down two full-time internships simultaneously didn't go unnoticed, nor did his legendary ability to pull all-nighters to meet deadlines.

"He had boundless energy. Kids these days have no idea about hardware or how stuff works, but he had a PC hacker background and was not afraid to just go figure things out."

– Bruce Leak, Rocket Science Games

Musk loved what he saw in Silicon Valley and as soon as he graduated with dual degrees, he headed back to Silicon Valley to pursue a doctorate in materials sciences and physics at Stanford. Musk dropped out of Stanford after two days and talked Kimbal into moving to Silicon Valley so they could conquer the web together.

"The first inklings of a viable Internet business had come to Musk during one of his internships. A salesperson from the Yellow Pages had come into one of the start-up offices. He tried to sell the idea of an online listing to complement a regular listing a company would have in the big, fat Yellow Pages book. The salesman struggled with his pitch and clearly had little grasp of what the Internet actually was or how someone would find a business on it. The flimsy pitch got Musk thinking, and he reached out to Kimbal, talking up the idea of helping businesses get online for the first time."

– Ashlee Vance

With that, the Musk brothers decided to launch Global Link Information Network which eventually would be

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