POWER PLAY

Elon Musk, Tesla and the Bet of the Century

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Washington Post

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To my parents

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PROLOGUE

THE BEGINNING

On a breezy night in March 2016 at the Tesla design studio, Elon Musk took the stage in front of a crowd of supporters. Dressed like a James Bond villain, in a black jacket with the collar up, he was on the cusp of achieving a decade-long dream, a goal the famed entrepreneur had spent years building toward: the grand reveal of his Model 3 electric car.

The design studio—near the Los Angeles airport and in the same complex as Musk's privately held rocket company, SpaceX—was the home of Tesla's creative soul. It was a magical place, where Franz von Holzhausen, the automotive designer who contributed to the re-imagined Volkswagen Beetle and Mazda's resurgence, headed a team that put into form the ideas that Musk envisioned. Together they aspired to build revolutionary and dazzling electric cars, eschewing the techie, nerdy look favored by competitors, who had long seen such vehicles as experimental novelties.

Hundreds of customers turned out for the occasion. A Musk party wasn't to be missed; whether it was for Tesla or SpaceX, his events attracted an eclectic mix of Silicon Valley entrepreneurs, Hollywood names, loyal customers, and car enthusiasts. Until now Tesla had been a niche luxury brand—a fantasy for California environmentalists that had morphed into a whim for the rich, a must-have among those wealthy enough to have garages full of BMWs, Mercedes, and other gas-powered status symbols.

The Model 3, with its pledged starting pricing of $35,000, held

the promise of something different. It was the embodiment of Musk's ambition to bring a fully electric car to the masses. It was a gamble in the form of a four-door compact car: that Tesla could generate the sales volume and cash to take on the biggest of the big boys in the century-old automotive industry: Ford, Toyota, Volkswagen, Mercedes-Benz, BMW, and, of course, General Motors. The Model 3 would determine if Tesla was a real car company.

Musk, just a year younger than Henry Ford when the Model T was introduced 108 years earlier, stood onstage that night, greeted by the pounding bass of techno music and screams of his fans, to rewrite history. He came to usher in a new era.

It was his mission to change the world and maybe even save it (and presumably get rich while doing so) that had helped him attract a team of executives to put his vision into reality. In the crowd, those key deputies—who had been pulled from the automotive industry, tech, and venture capital (including Musk's trusted confidant, his brother, Kimbal)—reveled in the excitement.

Onstage, Musk fumbled through charts about rising CO_2 pollution as he lamented the damage done to the planet. "This is really important for the future of the world," he told the crowd to cheers.

A highly produced video gave the first glances of the Model 3. The car looked like a beacon of the future, outside and in. Sleek curves and lines encased an interior unlike anything on the market, the gauges of a typical car gone, replaced by a single large tablet-like screen in the center of the cockpit. The car zoomed along winding roads down the California coast. Again, the crowd cheered. One attendee screamed: "You did it!"

Musk commanded the stage, telling his audience that Tesla had already received more than 115,000 deposits of $1,000 each—a $115 million boost in cash to the company. Within weeks, Tesla would claim more than 500,000 reservations. It was a staggering figure: Thirty-two percent more than Toyota Motor Corp. sold that year in the U.S. of its popular family sedan archetype, the Camry. And these were reservations—people lining up two years before the car would even be produced.

The Tesla team had devised a plan to slowly start making cars, with the goal of having a few thousand ready by the end of 2017,

then boosting their capacity week by week, through 2018, until finally reaching the goal of 5,000 cars a week by the middle part of that year.

That volume—5,000 cars a week, 260,000 cars a year—was a widely held benchmark, a defining figure of what it meant to be a viable factory in the stable of a major carmaker. If Elon Musk and Tesla hit it, they could become a new force in the automotive industry.

But even that wasn't enough for Musk. He was already boasting that by 2020 he could get production at the company's single assembly factory outside Silicon Valley to 500,000 vehicles in a single year—twice as many as most car factories in the U.S.

It is hard to overstate just how crazy this would sound coming from anyone other than Elon Musk.

Automakers typically take five to seven years from the start of designing a new vehicle to delivering it to customers. It's a tedious and complex process, refined over generations of experience. Before a new car hits dealer showrooms, it's tested in the desert, the Arctic, and the mountains. Thousands of suppliers contribute to the effort, building parts with astonishing precision for vehicles that will ultimately be pieced together in factory blitzes choreographed to the second.

But for all of his startup gumption, undeniable ambition, and vision, walking off the stage that day, even with pre-orders pouring in, Musk couldn't escape the inexorable financial logic learned over a century by the likes of GM, Ford, and BMW: the process of making cars is a brutal business—and an expensive one.

And Elon Musk's books were a disaster. Tesla was burning, on average, $500 million a quarter and had only $1.4 billion free cash on hand—meaning Tesla was on track to be out of money by the end of 2016 if something drastic didn't change.

But this was all part of the confidence game he always knew he'd have to play if he were ever going to create the world's most valuable automaker. Belief created the vision; the vision would create a market; the market would create cash; and cash would create cars. He just had to do it on an unimaginable scale, and do it fast enough to stay a car's length ahead of competitors, creditors, customers, and investors betting against the company through a process called short selling that could pay handsomely if Tesla's stock plunged in value.

It was, he knew all too well, a dangerous race.
Or, in his darker moments, the ultimate game of chicken.

In June 2018, a little over two years after Musk's glitzy reveal of the Model 3, I visited him deep inside the cavernous Tesla Inc. assembly factory half an hour outside Silicon Valley. Musk looked weary. In a cubicle on the factory floor, he was dressed in a black Tesla T-shirt and jeans, his six-foot-two frame hunched over an iPhone. His Twitter account streamed taunts from short sellers; some of the world's most powerful investors were wagering against him, predicting his imminent failure. His email in-box contained new messages from a recently fired employee accusing the CEO of cutting corners and putting lives at risk.

Over his shoulder, the body shop towered: It was the greatest expression yet of Musk's vision: a mechanical beast that ate raw parts at one end and spit out cars at the other. Two stories tall, with more than a thousand robot arms anchored to the floor and hung from the ceiling, it was a gauntlet for the car skeletons it forged. Sparks flew as the robot arms swooped in to weld pieces of sheet metal to the frame. The air filled with an acrid smell. A reverberation of metal clanged like a deafening metronome.

From the body shop, the car moved to the paint shop where pearl white, midnight silver, and Tesla's iconic race-car red were applied. Then to the general assembly line where the thousand-pound batteries were added, along with all of the touches that make a car a car—the seats, the dashboard, the display.

It was at this juncture where the problems currently were, and why Musk had been sleeping alone on the factory floor. The assembly line was plagued by snags. He'd relied too much on robots to make the cars, he said. The 10,000 parts required from hundreds of suppliers had created an endless loop of complexity. Everywhere he turned, he found something working not quite right.

He apologized for his unkempt appearance—his brown hair hadn't been combed in a while and he hadn't changed his T-shirt in three days. In a few days, he'd turn forty-seven. He was a year behind schedule in cranking up production of the Model 3, the compact car that would make or break Tesla.

Musk sat at an empty desk. His pillow from a few hours' sleep rested on a chair next to him. A salad went half-eaten. A bodyguard stood nearby. The company teetered on the verge of bankruptcy.

But for all of this, he was in surprisingly good spirits. He assured me that everything would work out.

A few weeks later, he called me in a decidedly darker mood. The world was out to get him. "It's not like I desperately want this fucking role," he said. "I'm doing this because I believe in the goddamn mission, that I think that sustainable energy needs to prosper."

If it seemed like rock bottom for Elon Musk, it wasn't.

At the heart of Musk's fight and Tesla's history is a central question: Can a startup conquer one of the biggest and most entrenched industries in the global economy? The automobile changed the world. Aside from the autonomy and mobility it offered individuals, and the entire swaths of modern civilization it has helped incubate and connect, it has generated an economy unto itself. Detroit helped make the middle class, establishing wealth and stability for the communities it touched. It also became one of the nation's largest industries—creating almost $2 trillion in revenue annually in the U.S. and employing one in twenty Americans.

GM, Ford, Toyota, and BMW have grown into global icons that design, build, and sell tens of millions of vehicles each year. Those car purchases have come to represent more than just an appliance; they convey independence and status, a symbol of the American Dream and, more and more so, the Global Dream.

The downside is that as those dreams have spread throughout the world, those same cars, through their manufacture and use, have contributed to unprecedented scales of congestion, pollution, and climate change.

Enter Musk, a self-made multimillionaire by his twenties who dreamed of using his newfound wealth to change the world. His belief in electric cars was so resolute that he staked his fortune on its success, teetering on bankruptcy because of it and burning through three marriages—twice to the same woman—along the way.

It's one thing to create a social network when the incumbent is MySpace. Or to use an online platform to unlock excess inventories of

cars and apartments, to take on taxi cartels or the hotel industry. It's something else entirely to stare down some of the biggest companies in the world and to challenge them on their own turf, with something they've been learning to make—often painfully—for over a century.

It is often a narrow-margin business. The average car may only generate about $2,800 in operating profit. To get to that point, you need to achieve extraordinary scale, including the ability to keep a factory humming to the tune of 5,000 cars a week. And even if you do that, you have to be damn sure that someone's going to *buy* them all.

Any snag in production or sales can very quickly lead to disaster. Costs mount every day that a factory isn't in use, or that cars aren't moving out to dealerships, or that consumers aren't driving them home. That cash flow, from consumer to dealers to manufacturers, is the lifeblood of the automotive industry; it in turn funds the development of a company's next vehicles, something that can require massive investments and sunk costs.

GM spent a total of $13.9 billion on developing new products in 2016 and 2017. And in a business where profits can swing wildly from one year to the next (GM was $9 billion in the black in 2016; $3.9 billion in the red in 2017), it's perhaps little surprise that the biggest carmakers can't get by without hoards of cash: in 2017 GM had $20 billion in cash on hand; Ford had $26.5 billion; Toyota and VW both finished fiscal 2017 with $43 billion in their bank accounts.

So great are the barriers to entering the car business that the last major new U.S. carmaker to emerge that is still around today was Chrysler. That was in 1925. Or as Musk likes to remind people, in playing up the outrageous long shot he's taking, only two U.S. car companies have *not* gone bankrupt: Ford—and Tesla.

So you'd pretty much have to be delusional to enter such a competition; which some think Elon Musk is. But he hasn't shrunk from the challenge. Instead he has willed himself and his company to where the lofty visions of Silicon Valley meet the harsh reality of Detroit. His big idea is that in Tesla he can make electric cars really work. That they can outperform their gas-guzzling cousins; that they can out-style them; out-tech them; save customers billions of dollars a year on gasoline; and in so doing save the world from itself.

But it's a promise that at times obscures the ruthless business ambition—and imperative—under which Musk and Tesla operate. Many of us might misunderstand or underestimate Tesla's endgame. They might see the car as a toy for the green-conscious family down the block with money to burn, or for the status-inclined hedge funder with the progressive air. Or else it's the new Ferrari for the walking midlife crisis who just parked next to you at the train station.

But these niche existences? These are decidedly not what Tesla is about. And that is why the fate of the company rides on the Model 3, the electric car for the masses. As one Wall Street banker lamented years ago, "Either they become a niche manufacturer like Porsche or Maserati and make 50,000 high-end cars annually, or they crack the code on a $30,000 car that would put them on the inflection point of a large industrial."

That inflection point is the Model 3.

Musk's relentless drive to create the Model 3, and the questionable tactics he has used to get there, have unsettled competitors and industry observers alike. Unlike most automotive executives, Musk's philosophy of decision-making flows from his California ecosystem, where it's better to make a fast, wrong choice that can be undone quickly than to spend time perfecting hypotheticals. For a startup, time is money, something even truer for a new car company that has been, largely from day one, burning through millions of dollars a day.

Musk is a firm believer in the power of momentum, that one win leads to another. And as he has developed and sold successive models of electric cars that have shattered preconceptions of what electric cars can do, he has undoubtedly strung together some Ws.

His success with Tesla's early luxury models has sprung his competitors into action. The world's largest automakers in 2018 were rushing to catch up with their own electric cars, investing more than $100 billion to build and bring out 75 all-electric and plug-in hybrid vehicles by the end of 2022, according to one study. By 2025, analysts were predicting then, almost 500 new types of electric cars could be on sale, representing one in five new car sales globally.

But Musk has carved out a decided brand advantage. He has almost singlehandedly created the contemporary electric car zeitgeist. He embodies it. To many, he is it.

And that is why, in 2018, investor enthusiasm for Musk's vision

pushed the market value of Tesla higher than that of any other U.S. automaker—before having ever turned an annual profit and selling just a fraction of the cars. That increasing share price indicated that investors were betting on the potential of Tesla to lead the electric car revolution. Tesla's access to billions of dollars of capital had fueled its growth and allowed it to survive.

Investors had been valuing Tesla more like a tech company than a typical automaker, which gets judged harshly by quarterly performance and their low expectations for the future. That was good news for Musk in 2018. If Tesla had been valued by investors the way they valued GM, it would have been worth $6 billion—not $60 billion. If GM had been valued like Tesla, it would have been worth $340 billion, not $43 billion.

But despite all the hype, Tesla must abide by the same financial logic as any carmaker—each new product represents a stretch, and a possibly fatal stumble. This is, in fact, only more true for Tesla, given its minuscule lineup. The stakes grow larger as Tesla grows bigger, as the bets go from a few million dollars to billions.

And while Musk's vision, enthusiasm, and determination carry Tesla; his ego, paranoia, and pettiness threaten to undo it all.

His fans and detractors can't get enough of him. His face has appeared on magazine covers for a decade. He was the inspiration for Robert Downey Jr.'s portrayal of Tony Stark in the *Iron Man* movies. He's prolific on Twitter, sparring with government regulators he disagrees with, attacking short sellers betting against him, and joking with his fans about everything from Japanese anime to drug use. But increasingly people have seen another side of him. Frazzled. Stressed. Worried. Despairing. Insecure. In short: vulnerable.

Would Musk's naked ambition to upend the automotive industry enable him to do what once was seen as impossible? Or would his hubris be his undoing?

Amid the controversial figures to have emerged from Silicon Valley in recent years, you couldn't help but wonder: Is Elon Musk an underdog, an antihero, a con man, or some combination of the three?

PART I

A REALLY EXPENSIVE CAR

CHAPTER 1

THIS TIME COULD BE DIFFERENT

The idea for an electric car kept JB Straubel up late one summer night in 2003. His tiny, rented house in Los Angeles brimmed that evening with members of Stanford University's solar car team, who had just finished a race from Chicago. The biennial event was part of a growing movement to stoke interest among young engineers in developing alternatives to gas-powered vehicles. Straubel had offered to play host to his alma mater's team, and the grueling run left many sleeping on his floor.

Intensely focused on his own projects, Straubel had never joined the team himself during his six years at the Stanford engineering school. But his interests aligned with those of his guests: He too was obsessed by the idea of powering cars with electricity—an interest he had held since his childhood in Wisconsin. After graduating, he had floated between LA and Silicon Valley, struggling to find his place. Straubel didn't look like a mad scientist intent on changing the world; he had a quietness about him and the bland good looks of a midwestern frat boy. But inside, he had a gnawing desire to do more than take a job with friends at a startup like Google or join the bureaucracy of a Boeing or General Motors. He wanted to create something that changed everything, whether it was in a car or an airplane; he wanted to chase a dream.

Stanford's team, like its competitors, had designed a car that ran on energy it collected from the sun using solar panels. Small batteries stored some of that energy—for use at night, or else when the sun

was obscured by clouds. It being a solar race, however, organizers placed limits on how batteries could be used.

Straubel thought this prohibition was misguided. Battery technology had improved dramatically in recent years, with the rise of personal electronics. He wanted to think beyond the arbitrary rules defined by competition organizers. Better batteries meant a car could run longer without relying so much on finicky solar panels and the whims of the weather. Why not emphasize battery power, whatever the source, instead of fixating on the sun?

He'd been studying a promising new type of battery that used lithium ion, first made popular by Sony in its camcorders a decade earlier before it spread to laptops and other consumer electronics. Lithium-ion cells were lighter weight and packed more energy than most of the rechargeable batteries then on the market. Straubel knew the challenges posed by older batteries—those lead-acid, brick-shaped containers were heavy, and they held comparatively little energy. He might get twenty miles of driving range out of a car before needing to find a place to recharge. With the rise of lithium-ion batteries, however, he saw the potential for something more.

And he wasn't alone: Among those who stayed awake with him that night was one of the Stanford team's younger members, Gene Berdichevsky, who shared an interest in batteries. As they chatted, he grew excited about Straubel's idea. For hours they batted ideas back and forth. If they strung thousands of small lithium-ion batteries together to create enough energy to power a car, would they need to harvest the sun's energy at all? They did the math to figure out how many batteries they'd need to power a car on a single charge to go from San Francisco to Washington, D.C. They sketched out a torpedo-shaped vehicle designed for aerodynamics. With half a ton of batteries and a lightweight driver, they figured their electric car might get a range of 2,500 miles. Just imagine the attention that would get—it was precisely the kind of stunt that could spark worldwide interest in electric cars. Animated by their conversations, Straubel suggested the team shift gears from solar power to a long-range electric car. They could raise money from Stanford alumni.

With the sun rising in the backyard, Berdichevsky and Straubel were giddy as they began messing with lithium-ion batteries that Straubel kept around for experiments. They fully charged finger-

length cells, then videotaped themselves as Straubel hit them with a hammer. The impact set off a reaction that ignited a fire, sending the battery tubes off like rockets. The future looked bright.

"This needs to be done," Straubel told Berdichevsky. "We've got to do this."

Jeffrey Brian Straubel had spent his childhood summers in Wisconsin rummaging through the dump to find mechanical devices to take apart. His parents indulged his curiosity, allowing their basement to be converted into a home lab. He built an electric golf cart, experimented with batteries, and became enthralled with chemistry. One evening, while in high school, he tried to decompose hydrogen peroxide to make oxygen gas, but he had forgotten that there was some leftover acetone in his flask, which resulted in an explosive mixture. It detonated into a fireball that shook the house and sent shards of glass flying. His clothes caught fire; the smoke detector blared and Straubel's mother rushed to the basement to find her son's face gushing blood, requiring 40 stitches. To this day, though Straubel looks the part of the earnest, baby-faced midwesterner, a scar down his left cheek hints at something a bit more mysterious.

Straubel learned a new respect for the dangers of chemistry, leading him in 1994 to Stanford University, where he kept an interest in how energy worked, realizing a passion for the juncture between lofty science and the real-world application of engineering. He became enamored, specifically, with energy storage and renewable energy generation, power electronics, and microcontrollers. Ironically, he dropped a class on vehicle dynamics—he found the details surrounding a car's suspension and the kinematics of tire movement boring.

Straubel wasn't so much a car guy as a battery guy. His engineering brain saw an inefficiency in the world of gas-powered cars. Petroleum was finite and burning it for energy dumped harmful carbon dioxide into the air. To him, engineering an electric vehicle wasn't about creating a new car, per se, but addressing a crappy solution to an engineering problem. It was like being cold, spying a table in the room, and burning it for warmth. Yes, it created heat, but you were left with a room full of smoke and no table. There had to be a better way.

During his third summer of college, a professor helped land him an internship at a startup car company in Los Angeles called Rosen Motors. The company had been founded in 1993 by legendary aerospace engineer Harold Rosen and his brother Ben Rosen, a venture capitalist and chairman of Compaq Computer Corp. They envisioned a car that was nearly pollution-free and were working to develop a hybrid-electric powertrain. They wanted to marry a gas-powered turbogenerator with a flywheel. Their flywheel, a spinning body that generates more and more energy the faster it spins, was designed to create the electricity needed to keep the vehicle going once the engine had started moving it.

It would be Straubel's introduction to the car business. Harold Rosen forged a connection with him and took him under his wing. Soon, Straubel was working on the magnetic bearings for the flywheel and helping with test equipment. The summer flew by; it made Straubel realize he needed to return to Stanford for his senior year to learn more about car electronics.

Back at school, he worked remotely for Rosen until he got a call with disappointing news: the company was shutting down. It was an early lesson for Straubel in the challenges of launching a car company from scratch. Rosen Motors had burned through almost $25 million. They had installed their system in a Saturn coupe as a kind of proof of concept. (They'd torn apart a Mercedes-Benz as well.) They promised a car that could do zero to sixty in six seconds, with the hope, ultimately, of partnering with a carmaker to implement their technology.

But even with glowing press, they couldn't see a way forward. The joke in the auto industry has long been that to make a small fortune in the car business, start with a large one. In the company's obituary, Ben, whose fortune came in part from a highly successful investment in Compaq, was sanguine about their effort: "There are not many chances you have in a major industry to change it and do something that's good for society and clean up the air and reduce the use of petroleum," he said. "It was a chance to change the world."

Back at Stanford, Straubel rented an off-campus house with a half-dozen friends. Inspired by his experience that summer but suspecting that Rosen's flywheel idea would be too challenging to implement, he took over the garage to work on converting a used Porsche 944

into a purely battery-powered vehicle. He had some early success: His jerry-rigged car, powered by lead-acid batteries, was as quick as the devil, producing burnouts and a blazing quarter mile. Straubel didn't concern himself with the handling or suspension. Instead, he focused on the car's electronics and battery management system. That was key, trying to figure out how to juice enough power without blowing a motor or burning up the batteries. He began spending time with other like-minded engineers in Silicon Valley, who introduced him to electric car competitions. Similar to how Henry Ford had demonstrated his abilities at the track every weekend, a hundred years earlier, Straubel and his friends took to drag racing. The trick to these races, he found, was ensuring the batteries didn't get overheated and melt down.

As Straubel continued to tinker with electric cars, he got to know an engineer named Alan Cocconi, who had worked as a contractor on General Motor Corp.'s failed electric car called the EV1. In 1996, Cocconi's shop, about thirty miles from downtown Los Angeles in San Dimas, was working on ways to create excitement around the idea of electric cars. They took advantage of a kit car that was then favored by home-car enthusiasts, with a fiberglass frame for a low-slung, two-seat roadster. But instead of installing a gas engine, they powered the car with lead-acid batteries, which were packed into the doors. The result: a hot rod that could accelerate from zero to sixty miles per hour in 4.1 seconds, as good as a super car. The car could drive about 70 miles on a single charge—nowhere near what the average car could do on a tank of gas, but a promising start. More impressive still, he began beating Ferraris, Lamborghinis, and Corvettes in drag races. He called his bright-yellow car the tzero—a math symbol that marks a starting point (when elapsed time equals zero).

By late 2002, however, Cocconi's shop was going through tough times. Carmaker clients were less interested in converting cars into electric in order to impress regulators, who had themselves shifted their interests away from electric cars toward other zero-emissions technology. And the tzero proved costly and time-consuming to build. Undeterred, Cocconi, who had been tinkering with lithium-ion batteries to build remote-controlled airplanes, began working on converting the tzero's batteries away from lead-acid.

That idea caught Straubel's attention as he hung out at the shop

after graduation, splitting his time between LA and Silicon Valley. He proposed to Cocconi the same idea for a cross-country car that he and the Stanford solar team had batted around that long night in the summer of 2003. He figured he'd need about 10,000 batteries strung together, and that it would cost about $100,000 to make the demo car. The team at AC Propulsion liked Straubel's enthusiasm and were eager to do it—if Straubel could find the money for it. In fact, Cocconi wanted to hire Straubel but the business couldn't afford him.

For his part, Straubel wasn't sure he was ready to settle down into a real job. He was also spending time with his old boss, Harold Rosen, then in his seventies, who wanted to pursue another wild idea: a high-altitude, hybrid-propulsion aircraft that could be used to create wireless internet access. Straubel thought lithium-ion batteries might be the solution Rosen needed, too.

As Rosen and Straubel looked for investors for their new aerospace venture, Straubel remembered a guy he'd heard of back in Palo Alto. At the time, Straubel had known of Elon Musk as a seemingly eccentric member of the flying club at the local airport. After Musk was late in returning an airplane, upsetting other members who were scheduled to fly, he sent a giant bouquet of flowers to the front desk. Lately, Musk had been in the news for his involvement with a startup called PayPal that had been acquired by eBay for $1.5 billion, and for starting a rocket company with his new fortune. He seemed like a person drawn to big, impossible ideas. He could be just the investor they needed.

That October, Straubel settled in to a lecture series about entrepreneurship at Stanford University to hear Musk, then thirty-two, speak. "If you like space, you'll like this talk," Musk began. Before getting into how he founded a company to make rockets, called the Space Exploration Technologies Corp., or SpaceX, he walked through his own founding story. It had a Horatio Alger quality to it. He'd grown up in South Africa, emigrated to Canada at age seventeen by himself, then to the U.S. to finish his undergraduate studies at the University of Pennsylvania. Shortly after finishing there, Musk and his best friend Robin Ren drove across the U.S. to study at Stanford. Musk wanted to go deep into energy physics, convinced he could make

radical advances in battery technology, only to abandon his studies—two days later—ahead of the gold rush era of the late 1990s dot-com boom.

Straubel listened as Musk, dressed in black with his shirt unbuttoned like he was at a European nightclub, elaborated on his origin story. He said few venture capitalists on Sand Hill Road at the time had shared his vision for the internet. The fastest way to make money, Musk had figured, would be helping existing media companies convert their content for the World Wide Web. He and his younger brother, Kimbal, founded Zip2 to do just that, eventually attracting attention for a first-of-its kind Web program that gave turn-by-turn map directions between two locations—an idea that would later become ubiquitous. It was an attractive feature for newspaper companies, including Knight Ridder, Hearst, and *The New York Times,* that were looking to create city-directory-type websites. The two young men quickly sold the company for cash ("That's a currency I highly recommend," he joked wryly) and the newly rich Musk, with $22 million in the bank, had one goal: to start another company. His next bet, in early 1999, that he could replace the ATM with a safe online payment system—a company eventually known as PayPal—created the true fortune that he would use to fund his grander ambitions.

There was a question that had long nagged at him: Why had the space program stalled? "In the '60s, we went from basically nothing, not being able to put anyone into space to putting people on the moon and developing all the technology from scratch to do that, and yet in the '70s, the '80s and the '90s we've kind of gone sideways and we're currently in a situation where we can't even put a person into low-earth orbit," Musk said. It didn't align with other technologies, such as microchips and cell phones, which had only gotten exponentially better and cheaper with time. Why had space technology languished?

What Musk said struck a chord with Straubel, who had been thinking similar things about the auto industry. Afterward, Straubel rushed forward to talk with Musk, dangling as bait his connection to Rosen, known in aerospace circles for his role in helping develop modern communication satellite technology. Musk invited Straubel and Rosen to come see the SpaceX rocket factory near Los Angeles.

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Straubel watched as Rosen walked through SpaceX's office in a former El Segundo warehouse seemingly unimpressed. He kept pointing out flaws in Musk's plans for a rocket that would supposedly cost a fraction of what was then being built. "This is going to fail," Rosen told Musk, to Straubel's dismay. Musk was no less critical of Rosen's idea for an aircraft to create wireless internet: "That idea is stupid." By the time they sat down for lunch, Straubel was convinced the entire visit was a disaster.

To keep the conversation going, Straubel turned to his own pet project, an electric car that could cross the country. He described to Musk how he was working with a shop called AC Propulsion to use lithium-ion batteries, which could be just the breakthrough he needed. It was a pitch Straubel had given whenever he had the chance, one that most thought was nuts. But not Musk. It clicked, Straubel could tell just by looking at him. His face embraced the idea. His eyes darted up to seemingly process the information. He nodded in agreement. Musk simply got it.

Straubel left feeling like he had met somebody who shared his vision. After their lunch, he followed up with an email, suggesting Musk reach out to AC Propulsion if he was interested in seeing an example of a lithium-ion powered car. Musk didn't hesitate. He wrote back that he wanted to contribute $10,000 to Straubel's long-range demo vehicle, and he promised to give AC Propulsion a call. "This is really cool stuff and I think we are finally nearing the point where electric cars are a viable option," Musk wrote.

Straubel didn't know he'd soon be competing for Musk's attention.

CHAPTER 2

THE GHOST OF EV1

The idea for Tesla Motors began not with Elon Musk or JB Straubel, but with Martin Eberhard—a man walloped by middle age. As the new millennium began, in quick succession, he had sold his fledgling business and was divorcing his wife of fourteen years. She would receive much of the money he'd made, while he got to keep their house in the hills above Silicon Valley, the place his architect brother had helped him create and where, on a good day, he could see the Pacific Ocean. The lengthy drive to his new job at a tech incubator, a place to help startups get off the ground, took Eberhard along a road of hairpin turns through a canopy of redwoods, giving him plenty of time to think about what was next, personally and professionally. At forty-three, Eberhard wasn't sure what field to dive into, but he knew he wanted to start another company, something that mattered. Or else—maybe law school?

While stewing on that subject, Eberhard began dreaming about something more immediate, if clichéd: He wanted to buy a sports car. Something fast. Something cool.

At lunch each day, Eberhard, who with his salt-and-pepper hair and beard looked like the father in the 1980s sitcom *Family Ties*, debated with his longtime friend Marc Tarpenning which car to buy. The two had founded a company together five years earlier, in 1997, called NuvoMedia Inc., with the rather audacious goal of blowing up the book publishing business. Both read a lot, traveled often, and had grown tired of hauling their books around on long flights. The thought occurred to them: Why couldn't books be digital?

What followed was the Rocket eBook, the precursor to the Amazon Kindle and its ilk. In 2000, ahead of the dot-com bubble burst, they sold their business for $187 million to a company more interested in their patents than their digital revolution. Since they had relied so heavily on outside investors, such as Cisco and Barnes & Noble, the two had very little ownership stake left, which meant they didn't become super rich like Musk did when PayPal was acquired. And of what Eberhard did get, much was going to his soon-to-be ex-wife.

As Eberhard looked at all those fast cars, he complained to Tarpenning about fuel efficiency. The 2001 Porsche 911 with a manual transmission was a helluva car to drive, but it sucked gas at the pump. It got just 15 miles per gallon in city driving; a little better on the highway with 23 mpg. Ferrari and Lamborghini meanwhile might average just 11 mpg. A more mainstream 2001 BMW 3 Series averaged about 20 mpg on combined city and highway driving.

Global warming in 2002 hadn't yet begun to occupy its central place in the cultural conversation, but Eberhard had seen studies supporting it. His mind was predisposed to believe the rational arguments of science. "It's kind of foolish to think that we can continue to spill carbon dioxide into the air and expect nothing to happen," he said. Beyond that, it was hard for him to turn away from the idea that the U.S.'s troubles in the Middle East were a byproduct of its dependence on oil—a sentiment that Tarpenning shared.

Ever the engineer, Eberhard began researching what kind of car, hypothetically speaking, would be the most efficient, electric or gasoline. He prepared elaborate spreadsheets to calculate well-to-wheel efficiency (the total energy used by a car compared to the greenhouse gas emissions created). He became convinced that electric was the way to go. The only problem was that he couldn't find an electric car that suited his needs—especially not anything as sexy as a Porsche.

Eberhard wasn't alone. Increasingly in California, a vocal minority were clamoring for better electric options. His colleague at the startup incubator, Stephen Casner, was one of them. Casner had leased an EV1, GM's entrant into the still-nascent electric car market, which plunged him into the emerging subculture of electric vehicle enthusiasts. He attended the annual Electric Auto Association's rally, where he saw a Porsche converted to electric by a recent Stanford gradu-

ate (none other than JB Straubel). That car had garnered acclaim for posting a speed record at a drag race in Sacramento.

Sitting in an EV1 for a test ride, Eberhard took the car in. It certainly didn't look like a sports car, more like a weird, two-seat spaceship. For the sake of aerodynamic slickness, the EV1 sat low to the ground with a teardrop-shaped body. The rear wheels, partially covered by body panels, looked from the side like half-opened eyes. The design decisions helped give the car 25 percent less wind drag compared to other production vehicles, which in turn meant it was more energy efficient and required fewer batteries.

Weight and efficiency were a constant battle for electric-car makers. The EV1 battery pack weighed half a ton, a considerable amount at a time when the average sedan weighed a little more than 1.5 tons. Situated in the middle of the car, the pack formed a squat wall between the car's two seats, making the tiny vehicle feel even more claustrophobic. Atop the battery pack and surrounding the gear shifter at Eberhard's right hand were dozens of buttons, giving the appearance of a scientific calculator more than a typical sports car.

Still, Eberhard marveled at the acceleration. Stepping on the pedal led to a quick burst. GM claimed the car could go from zero to sixty miles per hour in less than nine seconds. And without a gas engine roaring, the ride was quiet, just the gentle whir of the motor.

It wasn't the car for Eberhard, wasn't the sexy sports car he sought. The EV1 would prove a tease anyway. GM was taking all of the cars back and killing off the line—it was deemed a money loser. But as they talked, Casner mentioned his neighbor, a man named Tom Gage, who worked for one of the original engineers on the EV1 project at a company in LA called AC Propulsion. There, shop owner Al Cocconi had concocted an electric car that they were calling the tzero.

Eberhard had read about it. Soon he was on a flight to Los Angeles to see it.

When Eberhard arrived at AC Propulsion, he learned that Cocconi and Gage had already sold two of the three tzeros that had been made. The selling price had been $80,000 each. Bright yellow, the car had a cartoonish, sloped front end and squat rectangular body. Twenty-eight lead-acid batteries were stacked inside panels where doors would normally have been, requiring Eberhard to climb in and

out of the car's tight cockpit *Dukes of Hazzard*–style. What it lacked in refinement and comfort, Eberhard discovered it made up for in acceleration. No clutch. No gear shifting. Pure adrenaline.

For all that, it shared a problem with the EV1: The tzero still depended upon big, expensive batteries that provided little range. As they talked, Eberhard recalled, he raised the idea of using lithium-ion batteries, which he was familiar with from his eBook. In his telling, the room grew uncomfortably silent when he shared his thoughts—almost as though he'd hit a nerve. Cocconi quickly wrapped up for the day.

When Eberhard returned, Cocconi had something to show him. It turned out the two had alighted on a similar idea. The remote-airplane buff had also noticed the benefits of lithium-ion as a replacement for the nickel metal hydride commonly found in such toys. The batteries were cheaper and had better performance. Using a small grant, Cocconi had set about to test a hunch that he could string a bunch of the laptop battery cells—sixty of them to start—together to create a battery pack that would put out more energy. He began talking about how they needed to convert the tzero to lithium ion.

If Cocconi could replace the tzero's lead-acid batteries with 6,800 of these cheap laptop batteries, in theory they could have a lighter-weight car with more range and greater performance. The only issue was that AC Propulsion was running out of money. Without California regulators pushing for mandated electric vehicles, one of its largest clients, Volkswagen AG, had pulled out of a contract (they had been working together to convert VW vehicles into electrics to help augment the company's California sales and avoid fines associated with vehicle emissions). Things looked bleak now for the shop, which was laying off employees as it tried to find a way to save the business.

Eberhard wanted a tzero and was prepared to pay for it. He agreed to pay $100,000 for the car and to give them an additional $150,000 to keep the lights on as they converted the tzero to lithium ion. Maybe he could help turn the shop into a real car company, Eberhard thought to himself. Solving a more mundane real-life problem, the problem of lugging around heavy books, had led him and Tarpenning to start their previous company. Maybe now he could address

this new problem, start a new company, and resolve his midlife crisis in one fell swoop.

The idea of an electric car is as old as the car itself. Creators tinkered with battery-run vehicles going back to the mid-1800s. Henry Ford's wife had an electric car in the early 1900s when the technology was seen as especially appealing to women put off by the hand crank, the noise, and the smell of gasoline-powered horseless carriages. Her husband's success with the Model T, a gas-powered car for everyman, pretty much ended the gas vs. electric debate. Ford Motor Co.'s ability to mass-produce the vehicle at a cost that a growing middle class could afford created an industry of carmakers and a network of filling stations based around fossil fuels. An electric car that might cost on the order of three times more than a typical sedan and have a range of only fifty miles just wasn't an appealing proposition.

Not until the 1990s did it look like an all-electric car might make a comeback. General Motors Corp. surprised the industry when it introduced a concept car at the Los Angeles auto show in 1990, then rushed the idea into production with what would, in 1995, become the EV1.

The inherent problem for the EV1 was one of math. Among the challenges for electric-car makers was that the cost of batteries for any fully electric vehicle added tens of thousands of dollars to its price tag. That was simply never going to cut it for corporate bean counters at the big automakers, people who often dropped features to save mere dollars—if not cents. The idea of adding thousands to a car's cost was generally a nonstarter, especially because the electric car faced so many hurdles for customers. Most notable among them was how they would even go about charging them; electric cars didn't have the benefit of drawing from filling stations dotted across every city and town in the country, developed over nearly a century.

To make the EV1, engineers worked from the formula that fewer batteries would cut cost. But that in turn reduced range. It amounted to an unsolvable riddle.

Even if lithium-ion power could resolve the range problem, Eberhard faced the fact that those batteries, even less expensive ones,

would still add cost compared to a comparable gas-guzzling car, which has no analogous expense. As he studied the issue, he concluded that too many car companies, including GM, had failed by emphasizing electric cars for everyday buyers. They had tried to reach scale, in hopes of driving down battery costs. The result was a car full of compromises—not thrilling enough to suit high-end buyers and too ineffective to compete at the lower and middle parts of the market.

From his days in consumer electronics, Eberhard saw that carmakers were taking the wrong approach. The latest tech always sold for a premium first, then came down to suit the everyday buyers. It was gobbled up by early adopters willing to pay more for the cool new thing—before the mainstream followed suit. Why should an electric car be any different?

He found inspiration from sales of the Toyota Prius, a hybrid that used an onboard battery to store power generated either from braking or from the car's gasoline-powered engine, reducing overall fuel consumption. The buyers for what was essentially a low-end Corolla with an expensive, green-power powertrain were skewing largely like those who bought Toyota's Lexus luxury brand. Movie stars, wanting to signal their environmental credentials, were showing up in Hollywood with them. As Eberhard drove the tony streets of Palo Alto, he took pictures of the driveways of the homes he saw, where BMWs and Porsches were lined up alongside Prius sedans. Those were, he wagered, his potential customers. They worried about the environmental impact of driving while still craving performance.

By developing a high-priced electric sports car, Eberhard wouldn't face as much pressure to get his battery costs down. And from personal experience, Eberhard knew that sports car buyers could be a forgiving lot, willing to overlook some things—even dependability—if the performance was there and the brand was considered cool.

As Eberhard became more excited about a potential market, he convinced Tarpenning to join him in starting what he christened Tesla Motors, after Nikola Tesla, who designed the alternating current electric system that powers homes around the world. They registered the company in Delaware on July 1, 2003—nine days ahead of Tesla's date of birth 147 years earlier—and began trying to figure out what they needed to know about being in the auto industry.

Admittedly, they knew little. They saw that as an asset. The industry was undergoing structural changes, as behemoths such as GM tried to adapt to changing customer tastes and legacies of debt, high labor costs, and shrinking market share. For generations, carmakers had pioneered vertically integrated operations, where in-house part suppliers fed the pieces needed to make a car to the assembly end of the business. To slash cost, those parts makers were being spun out to become third parties around the world. In theory, Eberhard bet, tiny Tesla could buy the same parts being used by the big players to make his sports car.

And why *build* the car themselves, for that matter? When the two were making eBook readers for NuvoMedia, they didn't actually assemble the gadgets. Rather, like most consumer electronics companies, they outsourced the work to third parties. Few car companies offered such services, they discovered, but one that did caught their eye: Lotus, the UK sports car maker.

Lotus had recently released a new version of its Elise roadster. What if Tesla could simply buy a few Elise cars, have Lotus tweak their designs enough to make them look singular, and swap out their combustion engines for the electric motors made by Cocconi? They'd have a high-end electric sports car on their hands.

Others had thought about engineering an electric car, but they had failed to make it profitable. Eberhard was thinking of ways to change the business of making cars altogether, bringing to a hundred-year-old industry the lessons learned from a career as an entrepreneur in Silicon Valley. Tesla would be asset-light, focused on brand and customer experience. He figured the timing was right.

By September 2003, AC Propulsion had completed the conversion car that Eberhard had commissioned and the results made him think they were on to something. The new tzero, with its lithium-ion batteries, had shed a remarkable 500 pounds from its weight. The 0-to-60 acceleration speed improved to a mind-melting 3.6 seconds, ranking it among the world's quickest cars. The conversion also improved the vehicle's range, allowing it to go 300 miles on a charge, a substantial improvement from the 80 miles that Cocconi and Gage had been mustering from their older tzeros.

Eberhard had his neighbor Ian Wright, an amateur race car driver, give it a test drive. It was unlike anything Wright had driven before. To attempt a super-quick launch of a gas-powered car requires an advanced vehicle and driver. A driver has to rev up to speed and engage the clutch at just the right moment. Engage the clutch too soon and you'll stall, since there's not enough torque to advance the car. Too late and the tires smoke. It all has to be timed just right, so the tires take off precisely when the engine has enough power to turn them, and no more. Automatic transmissions can help a driver, but those are dependent on gas-powered systems.

Not so with the tzero. Eberhard and Wright found that the electric car was already a full vehicle length ahead of where its competition would be by the time any gas-powered car could go through those steps. The acceleration didn't fade as the car sped up, either. "It felt like a racecar in first gear but a first gear that just kept going and going, all the way to 100 mph," Wright later wrote. He soon ditched his own startup idea and joined Eberhard and Tarpenning instead.

While all of this bolstered Eberhard's idea for a sports car, the tzero suggested a different possibility to Gage and Cocconi. They wanted to use the new battery technology to make an everyday EV. The lithium-ion batteries could give cars a range that took the technology from a plaything to a daily commuter.

They had made great strides together but it was clear: the two sides needed to go their own ways. Gage and Eberhard came to an understanding. If they couldn't be in business together, they could at least *do* business together. Eberhard would buy Gage's motors and electronics for the roadster he planned to develop. But it wouldn't be an exclusive deal: AC Propulsion would be free to do its own thing.

The challenge for both, however, was that neither team had a bank account large enough to create a car, no matter how good an idea it seemed. They would need to raise millions of dollars to get off the ground. A gentleman's agreement was reached that they wouldn't pursue the same investors.

Very quickly, one of those potential investors for AC Propulsion became Elon Musk—thanks, in part, to a recommendation from JB Straubel. Musk's name had also come up when Gage showed the tzero to Sergey Brin and Larry Page, co-founders of Google, the Web search engine that had launched just a few years prior. During a dem-

onstration of the tzero, Gage had impressed them with the car, but they had demurred from investing; their company was still a few months away from going public. Brin suggested Musk. "Elon has money," he said.

"What do you know about building a car?" Judy Estrin asked Eberhard. The co-founder of Packet Design, the incubator where Eberhard had worked before quitting to work on his Tesla idea full-time, had listened intently to his pitch. She'd always been impressed with Eberhard's intelligence and risk-taking as an entrepreneur. She didn't doubt his theory that the time was right for an electric car. But creating a car company was hard to pull off, to put it mildly.

Eberhard was receiving similar pushback as he and his partners looked for money. Laurie Yoler, a friend and colleague at Packet Design who was well connected in the investor world, was setting them up with meetings around Silicon Valley. A startup typically began with some seed money—maybe from the founder's own pocket or scraped together from friends and family, to show that the company had strong early support—before raising increasingly large rounds of funding. At each round, the founder gave up some ownership stake of the company as others bought in, and current investors either had to up their investment or else face dilution. Venture capitalists (VCs), meanwhile, ran funds that raised millions of dollars with the goal of investing in such startups, then cashing out—either through acquisition of the startup by a bigger company or else through an initial public offering at some point during the fund's lifetime (typically eight to twelve years).

In those early days, a software-based startup, such as Facebook, was judged on its expanding user base rather than its profit. Mark Zuckerberg's social network didn't turn a profit until five years after he founded it in his Harvard University dorm room, still years before its IPO. Amazon went nearly a decade before turning an annual profit; meanwhile it spent its cash to grow its user base and build unparalleled logistics and digital infrastructure systems. And those are the successes. They bled and bled cash until at some point they turned a corner.

A car company just wasn't something most investors were con-

ditioned to consider. First, there hadn't been a successful new car company in generations. And simple math led investors to quickly recognize that it would be hugely capital-intensive, meaning their chance of a large return was less likely. Even to become a supplier to a car company, as the team at AC Propulsion aspired to do, was fraught; it might take a decade or more before its widget turned up in a production vehicle, long past the time horizon of a normal VC's investment. But on a Tuesday afternoon in late March 2004, Eberhard opened his email to find a short message from Gage. Musk had been copied in with a note suggesting the two connect. "He would be interested in hearing about your activities at Tesla Motors," Gage wrote.

Eberhard looked at the email and immediately remembered listening to Musk speak years before at a lecture on the Stanford campus, about his vision for space travel and visiting Mars. Clearly, he wasn't allergic to thinking big.

What wasn't said in the email: AC Propulsion had failed to convince Musk that they had a sound business. Unknowingly echoing Eberhard's own sentiments, Musk told Gage that he thought the best way to make electric cars cool was to begin at the high-end and work down to the mainstream. What about converting the sports car made by UK carmaker Noble? He was thinking about importing one without an engine. That car was sexy for sure. But Gage and Cocconi weren't interested in going in that direction.

Given how closely their visions were aligned, a meeting between the small Tesla team and Musk was quickly arranged. Tarpenning had family plans, so that left just Eberhard and Wright to fly to LA with a business plan that they had been crafting for months. They had run the numbers; they figured it would cost them $49,000 to build each sports car, which they had taken to calling Roadster. The biggest part of that number—almost 40 percent—would come from the cost of the batteries, though they hoped they could get discounts as production ramped up. Surely battery suppliers would be thrilled at the prospect of a company whose products depended not on a single one of their cells, like a digital camera or cell phone, but thousands. About $23,000 would be needed to fabricate the car—buying the chassis from a third party such as Lotus, along with the components that make up your typical vehicle. They would then turn around

and sell it to a small number of approved car dealers for $64,000, who would turn around and sell it to customers for $79,999. That math meant Tesla would make a gross margin of $15,000 per vehicle, allowing it to break even if it sold 300 cars per year, or just about 1 percent of the high-end U.S. sports car market.

They projected they'd need to raise a total of $25 million to fund the creation of the company through its breakeven, which they imagined they'd reach in 2006, at which point it would start turning a profit. They planned to first raise $7 million, money they'd use to begin hiring engineers and to pay for the creation of a handmade prototype. They then planned to raise an additional $8 million by that year's end, to pay for the vehicle's final development and the creation of additional prototypes. Nine months later they would raise $5 million more to pay for the factory tooling and to begin building inventory, capped by a final fundraising of $5 million in March 2006—two years after their first investment—to fund the production launch.

Their plan was straightforward enough: Make an awesome sports car that could beat the best in the world. Sell it for $79,900. Deliver 565 of them in four years. Make a profit. Change the world. What could be easier? The math seemed so simple. They didn't realize at the time that they were using the wrong numbers.

Musk was enthusiastic but skeptical. "Convince me you know what you're talking about," he told them as they sat in a glass conference room near his cubicle at the SpaceX offices in El Segundo, decorated with airplane models. He quizzed them on how much funding would be required. "Why won't it be twice that or five times that or ten times?"

The two men didn't have a good answer beyond being able to say they'd been in contact with Lotus, after hounding executives during the LA auto show, and that they had read that the Elise had been developed for less than $25 million. Musk looked unconvinced. The biggest risk, he told them—presciently, it turned out—was that they might need way more money than they anticipated. Still, Musk was intrigued.

They discussed their plans for after the Roadster. Eberhard called for either making a super version of the car, with a two-speed transmission and nicer interior, a car that could compete against six-figure

competitors. Or going down-market a little and offering a four-seat coupe to target the buyers of the Audi A6. Or else maybe an SUV? Once the company reached volume production, which would get them to less expensive parts and cut manufacturing costs, they envisioned lower-priced "follow-on" cars. What Eberhard's Tesla represented was a road map to ushering in electric cars. Like an old treasure map, some parts of it were fuzzy and built on assumptions—rightly or wrongly. At its core, though, the path forward looked clear. The Roadster could be the start of something.

After two and a half hours, Musk said he wanted to do it, though he still wanted to talk to the absent Tarpenning. He had some conditions, too. He'd become chairman, he stipulated. Also, they needed to close the deal in ten days because his wife, Justine, was scheduled to have a C-section for the birth of their twin boys.

Eberhard and Wright left the meeting elated. "We just got the company funded!" Eberhard told his new business partner.

While Musk did his final due diligence, so did the Tesla team. Yoler, their VC connector, asked around about Musk. She reported back to Eberhard that he had a reputation for being difficult and stubborn. What wasn't widely known at the time was how Musk's time as CEO at PayPal had come to an end. Musk had been kicked out of his position by a board unhappy with his management style—while he was on his honeymoon. It was just ahead of the company being sold to eBay, a move that cemented him as wildly rich but also left him feeling like he'd lost control of his creation. It was a formative moment for Musk. He would never forget the feeling—or the financial knife fight—of losing a company.

Yoler was worried. Eberhard could be difficult and stubborn as well—a common trait among entrepreneurs who've got to trust their guts against a crowd of people telling them their ideas are too risky, unwise, unproven. "You gotta talk to him," Eberhard told her. She got on the phone with Musk and was quickly reassured. "He really impressed me," she said. "He said, 'I'm gonna be a very wealthy board member and investor, that's all I'm looking for.' "

And so they closed the deal swiftly. Musk put in $6.35 million of the $6.5 million initial investment. Eberhard contributed $75,000, with the rest coming from other small investors. He became CEO; Tarpenning, president; and Wright, chief operating officer. Yoler was

put on the board, as was a longtime friend and mentor of Eberhard's, Bernie Tse. On the night their new chairman's check was deposited, they all gathered, except for Musk, in a tiny Menlo Park office that Eberhard had rented. They passed around a bottle of champagne and toasted the start of their company. It was an auspicious beginning for a promising business, one that was truly their own.