Chapter One
Electricity and Math

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March 2011. I was literally and figuratively on top of the world.

Strapped into one of the observer seats aboard the flight test 787 #5, I gazed down at downtown Seattle, its skyline gleaming in the afternoon sun. We were on final approach into Boeing Field, returning from two weeks of testing in Hawaii. As pilot Mike Bryan banked the big jet toward the runway, I couldn't help but smile. Flying home in a brand-new Dreamliner—how had I ended up here?

The answer lay in a lifelong fascination with electricity, flight, and the inner workings of things.

It started early. I didn't know exactly why, but electricity hooked me. I was the kind of kid who didn't just play with toys—I wanted to take them apart and see how they worked. In second grade, I met a fellow science nut named David F. (One of three Davids in the class—we had to differentiate somehow.) David F and I hit it off immediately, united by our love of science, especially electronics.

We devoured catalogs from long-forgotten radio and electronics companies, studied diagrams, and dreamed up projects. One of our early obsessions was a pair of old Kellogg switchboard handsets from the 1950s. We could use a battery and a long wire as intercoms if we could figure out how to wire them correctly. Of the nine possible configurations, only one worked. For days, I sat under David F's basement stairs, endlessly testing combinations while we talked through the static. Trial and error never felt so exciting.

Our friendly competition peaked in fifth grade. One week, DavidF would build a model rocket out of a mailing tube. Next, I'd try to top it with something even flashier. We started collecting old telephones and launched our own pretend company: D&D Telephone. We even got a rubber stamp made. Then, feeling ambitious, we started the Aerospace Division.

This was the 1960s, the peak Mercury Program era. Inspired by NASA, we wrote to Boeing asking for scrap metal to build our space capsule. Miraculously, the PR folks at Boeing didn't just toss our letter—they took it seriously. They called our teacher, Miss Duncan, and verified we were legit science geeks. A few weeks later, two Boeing suits and a photographer were waiting in my backyard after school, standing next to a 15-foot-long BOMARC ramjet engine. A rocket—ours!

I had to sign for it and promise not to resell it. We never did figure out how to open it, but the story made the Boeing news, which joked about "supporting the competition." That ramjet sat in our backyard for fifteen years, a neighborhood legend.

My dad, Earl, had studied electronics in the Navy after World War II, though by then he was more into photography and woodworking. But he caught my enthusiasm. Evenings became a ritual: Dad and I in the basement, poring over hobby magazines, building electric motors, batteries, and radios. Instead of watching the evening news, we were experimenting, soldering, and making sparks fly—literally.

Getting parts was a scavenger hunt of its own. After school, some days, I'd bus downtown to his office at the Seattle Post Office (he was the Postal Inspector In Charge—he carried a gun and investigated mail fraud and break-ins, which I thought was incredibly cool). From there, we'd hit the surplus stores and electronics shops around First Avenue, pawing through bins of resistors and figuring out our next build.

One of our masterpieces was a Tesla Coil. It sent purple sparks leaping into the air and made lightbulbs glow from a distance. We built it from scratch—winding hundreds of turns of wire onto a cardboard tube—and entered it in the citywide science fair. It was a showstopper… but I missed the judges because I was off buying a hot dog. The exhibit next to mine had a working model of the Ballard Locks, complete with running water, so it's hard to say who would've won anyway.

Another hit project: an early electronic siren based on a multivibrator circuit. Once it was triggered, it wouldn't shut off. Dad took it to work, stuck it in the break room, and labeled the button "DO NOT PUSH." Naturally, the siren howled all day long.

Our projects kept getting more ambitious. We put a wire antenna on the roof and strung it to an old shortwave radio a friend had given us. I became obsessed with the eerie glow of vacuum tubes, the swirling voices from far-off countries, and the mysterious squeals of space weather. That interest evolved into Heathkit projects, CB radio, and a lifelong interest in radio and communications.

In high school, we designed and built a reaction-time tester for a fundraiser. Picture this: a traffic light replica, foot pedals for gas and brake, and a pen on a spinning paper record that plotted your reaction time. Each contestant got a souvenir graph of their score. It was all analog, homemade, and powered by junk drawer ingenuity—and it worked beautifully.

By then, David F and I had discovered KRAB-FM, a quirky non-commercial radio station housed in a former donut shop in North Seattle. They needed volunteer help, and we were interested. The walls were lined with egg cartons for soundproofing, and an ancient Collins transmitter hummed in the hall. The manager encouraged me to study for my 3rd class FCC license so I could run the board.

At 16, I was running the 10,000-watt transmitter and playing scheduled shows. Some nights, I was the only one in the building—just me, some big Ampex reel-to-reel machines, turntables, and a glowing control panel. I was hooked. Broadcast engineering became my dream.

But life changed again in 1970. My Dad got promoted, and we moved to San Francisco just before my senior year. The new high school was a letdown—cliquey and cold—but they did offer a basic electronics class. My first real training. I loved every minute of it.

When it came time to choose a college, I picked DeVry in Phoenix. My parents "gave" me the family's '66 Volvo, and I packed it to the roof with everything I owned. I drove south that summer, chasing the dream of becoming an engineer.

But I hit a wall: math. Advanced math—calculus, differential equations—was my nemesis. I hired a tutor and gave it my best, but the mechanisms just wouldn't stick. I'd always known math was a weak spot, but now it was glaring. The electronics classes and creativity came naturally; the math did not.

I shifted tracks. Instead of engineering, I pursued the electronics technician program, which focused on practical skills, algebra, and trigonometry. It was tough—DeVry was no cakewalk. Thirty started; six of us graduated. But I loved it, and I was on my way.

The Vietnam War was still raging, and I was about to lose my student deferment. Life was coming at me fast, but I had the spark.

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