TWELVE

12 is the number of my idol, Tom Brady. It’s the sum of all the letters in my name. It’s also how old I was when I started high school.

In short, I skipped two grades: first and sixth. Between kindergarten and eighth grade, I attended five schools, including two different styles of homeschooling (three years at a co-op and one in my kitchen). Before skipping, I was perennially bored.

But when I began homeschooling, everything changed. Free to move as fast as I wanted, I devoured tomes from Jefferson, Hamilton, and Madison to London, Kipling, and Twain. I wrote 10-page papers on subjects from Ancient Sparta and military history to the founding of the United States and the resounding impact of slavery. I discovered more than I ever had, kindling a lifelong joy for learning.

While high school offered welcome academic opportunities--studying two languages and taking early science APs chief among them--the social environment was a different beast. Many classmates considered me more a little brother than a true friend, and my age and laser focus on academics initially made me socially inept. I joined sports teams in spring and built better relationships, but my lack of size (5’1”) and strength relegated me to the end of the bench. Oftentimes, I secretly wished I was normal age.

That secret desire manifested itself in different ways. While I’ve loved football since I was a little kid, I soon became obsessed with personal success on the gridiron--the key, I figured, to social acceptance and the solution to my age problem. I had grown up obsessively tracking my New England Patriots. Now, instead of armchair quarterbacking, I poured hours into throwing mechanics and studying film after my homework each night. Itching to grow, I adopted Brady’s diet, cutting dairy, white flour, and processed sugar. But in the rush to change, my attitude towards academics shifted; I came to regard learning as more a job than a joy. No matter what talents I possessed, I viewed myself as a failure because I couldn’t play.

That view held sway until a conversation with my friend Alex, the fastest receiver on the team. As I told him I wished we could switch places so I could succeed on the gridiron, he stared incredulously. “Dude,” he exclaimed, “I wish I was you!” Hearing my friends voice their confidence in my abilities prompted me to reflect: I quickly realized I was discounting my academic talents to fit a social construct. Instead of pushing myself to be something I wasn’t, I needed to meld my talents and my passions. Instead of playing sports, I recognized, I should coach them.

My goal to coach professionally has already helped me embrace the academic side of the game--my side--rather than sidelining it. I have devoured scouting tomes, analyzed NFL game film, spoken with pros like Dante Scarnecchia, and even joined the American Football Coaches Association. Translating that coach’s mentality into practice, I began explaining the concepts behind different plays to my teammates, helping them see the subtleties of strategy (despite Coach Whitcher’s complaints that I was trying to steal his job). And I discovered that my intellectual understanding of the game is far more important in determining my success than my athletic tools: with the discipline, adaptability, and drive I had already developed, I’ve become a better player, student, and friend.

Physically and mentally, I’ve changed a lot since freshman year, growing 11 inches and gaining newfound confidence in myself and my abilities. Instead of fighting for social acceptance, I’m free to focus on the things I love. Academically, that change re-inspired me. Able to express my full personality without social pressure, I rededicated myself in the classroom and my community. I still secretly wish to be Tom Brady. But now, I’m happy to settle for Bill Belichick.

FLYING

As a young child, I was obsessed with flying. I spent hours watching birds fly, noting how the angle of their wings affected the trajectory of their flight. I would then waste tons of fresh printer paper, much to the dismay of my parents, to test out various wing types by constructing paper airplanes.

One day, this obsession reached its fever pitch.

I decided to fly.

I built a plane out of a wooden clothes rack and blankets, with trash bags as precautionary parachutes. As you can imagine, the maiden flight didn’t go so well. After being in the air for a solid second, the world came crashing around me as I slammed onto the bed, sending shards of wood flying everywhere.

Yet, even as a five-year-old, my first thoughts weren’t about the bleeding scratches that covered my body. Why didn’t the wings function like a bird’s wings? Why did hitting something soft break my frame? Why hadn’t the parachutes deployed correctly? Above all, why didn’t I fly?

As I grew older, my intrinsic drive to discover why stimulated a desire to solve problems, allowing my singular passion of flying to evolve into a deep-seated love of engineering.

I began to challenge myself academically, taking the hardest STEM classes offered. Not only did this allow me to complete all possible science and math courses by the end of my junior year, but it also surrounded me with the smartest kids of the grades above me, allowing me access to the advanced research they were working on. As such, I developed an innate understanding of topics such as protein function in the brain and differential equation modeling early in high school, helping me develop a strong science and math foundation to supplement my passion for engineering.

I also elected to participate in my school’s engineering pathway. As a team leader, I was able to develop my leadership skills as I identified and utilized each member’s strength to produce the best product. I sought to make design collaborative, not limited to the ideas of one person. In major group projects, such as building a hovercraft, I served as both president and devil’s advocate, constantly questioning if each design decision was the best option, ultimately resulting in a more efficient model that performed significantly better than our initial prototype.

Most of all, I sought to solve problems that impact the real world. Inspired by the water crisis in India, I developed a water purification system that combines carbon nanotube filters with shock electrodialysis to both desalinate and purify water more efficiently and cost-effectively than conventional plants. The following year, I ventured into disease detection, designing a piezoresistive microcantilever that detected the concentration of beta-amyloid protein to medically diagnose a patient with Alzheimer’s disease, a use for cantilevers that hadn’t yet been discovered. The project received 1st Honors at the Georgia Science Fair.

Working on these two projects, I saw the raw power of engineering – an abstract idea gradually becoming reality. I was spending most of my days understanding the why behind things, while also discovering solutions to prevalent issues. In a world that increasingly prioritizes a singular solution, I am captivated by engineering’s ability to continuously offer better answers to each problem.

Thirteen years have passed since that maiden flight, and I have yet to crack physical human flight. My five-year-old self would have seen this as a colossal failure. But the intense curiosity that I found in myself that day is still with me. It has continued to push me, forcing me to challenge myself to tackle ever more complex problems, engrossed by the promise and applicability of engineering.

I may never achieve human flight. However, now I see what once seemed like a crash landing as a runway, the platform off of which my love of engineering first took flight.

THE LISTMAKER

Current inventory: thirty-two note pads, ten packs of Pilot G-2 pens, and pure willpower.

I come from a long line of list-makers. It shows up on both sides of my family, so by the time this trait reached my generation, it hit a peak. I’m a first-rate **lister**.

My chronic list-making tendencies began in fourth grade when I begged for a white board and a set of Expo markers for Christmas. I started creating daily color-coordinated to-do lists replete with little checkmark boxes, and fun facts for my family to enjoy—perhaps to compensate for the fact that my large white board reigned over the kitchen space.

And, while I’ve retired the white board, I still stick with a note pad. I keep a note pad by the telephone, one on the counter, and of course, one in my backpack—some of them have new app ideas, some of them have new book ideas, maybe there’s even a revolution in there somewhere.

As far as habits go, it’s not a bad one to have.

A list is the keeper of spontaneous expression. With every contraction of my brain, every output of overflowing postulations, every idea my imagination rapidly hurls at me, those thoughts that had been unconscious suddenly surface at the touch of pen to paper. A thought, which is in so many ways intangible, is absolutely tangible on paper. And I like that thought—that our words can have resonance.

Because I’m not just a list-maker. **Words** and how they shape our reality have been a driving force in my life…

As a writer, I am constantly constructing reality. Writing on a page has a physicality: each word by itself could seem mundane and even unimaginative, but the way I choose to arrange them on the page makes them meaningful. Someone reads them, and now my words exist in the world as their own object.

As a debater, I edit on paper, I write on paper, I read on paper. And when I voice the words, and put them into the world, someone’s perception is changed, for better or for worse.

As an artist, I spin my words into portraits of people, landscapes of nature, even cartoons of fantastical polka dotted critters. My loose-leaf pages are a sanctuary from the rigors of “productivity,” and each doodle represents the language of my dreams and imagination.

Words build bridges. But the words that make up my lists aren’t just any words—they’re filled with “do, complete, finish, be.” They harness energy and incite action, give me answers and direction. They serve to connect the me I am—a tad disorganized, spontaneous, a little confused, and very overwhelmed—with the me I aspire to be. I can rely on them. Although the course of my life is most likely going to be transient, jumbled, and complex, covered in a tangle of corrections, with contradicting figures sprawled all over, lists will always keep me grounded.

There is something wonderful about a physical pen with graceful ink in my control that a handwritten list can solely provide, and that I will not grow out of. Lists go hand in hand with refreshing walks and a cup of hot chocolate in the morning: they are always there for me, to be read or put away or kept tucked away in a drawer or pocket—within reach.

Best of all, lists have a way of clarifying things: You can’t really mess around with a 3 by 5 note pad; you have to get to the absolute essence of an idea. In that moment between thinking a thing and writing it down, a shift takes place. Once I’ve got it down on paper, it’s going to happen.

THE BUILDER & PROBLEM SOLVER

Since childhood, I have been an obsessive builder and problem solver. When I was 6, I spent two months digging a hole in my backyard, ruining the grass lawn, determined to make a giant koi pond after watching a show on HGTV. After watching Castaway when I was 7, I started a fire in my backyard--to my mother's horror--using bark and kindling like Tom Hanks did. I neglected chores and spent nights locked in my room drawing pictures and diagrams or learning rubik's cube algorithms while my mother yelled at me through the door to go to sleep. I've always been compulsive about the things I set my mind to. The satisfaction of solving problems and executing my visions is all-consuming.

But my obsessive personality has helped me solve other problems, too.

When I was 8, I taught myself how to pick locks. I always dreamed of how cool it must have been inside my brother’s locked bedroom. So I didn't eat at school for two weeks and saved up enough lunch money to buy a lockpicking set from Home Depot. After I wiggled the tension wrench into the keyhole and twisted it counterclockwise, I began manipulating the tumblers in the keyhole with the pick until I heard the satisfying click of the lock and entered the room. Devouring his stash of Lemonheads was awesome, but not as gratifying as finally getting inside his room.

As the projects I tackled got bigger, I had to be more resourceful. One day in history class after reading about early American inventions, I decided to learn how to use a Spinning Jenny. When my parents unsurprisingly refused to waste $500 on an 18th century spinning wheel, I got to work visiting DIY websites to construct my own by disassembling my bike and removing the inner tube from the wheel, gathering string and nails, and cutting scrap wood. For weeks, I brushed my two cats everyday until I had gathered enough fur. I washed and soaked it, carded it with paddle brushes to align the fibers, and then spun it into yarn, which I then used to crochet a clutch purse for my grandmother on mother's day. She still uses it to this day.

In high school, my obsessive nature found a new outlet in art. Being a perfectionist, I often tore up my work in frustration at the slightest hint of imperfection. As a result, I was slowly falling behind in my art class, so I had to seek out alternate solutions to actualize the ideas I had in my head. Often times that meant using mixed media or experimenting with unconventional materials like newspaper or cardboard. Eventually I went on to win several awards, showcased my art in numerous galleries and magazines, and became President of National Art Honors Society. Taking four years of art hasn't just taught me to be creative, it’s taught me that there are multiple solutions to a problem.

After high school I began to work on more difficult projects and I channeled my creativity into a different form of art - programming. I’m currently working on an individual project at the Schepens Institute at Harvard University. I'm writing a program in Matlab that can measure visual acuity and determine what prescription glasses someone would need. I ultimately plan to turn this into a smartphone app to be released to the general public.

The fact is that computer coding is in many ways similar to the talents and hobbies I enjoyed as a child--they all require finding creative ways to solve problems. While my motivation to solve these problems might have been a childlike sense of satisfaction in creating new things, I have developed a new and profound sense of purpose and desire to put my problem solving skills to better our world.