**15282, Bruce Bates**

Good Evening Ladies and Gentlemen, and Thank you, Tim, for that fine introduction.

Tim and I go way back, all the way to elementary school, so we know a lot about each other, both good and bad, a situation I like to think of as mutually assured destruction. We ran high school cross country together, roomed together in college our first year and our last year and had the same college major of Civil Engineering. There was one big difference between us though. He was more of a cool kid and I was more of a nerd growing up. That meant he was more popular with the girls, but I got the best grades.

I want to thank the Virginia Tech Alumni Department for giving me the Distinguished Alumni award, I guess this proves that looks and personality are not part of the selection criteria.

I had a great experience matriculating at Virginia Tech, back when electronic calculators were the hot new technology. The most impactful class I took at Tech was Matrix Methods, taught by Dr. Siegfried Holzer. In that class we developed a matrix based frame solution program, in FORTRAN, using punch cards, and I thought that was just about the coolest thing ever. To be able to use a computer to accurately predict how a structure would behave, I thought was just incredible. Little did I know that one class would make the difference in my career success? I don’t think I was too much of a pain in class, was I Dr. Holzer?

When I graduated I was all set to take a job with Exxon in New Jersey, but this company out in California offered me an interview trip, so I thought why not, a free trip to California. So in December of 1980, I left the cold and ice of Blacksburg to visit Fluor Corporation, in warm and sunny Irvine, California. I mean, that’s a logical reason to choose one job over another isn’t it, warm vs. cold? It made perfect sense to me.

I was blown away with the facility, the people, everything about it, so of course I took the job. My plan was to work in California for a year or two, then come back east where I belonged. I figured I’d get tired of the lack of season changes and return to the ice and cold once I got bored with year round sunshine. Once I got out there, everyone told me if you stay two years you’ll stay for good. Then I met and married a tall, blonde volleyball playing California girl, so needless to say, I wasn’t coming back. Lisa has been my wife for 25 years now.

Fluor is a huge company with huge projects, and when I started working there I was assigned to a project with about 50 other structural engineers. When I was in school I had visions of designing skyscrapers, wearing a hardhat, and pointing at things with rolled up blueprints. The reality is when you’re an entry level structural engineer at a big company like Fluor, you don’t get to do stuff like that. The project I was on was a refinery project in Saudi Arabia. Part of the project involved fabricating pipe racks at a shipyard in Japan, then shipping them to the project in Saudi Arabia. My assignment was to calculate the center of gravity for each pipe rack. The first one I did was fairly interesting and the second one wasn’t too bad either. The next 300 got to be rather tedious. I was expected to crank out 3 or 4 of these a day, and after I programmed my Texas Instruments calculator to do the calculations for me, I could knock them out in about 10 minutes each. This meant I was excruciatingly bored and about as far away from designing skyscrapers as I possibly could have been. That made me start getting itchy for something with a lot more challenge and I was starting to look elsewhere for greater challenges.

About that time, an internal job posting appeared for a position with the computer group, looking for someone to help support and enhance Fluor’s mainframe structural analysis program called SAP4. I remembered my experience in matrix methods so I went for it. Thanks in part to my Virginia Tech Master’s degree, I got it. In retrospect that was a major pivot in my life. Had I not made that job switch I probably would have left Fluor and possibly come back east. Instead I stayed with them for a few more years always looking for more and greater challenges.

Around the mid 1980’s personal computers were getting popular so Fluor got a bunch of them and just sort of sprinkled them around the company, but nobody really knew what to do with them. I was given the job of figuring out if these new gadgets had any use for structural engineering. I wrote a small frame analysis program for the PC and the Fluor engineering group loved it. My name and phone number were on the start screen for the program, in case anyone had questions about it. When I started getting calls from engineers who didn’t even work at Fluor I knew we had something. I went to my managers and suggested we start selling the program commercially and was immediately shut down, so I decided to give the software business a shot on my own.

I decided I’d gone as far as I could and I left Fluor, cashed out my retirement account, and started RISA Technologies, independent developer of structural design software. It took me about a year, with a few stops along the way, to create the first version of RISA-2D. After I completed RISA-2D I went door to door among structural engineering offices in Southern California trying to sell it. It’s incredible how motivating no income and a shrinking savings account can be. As it turned out I was able to sell RISA-2D to most of them. This was a big step because at this point I knew I might actually be able to support myself writing structural design software.

The next big step was writing RISA-3D, which I finished in 1993. Once I started selling RISA-3D the company really started growing and I was able to finally start hiring other engineers and RISA-3D has been the focus of the company ever since. Today RISA-3D is the most widely used structural analysis program in the United States and it has been for the last ten years. Fluor Daniel, my old employer, is now one of my biggest clients. It can all be traced back to that matrix methods class with Dr. Holzer. I sure hope what Dr. Holzer taught me was accurate because that knowledge, through RISA software, has impacted the design of many thousands of structures.

Thank you.