

**Old Boys Association Annual Dinner**  
**Dr. Trevor C. Sorensen**  
**8<sup>th</sup> August, 2015**

Thank you Russell for the introduction. That's a hard act to follow.

It is a great honour to be invited here this evening to share some of my thoughts with this distinguished body of Novocastrians. I would especially like to thank John Beach for inviting me. I'm glad that I was able to accept, and I hope that by the end of this speech, you are as well.

I would first of all like to apologise, to misquote Monty Python, for "my outrageous Aussie accent." I left Australia when I was 18 and still somewhat impressionable, and even though I tried my best to keep my Australian accent, living almost 46 years in the land of the Yanks has taken its toll. For many years I have been in a rather unusual situation, where my accent is unique – there is nowhere in the world where I can blend in. No matter where I go, even here in my hometown, I have an accent and stand out as a stranger. To quote a popular book by the late great science fiction author, Robert Heinlein, I am a "Stranger in a Strange Land."

I left Australia in 1969 and returned on average only every six years. I first returned in December, 1975. In the six years I had been gone, Australia had adopted the metric system, introduced colour television, ended its participation in the Vietnam War, changed the clothing and hair styles - men's hair was getting shorter – and, was adopting American fast food - McDonalds, KFC, etc., with almost religious fervour. I could also see many other changes – lots of new houses where there used to be bush or abandoned coal mines, stores gone out of business, and so on. This was not the Australia I had left. It was some place new. I really was - a stranger in a strange land.

One change that really shocked me over the years was the degrading of our old school, from being one of top schools in the state, both in academics and sports, to a non-selective, local high school, with girls walking our hallowed halls, although that is one change I would not have objected to, and eventually to a college - the equivalent to our old junior high schools. This struck me as quite a tragedy.

My years at Boys' High left me with a wealth of memories of the wonderful, and not so wonderful, experiences that I had there. My oldest child, Angela, in 2009 said, "Dad, why don't you write these stories down so that we will have them and be able to pass them along even after you are gone." I thought that was a good idea, because I have had a really interesting life, being very involved with the American space program, and many other adventures. So I set out to write my memoirs. The first chapter I wrote was about my years at Boys' High. I completed the first draft at the end of 2009 and sent it to my old classmates with whom I was still in touch, for their review. This prompted some lively e-mail exchanges, as we discussed different events from those years, and the different memories we had of what really occurred. By the way, I will make an appeal here. When I was a junior, probably in 1<sup>st</sup> or 2<sup>nd</sup> Form, I came to school one morning and the seniors had put a small car, possibly a Goggomobile, up off the ground in a place that would make it very difficult to retrieve – possibly on the incinerator, on a verandah, or in a tree, ....! If any of you participated in that event or have first-hand knowledge of it and the

perpetrators, please let me know after this dinner. I want to record the facts.

The memoirs I wrote about my Boys' High days have almost become an unofficial history, although it is my personal story. I submitted it along with a chapter on my rocketry club activities during high school to the Old Boys' Association for inclusion on the website. So far, I have only seen the rocketry chapter of my memoirs posted there, but I hope that within a few months you will be able to read the rest of my Boys' High memoirs.

This effort forced me to relive in my mind my days at Boys' High. I realized just how important my years at Boys' High were to my subsequent career and life. It provided a wonderful preparation for me, especially professionally, although I must admit it fell far short when it came to social skills and how to deal with girls. I would like to share some of those gems with you, and how they helped me to transition into an incredible career and life. Please come on this journey with me over the next few minutes.

Let me start with my first day at Boys' High. I was one of only six boys from Hamilton Primary that were admitted to Boys' High. I was SO thrilled when I found out I was accepted. It was a dream come true. I remember when I first donned the grey shorts and long socks, blue shirt, and that wonderful blue and red striped tie and caught the bus to school. I was so proud to be recognized as being a big high school boy going to Boys' High. When I started attending classes there, I was like a sponge, ready to soak up the knowledge being imparted by our teachers. I was in awe of them, the older boys, and the whole experience. Over the next six years, I never completely lost that feeling of awe and thankfulness for being at Boys' High, even as I took it more and more for granted.

With very few exceptions, I think the teachers at Boys' High were excellent. Besides knowledge, they taught me many skills that proved to be very useful in later years. One is the value of discipline and respect. For those of you that attended Boys' High before the late 60s, which teacher do you associate with the word discipline? In my mind, it was not even close – Deputy Headmaster Thomas O'Connor, otherwise known as TOC.

I have to relate one experience, in Class 1A, that I had with TOC, which many of those who knew him find hard to believe, even though I swear it's true. It was during the change of period when we were waiting for our next teacher to arrive, I was standing up with my back to the door yelling across the room to my friend, Phillip Archer. All of a sudden, the classroom got deathly quiet and everybody was staring at the door. I stopped in mid-sentence and looked around. There was TOC standing in the doorway staring at me. He then said the dreaded words that would strike unbelievable terror into any boy who was a recipient of them - "Come see me at recess." And then he left, leaving me quaking, with the blood drained from my face, and starting to perspire. I now knew how the inmates on Death Row must feel on the day of their execution. The other boys looked at me with pity and mumbled things like "You're going to die." I believed them. Not a word that was said in the next class registered in my mind - all my attention was in contemplating the fate that awaited me.

At long last, the bell rang, and I walked the condemned man's walk down the corridor to the central intersection, where I turned right to reach TOC's office. I knocked and he told me to

enter. I stood there waiting for him to bring out his dreaded instrument of torture, the cane. He eyed me sternly and said "What's your name?" "Sorensen, sir." "Well, Sorensen, don't let it happen again - dismissed." The shock couldn't have been greater. He let me go without a caning! I think now that he could tell by the look on my face that I had been punished enough, probably more than by the physical pain of the cane. A huge weight had been lifted from my soul as I hurried out of his office before he had a chance to change his mind. Yes, I had survived the dreaded TOC. That encounter taught be some valuable lessons, the short-term one being to always be on the lookout for TOC, especially if I was doing something I shouldn't. The other was the importance of discipline balanced with mercy. Have a firm hand and impose discipline to make an operation or enterprise as efficient as possible. But discipline, combined with the application of mercy when possible, is the way to gain respect. I tried to apply these principles throughout my career, especially when I went into management positions and teaching at universities.

In 1<sup>st</sup> Form I was taught another very important lesson, although unfortunately, it is not one I learned well enough to always use. My German teacher for that year was Mr. Caldwell. One day while sitting in the back row of the classroom, Mr. Caldwell said to me "Herr Sorensen, stehen Sie auf!" so I stood up. He then said "Kommen Sie her!" which I understood to mean "Come here." I was just about to step forward when a classmate turned around and whispered to me "Comb your hair, comb your hair." He seemed so adamant about it that I hesitated, and then took the comb out of my pocket and started to comb my hair. Everybody immediately started laughing. My face turned red as I put the comb away and strode to the front of the class. The lesson here was not to believe everything you are told, and to listen to your own instincts, and trust your own knowledge and assessment if you believe they are correct. Don't abandon them just because somebody else tells you something different. [\[Post-speech note: I did not realize it during the speech, but Jack Caldwell, an old boy from 1958, was attending the dinner. I spoke and had my photo taken with him afterwards. He does not remember this incident, although all of the boys in my class that I have spoken to about it do remember it.\]](#)

These are just a few of the life lessons I learned, just in my first year at Boys' High. We had the advantage of a first class education, and the fact that it was a selective high school made a big difference.

The 1960s was an exciting time to grow up, especially for someone like me who was interested in science and technology. While I was in Primary School, Yury Gagarin became the first man to fly in space. By the time I started at Boys' High, the US had just completed its Mercury Program and getting ready to launch its Gemini missions. I started a scrapbook where I collected articles from the newspapers on the various manned spaceflights, that were happening more and more frequently. I still have that scrapbook.

It was during 1<sup>st</sup> Form that I borrowed a book from the Newcastle Library on rocketry. It was full of equations that I didn't understand, but it also described how rockets work and I was fascinated. I became passionate of rockets and all things related to spaceflight. My enthusiasm was infectious, and soon my closest mates at school joined me in forming a rocketry club. We built our own large metal rockets that used our own rocket engines powered by propellant that we mixed ourselves. We made mistakes, a lot of them, but fortunately, none fatal. But we also

learned a lot. In my rocketry memoirs that are posted on the OBA website, I called this group the NBHS rocketry club, even though it was unofficial.

Over the following years my friends and I launched many large steel rockets and had many close shaves, including starting a bush fire (which we managed to put out before it spread too far), and almost shooting down a jet fighter of the RAAF. The details are in my posted memoirs.

I guess my rocketry activities did eventually spill over to the school and had a very dramatic effect on the school when I was in 6<sup>th</sup> Form. Probably the thing I am most remembered for is my part in our 1969 Breakup or Muck-up Day. In Russell's speech for this dinner in 2010 he said, and I quote "*On muck-up day, Trev Sorensen and the nerd herd finally repaid our years of faith in them. Their smoke bomb snaked like a Steven King novel, right through the whole science block. Buoyed by his triumph and wanting to consolidate, mild-mannered Trevor, now badly off the leash, stormed like a Banshee through the school, emergency flare in hand.*"

First of all, I was surprised when I read this because I never considered myself a nerd. However, what Russell said was essentially correct. I used the knowledge I had gained with my rocketry and applied it to our plans for Muck-up Day.

I took my rocket propellant and added some special ingredients to make a wonderful smoke powder. I put it in a gallon size ice cream tin, and set it off between the tuck shop and the science block. It performed as expected, a slow-burning generator of thick smoke that soon enveloped that side of the school and over onto Turton Road, causing an evacuation. A bit later, I ignited a commercial smoke flare and was carrying it along like an Olympic Torch, filling the school behind the rampaging group of 6<sup>th</sup> Formers with smoke. Once I was outside, I dumped the flare and beat a hasty retreat towards the car park. On the way I was intercepted by Mr. Maiden, a worthy successor to TOC, who said to me "Sorensen, I'm disappointed in you." Ouch! And I thought I had achieved such an outstanding example of a practical scientific application.

My activities and interest in rockets sparked my desire to excel in maths and science, because I knew that I needed to do that in order to be a space engineer, which was my goal. As mentioned before, I had some outstanding teachers, including Herr Allan for German, Mr. Dobinson for Science, Vic Rooney for English and History, Preb Maehl for Maths, and Slops Mudford for Physics. After my HSC exams, I passed up a full Commonwealth scholarship in order to pursue my dream of being a space engineer.

I moved to America to attend university. Talk about a stranger in a strange land! I left Australia in near summer weather, and when I stepped off the plane in Kansas City, there was snow on the ground and a bitterly cold wind. Then there were other things, like the cars drove on the wrong side of the road, and the people talked funny. However, the language difference did have a good side benefit. At uni, I only had to speak a few words, and the girls would swoon and swarm all over me saying "I LOVE your accent. Please say more." I was able to get a lot of dates with gorgeous girls that I'm sure would not have been the case if I'd stayed in Australia.

I also quickly found out how ignorant many Yanks were of Australia. I have two examples that happened to me during my first semester in uni there. One person asked me where I came from, I

replied “Australia”. They then said, “How did you get here, did you fly or did you drive?” Another time, when I was speaking to someone, they asked where I was from. I again replied, “Australia.” They asked “How long have you been here?” I replied “Three months.” They said, “Boy, you learned English quickly.”

I enrolled in Aerospace Engineering at the University of Kansas. Because of what I had done in Level 1F Maths and Physics, I was able to skip the first two Calculus and Physics courses, and this enabled me to get my Bachelor of Science Degree in only 3 ½ years. I had a Permanent Residence Visa for the US, which enabled me to stay and work, but this was during the post-Apollo slump in aerospace, and the only job I could find was as an aircraft structural engineer in Dayton, Ohio. After 6 months the Air Force cancelled the contract and I was laid off. I ended up going to graduate school and got my Master of Science and Doctor of Engineering degrees in Aerospace Engineering working on the NASA Pioneer Venus project. For my doctorate, I did my research at NASA Ames Research Center, south of San Francisco. This was a dream come true – working on a space mission for NASA.

Armed with my doctorate, I was able to get a job at the NASA Johnson Space Center in Houston, Texas. This was even more of a dream come true – working on the manned space program in Houston. This was in 1980, a year before the first shuttle launch. I started out as a Guidance and Control engineer, developing techniques to save the astronauts in case of ascent aborts. As part of my job, I got to ride in the Space Shuttle motion-based simulator with the astronauts. My computer targets were onboard during STS-1 and -2, but fortunately, they did not need to use them.

After STS-2, I joined the Flight Directors’ Office as their assistant. It was while in this role I came to Australia in 1982 to be a technical consultant to the Channel 7 Network during STS-3, where I appeared on TV nearly every day during the mission. While in the Flight Directors’ Office, I underwent all the classroom and simulator training done by the astronauts and flight controllers on how to operate the space shuttle. I even was instructed using a simulator on how to use the loo in space. I got to do a spacewalk simulation and operate the remote manipulator arm. I became good friends with many of the astronauts, even some from Apollo days like John Young. I even had some astronauts over to my place and introduced them to Australian delicacies like Pavlova. But it was not all glamorous - I would also take care of astronaut Kathy Sullivan’s cats and clean their litter box while she was in orbit.

I worked at the Flight Director’s Console in Mission Control in Houston. Yes, I was living my dream from Boys’ High – I was a space engineer in the US Space Program. I was friends with some of the astronauts that were tragically killed when the Space Shuttle Challenger was destroyed during launch in 1986. I left the Flight Directors’ Office and managed a group of software engineers working on the programs used to design the shuttle flights.

In 1990 I accepted a position with Bendix Field Engineering in Alexandria, Virginia (a suburb of Washington DC) as a contractor to the Naval Research Lab. I was the Observations Manager for the LACE satellite, which was part of the DOD’s Star Wars Program. We tracked and imaged sounding rocket launches from space.

Working in Mission Control for the Space Shuttle program was not the highlight of my career. That occurred next, when in 1992 I became the Lunar Mission Manager for the Clementine mission to the Moon. Clementine was launched in January, 1994 and spent two and a half months orbiting and imaging the Moon, taking nearly 2 million images and providing the first global digital map of the Moon. It also discovered ice at the Lunar South Pole. I was in charge of the lunar operations. For that, NASA awarded me the Medal for Exceptional Scientific Achievement. That was the highlight of my career.

After Clementine, I worked on a couple other space missions, including the Galileo mission to Jupiter.

By 2000, I was sick of the commute and rat race that is Washington, and accepted a position as an Associate Professor in the Department of Aerospace Engineering at the University of Kansas, where I initiated various student aerospace programs. In 2007, I moved to Hawaii to join the faculty of the University of Hawaii at Manoa as a Specialist Professor and project manager in the Hawaii Space Flight Laboratory, where we are helping develop a launch vehicle, built a 55-kg satellite, which will be launched on our launch vehicle later this year, and are developing an innovative mission operations software system.

That is a brief overview of my career since leaving Australia. I did try a couple times to return to Australia during the 42 years since I first graduated from uni, but could not find suitable employment here. It seems like there is still not much call for space engineers in Australia...!

I would like to conclude by restating the central thesis of my speech – I had a dream that started in my first year of high school, was able to nurture and grow it through those six years, and the life lessons and brilliant education I received in those hallowed halls, enabled me to achieve and live my dream. Thank you, Boys' High, and especially to those teachers that guided me along the path.

Cheers, and thank you again for this great honour of speaking to you!