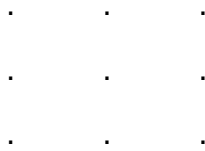


**Address by Burt Swersey, Professor of Engineering
2012 David M. Darrin '40 Counseling Award Winner
Delivered at the Spring 2013 Phalanx Honor Society Tapping Ceremony
April 6, 2013**

“Innovation and Entrepreneurship Begin With “4 Cs”

I am thrilled and honored to be the recipient of the David M. Darrin Counseling Award for 2012, and to be here today to address this wonderful group of students and guests. A puzzle.. Connect the 9 dots with 4 straight lines, without lifting your drawing implement.



New York Times, Sunday March 30, 2013, “Need a Job? Invent It.” Thomas Friedman wrote:

“WHEN Tony Wagner, the Harvard education specialist, describes his job today, he says he’s “a translator between two hostile tribes” — the education world and the business world, the people who teach our kids and the people who give them jobs. Wagner’s argument in his book “Creating Innovators: The Making of Young People Who Will Change the World” is that our K-12 and college tracks are not consistently “adding the value and teaching the skills that matter most in the marketplace.”

When I was graduated from Cornell in 1959, with a BSME degree, we had it easy. Strong US economy, lots of jobs, leading companies literally begging you to work for them. This has changed, and while we may not realize it, this change, this new reality, is GOOD. We had it too easy, while so many people in the world were suffering.. living on \$1 a day, without clean water, struggling to survive, without opportunities for education or the skills to raise themselves out of poverty.

We are guests on this amazing planet and we took advantage of our host. Now these past practices, this easy life for graduates of schools like Rensselaer, must change. According to Friedman, Tony Wagner and many others, the old motto, “Knowledge and Thoroughness”, simply will not cut it. You must become innovators who will make the world a better place for billions, as Tony Wagner says, “the ability to solve problems Creatively or bring new possibilities to life- (and) skills like Critical thinking, Communication and Collaboration are far more important than academic knowledge.”

Albert Einstein said, “Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.”

Walt Disney said, "If you can dream it you can do it."

And my granddaughter Rebecca, age 8 today, has inspired me. "Innovation and Entrepreneurship Begin With "C".

I took a 1 one credit course in creativity in my 5th year at Cornell that changed my life. I am teaching Inventor's Studio again this semester. I am also piloting a new 1 Credit course in SOE- Creativity, Innovation, Entrepreneurship. Note the order of the words. Creativity is the foundation. And it is about first REGAINING OUR CREATIVITY. Then add Critical Thinking, Collaboration, Communication, to get Innovation and Entrepreneurship. In the class, we draw, imagine, write stories about "Mermaids", look at trees from inside out, from Roots Upward. And we write poetry, following Rebecca's example. After her older brother got to do something that she didn't, she wrote:

Unfair

Unfair Stuff

Not so fair

First my brother

And then NOT ME

I didn't get to go

Right? Right?

Sometimes I do

Times I don't

Usually NO

For my brother

Fairness Come Please!

There are 18 students in the new class. 4 of them are among the 10 winners, chosen from 100 entries in Change the World Competition, supported by Sean O'Sullivan. WOW. Perhaps Creativity CAN BE TAUGHT!

And.. the exciting thing is, you here in this room today, some of the best that Rensselaer has to offer, can and must make life different for billions of people here in the US and around the globe. You have succeeded and shown that you can lead here. Friedman, Tony

Wagner and I believe that you must Invent your jobs and Invent the Future, a future that is more equitable, that “Puts People and Planet ahead of Profits.”

Let me pass on some wisdom that I have learned in the 55 years since being graduated. A story:

My first job was in Product Design Department at Polaroid Corporation. This was a hot company then. And Edwin H. Land was its brilliant leader. I was working for Dick Wareham. 5:30 Dick walks to his small office. Head down and shaking.. I said, “What’s wrong? Dick said, “I just met with Land. Listen to what he wants. This time he has gone too far.”

In 1960, cameras were basically manual. If you wanted a properly exposed photo, you used a light meter to measure the light, then you set the aperture and shutter speed on the camera. Land wanted something very different, something IDEAL, that seemed impossible.

“The lens should let in just the right amount of light for a perfect exposure, then become opaque”. Land’s background was chemistry and physics. Wareham knew that what Land wanted was impossible. I AGREED. Land had gone too far this time. I left Polaroid shortly after that for my 6 months in the Army. I did not return to Polaroid; instead I took a job at Sylvania, and worked for 2 years on design of some of the first large radar antennas for communication with synchronous orbit satellites.

Then I started a company making medical equipment. A young surgeon at Peter Bent Brigham Hospital in Boston wanted a scale for his metabolic research, that would weigh patients with 100 times the accuracy of standard scales. This was impossible. But.. I was inspired by that one credit course on Creativity and by what I learned at Polaroid. And I invented a scale that was 200 times more accurate!

I had forgotten about Polaroid and Land, until several years later, when the Polaroid SX-70 camera was on the cover of Time Magazine. It did exactly what Land wanted, and MORE. The engineers at Polaroid had accepted Land’s challenge and MADE IT EVEN BETTER, even learning from observing how bats use their radar to avoid obstacles. Bats inspired auto focus. The engineers had done the impossible, achieved a step towards What Would Be IDEAL.

Innovation comes from individuals Who have Regained their Creativity, And who have the courage to INSIST ON THE IMPOSSIBLE.. to Suspend Disbelief and Judgment, To See and Understand without being told, Who Imagine what would be IDEAL and then Make their Vision a Reality. That is the challenge. You have to do it all.

- Start with Values, Mission, Purpose.
- We must put People and Planet ahead of Profits.
- Regain our Creativity
- Remember that- We limit ourselves by our assumptions of what we believe is possible.

Don't work to provide what people ask for and say they want. Instead commit to what is really needed, and Threats to people and planet, that no one asks for because they believe they are impossible. People Adapt to what they have.

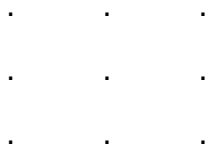
The Founders of Rensselaer taught- Technology applied to the common needs of people, especially those who are most in need, can raise people out of poverty, improve healthcare while reducing costs, make it possible for everyone to gain the education and the skills needed for success... And give us the opportunity to live a valued life.

You must become "Problem Finders" who do not wait to be told what to do. Instead, Look, really see, question, gather facts, analyze, criticize what exists, Imagine What Could Be, and then fight, and I mean it will be a fight and full of failures and frustrations, to make your Vision of what would be IDEAL, a Reality.

I know that you can. I have seen Eben Bayer and Gavin McIntyre, co-founders of Ecovative Design, and Paul Darois and Steve Galanska, inventors of Bullex Fire Extinguisher Training System, and Tahira Reid, who literally jump-roped her way from the streets of The Bronx to The Today Show, and a PhD. Watch her, Eben and Gavin on Ted.com. These graduates and many more, are no smarter than you. My father always said, "if others can do it, so can you."

So, don't wait. Start innovating and inventing today. Enter competitions, including Picnic Green Challenge and win 500,000 Euros. Apply for funding. Find a mentor. Surround yourselves with people who share your values, your beliefs, your passions and purpose. And become examples to many more young people, here and around the world, who will TRULY CHANGE THE WORLD and make it a far better, sustainable and equitable place.

Oh, and the 9 dots? We limit ourselves with assumptions we make. In order to connect the 9 dots with only 4 lines, you need to draw beyond the self-imposed limit and venture beyond the confines of the 9 dots. "Think outside the Box"



God Bless. Thank you.