California State Polytechnic University Commencement address

By Burt Rutan June 13, 1987

Distinguished Faculty, to-be-distinguished graduates, Good morning!

It's difficult to express what a thrill it is to be back at my alma mater and to have the opportunity to address this assembly. I suppose my challenge is to provide enlightenment to help you face your careers, in a world replete with opportunities and pitfalls. Possibly, my challenge is to *not* embarrass myself, since I do, indeed, want to return to Cal Poly someday to teach.

William F. Buckley warned that those with the square hats do not *listen* to commencement addresses, since they view remarks by the speaker as only the final *obstacle* to their emancipation. However, I approach this task with optimism because I feel a real *kinship* with anyone who has made it through the Cal Poly curriculum.

I graduated from Cal Poly in 1965. While preparing these remarks I discovered, to my horror that a large percentage of the current graduating class was *born* in 1965! When I was here as a student, the film *The Graduate* was playing down at the Fremont, Ford had just introduced the Mustang. The Beatles were displacing Peter, Paul and Mary and Elvis and *Prince* was something that chased cars and had to be paper trained. 1 now see that you are immersed in Grateful Dead, B-52, Ratt Poison, Bread, Corn, Kansas, Hiroshima, Meat Puppets, Fish Bone, Maffia Tack-head, and some group that bites the heads off bats. How am I to relate?

However, I was pleasantly surprised a couple of months ago when I had a chance to talk with many of you, and found that you are actually very *similar* to my graduating class... certainly much more so than anyone would have extrapolated from the Flower Children of 1969.

I think the best way to accomplish my task today is to pass on to you some of the most important things that I've learned from my experiences these last 22 years. Upon graduation in 1965, I accepted my *lowest* paying offer, a government job in a dismal, wind-blown desert. Civil Service was certainly furthest from my entrepreneurial spirit. But the *activity* I was to be immersed in, that of flight test engineering, was the important part. I felt the *enjoyment* of doing that work was the most important criteria. This was a good move, because I *did* find my niche. The key was that I enjoyed the work and found that a person can be creative and productive, *only* if he is *enjoying* his challenges.

I worked at Edwards Air Force Base seven years until I arrived at the point in which I felt I wanted *my* job more than *my boss's* job. Then, I launched my entrepreneurial career. I was able to quickly develop many new aircraft types including the Voyager. And I have been fortunate in finding that I always seem to be surrounded by people of equal enthusiasm.

At any point, I didn't *know* where I was going in the *long run.* I still don't know. I have discovered that it is *not* important to set long-term goals. Rather, it is *more* important to strive to find the niche where you will have freedom to exercise your most creative skills. In this way you will find the most potential for success.

Don't set your goals too high. After all, you can't have everything - where would you put it?

The *depressed* person is one who daily critiques his progress during his *struggle towards* a long-term goal. *The fulfilled* person is one who works hard, and then one day is *surprised* when he finds he has achieved a significant goal.

During the last several years you've been taught to read, to calculate, to recall, to solve, to explain, to present, and to react. These are all things that *computers* can do. The most advanced computer in the world does not have a brain as sophisticated as that of an *ant.* True, we could say that of *many* of our relatives, but we only have to put up with them at weddings and graduations! Your success and the success of the world around you, will be tied to *other* tasks of the brain: to reason, to create, to dream, to express despair, fear, exuberance, joy, determination and love. You will find as you go out into life, your biggest challenge will *not* be that of calculation and mechanical tasks but the challenge of dealing with *people ...* learning to motivate, to communicate and to inspire.

I would like to pass on to you a few things that I have found helpful in dealing with those around me:

> There's no limit to how far you can go if you don't mind who gets the *credit.* Give it freely if due and *when* it's due. Don't wait; do it while it's hot.

Let people know what is expected of them and let them know how they are getting along.
Avoid *worrying* about things over which you have *no control.* Find something you *can* control and focus on *it.*
Be sure to call your mother once per day, this puts things in *perspective,* since you can't bullshit *her.*
Never attribute to malice what can easily be explained by stupidity.

The Voyager project was an experience that taught me that the most *rewarding* things we can accomplish are those with technical sights set extremely high, with risks requiring courage, and with the need to *use* every aspect of freedom that our country can provide. The fulfillment of that dream really made flag wavers of us all, and it focused on the need to preach to others to strive to *keep* those freedoms. It showed me the importance of setting my sights high when being creative. This is what separates humans from the other animals.

We cannot leave our destiny to evolution because it gives us inadequate progress to please our egos. We must set our sights on *revolutionizing;* on trying something that may be out of reach, but still may be *just possible.* Even a *modest* goal will rarely be exceeded.

As you set your sights, the question often becomes one of calibration... how high? Perhaps history will put this in perspective. In aviation, we've recently seen the capability of sustained man-powered flight, and even *woman-powered* flight! Eighteen years ago Americans flew to the moon. Only sixty-six years before that, two brothers achieved the first powered flight.

In 1850, 53 years before the Wright brothers', a technical study was published in the *British Artisan* magazine concerning the feasibility of practical aviation. Using the same basic physics we use today, the author calculated the power that would be required for passenger aircraft and airships to fly. But he was faced with a problem: at that the time it took a ton of machinery to develop only three horsepower. I think some of his observations will help us in our dilemma about how to aim our technical sights at an unknown future. Quoting from the journal published in 1850, "The creator seems to have intended that man should *never* fly...Every mechanic cannot fail to perceive that [powered] flight is a practical impossibility... [forget man-powered flight]. It would take a hundred and six men doing their best to support one man in the air...Airship flight would be slow, and people would never patronize such travel except for the novelty of it...No man acquainted with nature's simple laws would endeavor to thwart her in the upper regions. There is no known power capable of competing with the warring elements, *electricity excepted,* but a thousand years may yet elapse ere this power be developed. Atmospheric pressure is reduced as you climb and few persons could exist long under such circumstances, as there are many who find the *ordinary* atmosphere hardly sufficient for their wants. Also, as airplanes climb, temperature decreases, and at a height of 10,000 feet there would be a difference of thirty degrees and thus aerial travelers would be taken from the midst of summer to the depth of winter in the space of twenty minutes. This would have a most injurious effect on the human system. We are already heirs to ills enough. Our ingenuity should be tasked to *lessen* those ills instead of being *misdirected* in search of the unattainable."

It's obvious that *this* scientist had *no chance* of participating in the remarkable develop-ments that were to take place. *This* is why two brilliant and motivated *bicycle repairmen* succeeded in flight instead of the top scientists of the day.

The fascinating part of the story is what took place later. Many individuals around the world accepted the challenge of flight in the years after the Wright Brothers. Incredible progress was made in the years 1908 to 1911. Quoting from a book by Victor Lockheed written in 1911; "Less than three years ago, airplane design was doubtful and completely experimental. At that time, probably not ten persons in the world had been off the ground. There were only four airplanes known that would really fly... no aviator had been two hundred feet high. At the present writing, (1911) one man has flown continuously for 11 hours; another has flown 500 miles in six hours... The English Channel has been crossed fifty times, an airplane has flown from London to Paris in four hours, the Alps have been surmounted... repeated cross-country journeys up to 4500 miles have been made at average speeds of 157 miles an hour... An aircraft has achieved 15 miles per gallon while carrying a 1000-pound payload...At least three European manufacturers have sold 500 airplanes each and some 2000 airplane pilots have made a total of more than half a million miles... over 10,000 people have made passenger flights and 45 million dollars [in 1911!] is invested in the aircraft industry in Europe alone, mostly by famous automobile companies."

As crude as things were in 1908, the excitement of the accomplishment of flight had fired the imagination, and had unleashed the skills of thousands of people achieving unbelievable progress in such a short period.

Another period in our history, which resulted in incredible progress, is that from 1962 to 1969. In only seven

years, space travel went from its infancy in which modest flights were made with the Mercury and the initial Gemini capsules to the successful Apollo moon landing. Incredibly complex technical tasks were performed as if they were easy. The seemingly unattainable goal had been dictated and *inspired* by President Kennedy. The *inspiration* is the key element.

The bad news is that today, our industry and government research and development organizations don't seem to be able to operate efficiently. They are stifled by over-regulation and are unwilling to take risks. They are strangled by fiscal controls and procedures such that more time and money is spent wrestling with the dollars than with solving the technical problems. As a result, we see our technical capability stymied and being surpassed in many crucial areas by foreign competition.

The most important thing I can tell you is that the industry *needs you.* Needed are your fresh ideas, your enthusiasm, and your ability to question. You do not *yet* have the *blinders* possessed by those who have years of *experience.* American industry *needs* you to question, to analyze without prejudice, and to motivate. American *ingenuity* is not dead. What is needed are those with the courage to speak out, to question *why* we are inefficient, to incorporate the entrepreneurial spirit into the roots of our large organizations and to preserve our freedom to do so. When you observe some ivy-league alumnus pressing an issue that promises to protect your *safety* - check *carefully* - see that it doesn't *steal* your *Freedom.*

The most difficult task you will face is to find *your* niche - an environment that provides *you* with excitement and motivation to allow you to enjoy your work, while also producing results in restoring America's productivity.

As I look out at you, I can't help but notice the silly outfits we are wearing. Maybe the fashion designer intended them, as a *symbol* to point to the humiliating postures that life will require of us on a daily basis! But then, we have specific uniforms for Avila Beach 206 classes.

In conclusion, it is clear the future holds great opportunities. It also holds pitfalls. The trick will be to avoid the pitfalls, seize the opportunities, and get back home by six o'clock.