

“ACHIEVING  
YOUR  
CHILDHOOD  
DREAMS”

*delivered by RANDY PAUSCH*

[www.EngineerPH.com](http://www.EngineerPH.com)

It is wonderful to be here. What [they] didn't tell you is that this lecture series used to be called The Last Lecture. If you had one last lecture to give before you died, what would it be? I thought, “Damn, I finally nailed the venue and they renamed it.”

So, in case there's anybody who wandered in and doesn't know the back story, my Dad always taught me when there's an elephant in the room, introduce them. If you look at my CAT scans, there are approximately 10 tumors in my liver and the doctors told me three to six months of good health left. That was a month ago, so you can do the math. I have some of the best doctors in the world.

So, that is what it is. We can't change it and we just have to decide how we're going to respond to that. We can not change the cards we are dealt, just how we play the hand. If I don't seem as depressed or morose as I should be, sorry to disappoint you.

And I assure you, I am not in denial. It's not like I'm not aware of what's going on. My family,

my three kids, my wife, we just decamped. We bought a lovely house in Chesapeake, Virginia, near Norfolk and we're doing that because that's a better place for the family to be, down the road.

And the other thing is, I am in phenomenally good health right now. I mean, it's the greatest thing of cognitive dissonance you will ever see is the fact that I am in really good shape. In fact, I'm in better shape than most of you. So anybody who wants to cry or pity me, can come down and do a few of those and then you may pity me.

All right, so what we're not talking about today. We're not talking about cancer. Because I spend a lot of time talking about that and I'm really not interested. If you have any herbal supplements or remedies, please stay away from me.

And we're not going to talk about things that are even more important than achieving your childhood dreams. We're not going to talk about my wife, we're not gonna talk about my

kids. Because I’m good, but I’m not good enough to talk about that without tearing up. So, we’re just gonna take that off the table. That’s much more important.

And we’re not gonna talk about spirituality and religion. Although, I will tell you that I have experienced a death bed conversion. I just bought a Macintosh. Now I knew I’d get nine percent of the audience with that, but ...

All right, so what is today’s talk about then? It’s about my childhood dreams. And how I’ve achieved them. I’ve been very fortunate that way. How I believe I’ve been able to enable the dreams of others. And to some degree, lessons learned. I’m a professor. There should be some lessons learned. And how you can use the stuff you hear today to achieve your dreams or enable the dreams of others. And as you get older, you may find that enable the dreams of others thing is even more fun.

So, what were my childhood dreams? Well, you know, I had a really good childhood. I mean, no kidding around. I was going back through the

family archives and what was really amazing was, I couldn't find any pictures of me as a kid where I wasn't smiling. Right? And that was just a very gratifying thing. There was our dog. Awe, thank you. And there, I actually have a picture of me dreaming. And I did a lot of that, you know. There was a lot of, "Wake up!"s, you know?

And it was an easy time to dream. I was born in 1960. Right? When you're eight or nine years old and you look at the TV set and men are landing on the moon, anything is possible. And that's something we should not lose sight of. Is that the inspiration and the permission to dream is huge.

So what were my childhood dreams? You may not agree with this list, but I was there. Being in zero gravity. Playing in the National Football League. Authoring an article in the World Book Encyclopedia. I guess you can tell the nerds early. Being Captain Kirk. Anybody here have that childhood dream? Not at CMU, no. I wanted to become one of the guys who won the big stuffed animals in the amusement park.

And I wanted to be an Imagineer with Disney. These are not sorted in any particular order, although I do think they get harder, except for maybe the first one.

Okay, so being in zero gravity. Now it's important to have specific dreams. I did not dream of being an astronaut because when I was a little kid, I wore glasses. And they told me, “Oh, astronauts can't have glasses.” And I was like, “Mm,” I didn't really want the whole astronaut gig. I just wanted the floating. So, and as a child, prototype zero point zero. But that didn't work so well.

And it turns out that NASA has something called the “vomit comet” that they use to train the astronauts. And this thing does parabolic arcs. And at the top of each arc, you get about 245 seconds where you're ballistic and you get about a rough equivalent of weightlessness for about 25 seconds. And there is a program where college students can submit proposals. And if they win the competition, they get to fly. And I thought that was really cool and we had a team, we put a team together. And they won and they

got to fly. And I was all excited 'cause I was gonna go with them. And then I hit the first brick wall because they made it very clear that under no circumstances were faculty members allowed to fly with the teams.

I know, I was heartbroken. Right. I was like, "But, I worked so hard." And so, I read the literature very carefully and it turns out that NASA, it's part of their outreach and publicity program. And it turns out that the students were allowed to bring a local media journalist from their hometown. And, Randy Pausch, web journalist. It's really easy to get a press pass.

So I call up the guys at NASA and I said, "I need to know where to fax some documents." And they said, "What documents are going to fax us?" I said, "My resignation as the faculty advisor and my application as the journalist." And he said, "That's a little transparent. Don't you think?" And I said, "Yeah, but our project is virtual reality and we're gonna bring down a whole bunch of VR headsets and all the students from all the teams are going to experience it. And all those other real

journalists, are going to get to film it.”

Jim Foley’s going, “Oh, you bastard. Yes.” And the guy said, “Here’s the fax number.” So, and indeed, we kept our end of the bargain. And that’s one of the themes that you’ll hear later on in the talk is, “Have something to bring to the table.” All right? Because that will make you more welcomed.

All right, let’s talk about football. My dream was to play in the National Football League. And most of you don’t know that I actually pl- No. No, I did not make it to the National Football League. But, I probably got more from that dream and not accomplishing it than I got from any of the ones that I did accomplish.

I had a coach. I was signed up when I was nine years old. I was the smallest kid in the league, by far. And I had a coach, Jim Graham, who was six foot four. He had played linebacker at Penn State. He was just this hulk of a guy and he was old school. I mean really old school. Like, he thought the forward pass was a trick play.



And he showed up for practice the first day and, you know, this big hulking guy, we were all scared to death of him. And he hadn't brought any footballs. How are we gonna have practice without any footballs? And one of the other kids said, "Excuse me, coach, cut there's no football." And Coach Graham said, "Right. How many men are on a football field at a time?" So I said, "11 on a team, 22." And Coach Graham said, "All right and how many people are touching the football at any given time?" "One of them." And he said, "Right. So we're gonna work on what those other 21 guys are doing."

And that's a really good story because it's all about fundamentals. Fundamentals, fundamentals, fundamentals. You've gotta get the fundamentals down because otherwise, the fancy stuff isn't gonna work.

And the other Jim Graham story I have is, there was one practice where he just rode me, all practice. Just, "You're doing this wrong. You're doing this wrong. Go back and do it again. You owe me. You're doing pushups after practice." And when it was all over, one of the other

assistant coaches came over and said, “Yeah, Coach Graham rode you pretty hard, didn’t he?” I said, “Yeah.” He said, “That’s a good thing.” He said, “When you’re screwing up and nobody’s saying anything to you anymore, that means they gave up.” And that’s a lesson that stuck with me my whole life. Is that, when you see yourself doing something badly and nobody’s bothering to tell you anymore, that’s a very bad place to be. Your critics are your ones telling you they still love you and care.

After Coach Graham, I had another coach, Coach Setliff and he taught me a lot about the power of enthusiasm. He did this one thing where only for one play at a time, he would put people in at like, the most horrifically wrong position for them. Like all the short guys would become receivers, right? It was just laughable. But we only went in for one play. Right? And boy, the other team just never knew what hit ‘em. Because when you’re only doing it for one play and you’re just not where you’re supposed to be and freedom’s just another word for nothing left to lose, boy, are you gonna clean

somebody's clock for that one play. And that kind of enthusiasm was great.

And to this day, I am most comfortable on a football field. I mean, it's just one of those things where, if I'm working a hard problem, people will see me wandering the halls with one of these things. And that's just because, you know, when you do something young enough and you train for it, it just becomes a part of you. And I'm very glad that football was a part of my life. And if I didn't get the dream of playing in the NFL, that's okay. I probably got stuff more valuable. Because looking at what's going on in the NFL, I'm not sure those guys are doing so great right now.

Okay, and so, one of the expressions I learned in electronic arts, which I love, which pertains to this is, "Experience is what you get when you didn't get what you wanted." And I think that's absolutely lovely.

And the other thing about football is, we send out kids out to play football or soccer or swimming or whatever it is, and it's the first

example of what I’m gonna call a head fake or indirect learning. We actually don’t want our kids to learn football. I mean, yeah, it’s really nice that I have a wonderful three point stance and that I know how to do a chop block and all this kind of stuff. But, we send our kids out to learn much more important things. Team work, sportsmanship, perseverance, et cetera, et cetera. And these kinds of head fake learnings are absolutely important. And you should keep your eye out for them because they’re everywhere.

All right, a simple one, being an author in the World Book Encyclopedia. When I was a kid, we had the World Book Encyclopedia on the shelf. For the freshman, this is paper. We used to have these things called books. And after I had become somewhat of an authority on virtual reality, but not like a really important one, so I was at the level of people at the World Book would badger.

They called me up and I wrote an article. And this is Katelyn Kellaheer. There’s an article, if you go to your local library where they still

have copies of the World Book, look under V for virtual reality and there it is.

And all I have to say is that, having been selected to be an author in the World Book Encyclopedia, I know believe that Wikipedia is a perfectly fine source for your information because I know what the quality control is for real encyclopedias. They let me in.

All right, next one. At a certain point, you just realize there's some things you're not gonna do, so maybe you just want to stand close the people. And, I mean, my god, what a role model for young people. I mean, this is everything you want to be. And what I learned that carried me forward in leadership later is that, you know, he wasn't the smartest guy on the ship. I mean, Spock was pretty smart and McCoy was the doctor and Scottie was the engineer. And you sort of go, and what skill set did he have to get on this damn thing and run it?

And clearly there's this skill set called leadership. And whether or not you like the series, there's no doubt that there was a lot to be

learned about how to lead people by watching this guy in action. And he just had the coolest damn toys. Right? I mean, my god. I just thought it was fascinating as a kid that he had this thing and he could talk to the ship with it. I just thought that was just spectacular. And of course, now I own one and it's smaller. So that's kind of cool.

So, I got to achieve this dream. James T Kirk, his alter ego, William Shatner, wrote a book. Which, I think, was actually a pretty cool book. It was with Chip Walter who's a Pittsburgh based author who's quite good. And he wrote a book on basically the science of Star Trek, what has come true. And they went around to top places around the country and looked at various things and they came here to study our virtual reality set up. And so we built a virtual reality for him. It looks something like that. We put it in, put it to red alert. He was a very good sport. It's not like he saw that one coming. And it's really cool to meet your boyhood idol. But it's even cooler when he comes to you to see what cool stuff you're doing in your lab. That

was just a great moment.

All right, winning stuffed animals. This may seem mundane to you, but when you're a little kid and you see the big buff guys walking around in an amusement park and they got all these big stuffed animals, right? And this is my lovely wife. And I have a lot of pictures of stuffed animals I've won. That's my Dad, posing with one that I won. I've won a lot of these animals. There's my Dad, he did win that one, to his credit. And this was just a big part of my life and my family's life.

But you know, I can hear the cynics. You know, in this age of digitally manipulated things, maybe those bears aren't really in the picture with me. Or maybe I paid somebody five bucks to take a picture in the theme park next to the bear. And I said, "How in this age of cynicism can I convince people?" And I said, "I know. I can show them the bears." Bring them out. You can just put them right there. You can just put them back against the wall.

So here's some bears. We didn't have quite

enough room in the moving truck down to Chesapeake. And anybody who'd like a little piece of me at the end of this, feel free to come up, first come, first serve.

All right, my next one. Being an Imagineer. This was the hard one. Believe me, getting to zero gravity is easier than becoming an Imagineer. When I was a kid, I was eight years old and our family took a trip cross country to see Disneyland. And if you've ever seen the movie National Lampoon's Vacation, it was a lot like that. It was a quest.

And these are real vintage photographs. And there I am, in front of the castle. And there I am. For those of you who are into foreshadowing, this is the Alice ride. And I just thought this was just the coolest environment I'd ever been in. And instead of saying, "Gee, I want to experience this," I said, "I want to make stuff like this."

And so I bided my time and then I graduated with PhD from Carnegie Mellon, thinking that meant me infinitely qualified to do anything.



And I dashed off my letters of application to Walt Disney Imagineering and they sent me some of the damn nicest “go to hell” letters I’ve ever gotten. I mean, it was just, “We have carefully reviewed your application and presently, we do not have any positions available which require your particular qualifications.”

Now think about the fact that you’re getting this from a place who’s famous for guys who sweep the street. So that was a bit of a set back. But remember, the brick walls are there for a reason. All right? The brick walls are not there to keep us out. The brick walls are there to give us a chance to show how badly we want something. Because they brick walls are there to stop the people who don’t want it badly enough. They’re there to stop the other people.

All right, fast forward to 1999. We did a system back at the University of Virginia called “Virtual Reality on Five Dollars a Day”. Just one of those unbelievable spectacular things. I was so scared back in those days as a junior academic. Jim Foley’s here and I just love to tell this story. He

knew my undergraduate advisor, Andy VanDamm. And I'm at my first conference and I'm just scared to death and this icon in the user interface community walks up to me and out of nowhere just gives me this huge bear hug. And he says, “That was from Andy.” And that was when I thought, “Okay, maybe I can make it. Maybe I do belong.”

And a similar story is that this was just this unbelievable hit because, at the time, everybody needed a half a million dollars to do virtual reality. And everybody felt frustrated. And we literally hacked together a system for about \$5,000 in parts and made a working VR system. And people were just like, “Oh my god.” This like, Hewlett-Packard garage thing. This is so awesome.

And so I'm giving this talk and the room has just gone wild. And during the Q and A, a guy named Tom Ferness, who was one of the big names in virtual reality at the time. He goes up to the microphone and he introduces himself. I didn't know what he looked like, but I sure as hell knew the name. And he asked a question.

And I was like, “I’m sorry, did you say you’re Tom Ferness?” He said, “Yes.” I said, “Then I would love to answer your question, but first, will you have lunch with me tomorrow?” And there’s a lot in that little moment. There’s a lot of humility, but also, asking a person where he can’t possibly say no.

And so, Imagineering, a couple of years later was working on a virtual reality project. This was top secret. They were denying the existence of a virtual reality attraction after the time that the publicity department was running the TV commercials. So Imagineering really had nailed this one tight. And it was the Aladdin attraction where you would fly a magic carpet. And the head mounted display, sometimes known as gator vision. And so, I had an in. As soon as the project had just ... You know, they started running the TV commercials and I had been asked to brief the Secretary of Defense on the state of virtual reality. Okay, Fred Brooks and I had been asked to brief the Secretary of Defense. And that gave me an excuse. So I called them up, I called Imagineering and I said,

“Look, I’m briefing the Secretary of Defense. I’d like some materials on what you have ‘cause it’s one of the best VR systems in the world.” And they kind of pushed back. And I said, “Look, is all this patriotism stuff in the parks a farce?” And they’re like, “Mm, okay.” They said, “This is so new that the PR department doesn’t have any footage for you so I’m gonna have to connect you straight through to the team who did the work.” Jackpot.

So I find myself on the phone with a guy named John Snoddy, who is one of the most impressive guys I have ever met. And he was the guy running this team. And it’s not surprising they had done impressive things. And so he sent me some stuff. We talked briefly, he sent me some stuff and I said, “Hey, I’m gonna be out in the area for a conference shortly. Would you like to get together and have lunch?” Translation, I’m going to lie to you and say that I have an excuse to be in the area so I don’t look too anxious. But I would go to Neptune to have lunch with you.”

And so John said sure. And I spent something

like 80 hours talking with all the VR experts in the world saying, “If you had access to this one unbelievable project, what would you ask?” And then I compiled all of that and I had to memorize it, which anybody who knows me knows that I have no memory at all. ‘Cause I couldn’t go in looking like a dweeb with, “Hi, question 72 ...”

So, I went in and this was like a two hour lunch. And John must have thought he was talking to some phenomenal person because I was doing was channeling Fred Brooks and Ivan Sutherland and Andy VanDamm and people like that. Henry Fooks. So, it’s pretty easy to be smart when you’re parodying smart people.

And at the end of the lunch with John, I sort of, as we say in the business, made the ask. And I said, “You know, I have a sabbatical coming up.” He said, “What’s that?” The beginnings of the culture clash. And so, I talked to him about the possibility of coming there and working with him. And he said, “That’s really good, except, you know, you’re in the business of telling people stuff and we’re in the business of

keeping secrets.” And then what made John Snoddy, John Snoddy, was he said, “But we’ll work it out.” Which I really loved.

The other thing that I learned from John Snoddy, I could do easily an hour long talk just on what’ve I learned from John Snoddy. One of the things he told me was that, wait long enough and people will surprise and impress you. He said, “When you’re pissed off at somebody and you’re angry at them, you just haven’t given them enough time. Just give them a little more time and they’ll almost always impress you.” And that really stuck with me. I think he’s absolutely right on that one.

So, to make a long story short, we negotiated a legal contract. It was going to be the first, some people referred to it as the first and last paper ever published by Imagineering. But the deal was, I go, I provide my own funding, I go for six months, I work with the project, we publish a paper.

And then we meet our villain. I can’t be all sweetness and light, because I have no

credibility. Somebody's head's gonna go on a stick. Turns out that the person who gets his head on a stick is a dean back at the University of Virginia. His name is not important, let's call him Dean Wormer. And Dena Wormer has a meeting with me where I say I want to do this sabbatical thing. And I've actually gotten the Imagineering guys to let an academic in, which is insane. I mean, if John hadn't gone nuts, this would never have been a possibility. This is a very secretive organization.

And Dean Wormer looks at the paperwork and he says, "Well, it says they're gonna own your intellectual property." I said, "Yeah, we got the agreement to publish the paper. There is no other IP. I don't do patentable stuff." He says, "Yeah, but you might. So deal's off. Just get them to change that little clause there and then come back to me." I'm like, "Excuse me?" And then I said to him, "I want you to understand how important this is. If we can't work this out, I'm going to take an unpaid leave of absence and I'm just gonna go there and I'm gonna do this thing." And he said, "Hey, you know, I

might not even let you do that. I mean, you’ve got the IP in your head already and maybe they’re gonna suck it out of you so that’s not gonna fly either.”

It’s very important to know when you’re in a pissing match. And it’s very important to get out of it as quickly as possible. So I said to him, “Well, let’s back off on this. Do we think this is a good idea at all?” He said, “I have no idea if this is a good idea.” I was like, “Okay, well we’ve got common ground there.” Then I said, “Well, is this really your call? Isn’t this the call of the dean of sponsored research? If it’s an IP issue?” And he said, “Yeah, that’s true.” So I said, “If he’s happy, you’re happy?” “Yeah, then I’d be fine.” Like Wile E Coyote. And I find myself in Gene Block’s office, who’s the most fantastic man in the world.

And I start talking to Gene Block and I say, “Let’s start at the high level,” since I don’t want to have to back out again. I said, “Let’s start at the high level. Do you think this is a good idea?” He said, “Well, if you’re asking me if it’s a good idea, I don’t have very much information. All I



know is that one of my star faculty members is in my office and he's really excited, so tell me more." Here's a lesson for everybody in administration, they both said the same thing. But think-

... they both said the same thing, but think about how they said it. Right? I don't know. Well, I don't have much information but one of my star faculty members is here and he's all excited so I want to learn more. They're both ways of saying "I don't know" but boy, there's a good way and a bad way. So anyway, we got it all worked out. I went to Imagineering. Sweetness and light. And all's well that ends well.

Some brick walls are made of flesh. So I worked on the Aladdin project. It was absolutely spectacular. I mean, just unbelievable. Here's my nephew, Christopher. This was the apparatus. You would sit on this sort of motorcycle-type thing and you would steer your magic carpet and you would put on the head-mounted display. The head-mounted display was very interesting. It had two parts and it was a very, very clever design. To get

throughput through, the only part that touched the guests' head was this little cap and everything else clicked onto it, all the expensive hardware. So you could replicate the caps, because they were basically free to manufacture. And, this is what I really did, is I was a cap cleaner.

I loved Imagineering. It was just a spectacular place. Just spectacular. Everything that I had dreamed. I love the model shop. People crawling around on things the size of this room that are just big physical models. It was just an incredible place to walk around and be inspired. I'm always reminded, when I went there and people said “Do you think the expectations are too high?” And I said, “Did you ever see the movie Charlie and the Chocolate Factory, Willie Wonka and the Chocolate Factory?” where Gene Wilder says to the little boy, Charlie, he's about to give him the chocolate factory and he says, “Well, Charlie, did anybody ever tell you the story of the little boy who suddenly got everything he ever wanted?” Charlie's eyes get like saucers and he says, “No,

what happened to him?” Gene Wilder says, “He lived happily ever after.”

Okay. So, working on the Aladdin VR, I describe it as a once in every five years opportunity and I stand by that assessment. It forever changed me. It wasn't just that it was good work and I got to be a part of it, but it got me into the place of working with real people and real HCI user interface issues. Most HCI people live in this fantasy world of white collar laborers with PhDs and Masters degrees and, you know, until you got ice cream spilled on you, you're not doing field work, right?

And, more than anything else, from Jon Snoddy, I learned how to put artists and engineers together, and that's been the real legacy. We published a paper, just a nice academic cultural scandal. When we wrote the paper the guys at Imagineering said, well, let's do a nice big picture, like you would in a magazine. And the SIGGRAPH committee, which accepted the paper, it was like this big scandal. Are they allowed to do that? There was no rule. So we published the paper and,

amazingly, since then there’s a tradition of SIGGRAPH papers having color figures on the first page. I, so I’ve changed the world in a small way.

And then at the end of my six months, they came to me and they said, “You wanna do it for real? You can stay.” And I said, “No”. One of the only times in my life I have surprised my father. He was like, “You what?” He said, “Since you were, you know, all you wanted, and now you that you got it and you’re like huh?”

There was a bottle of Maalox in my desk drawer. Be careful what you wish for. It was a particularly stressful place. Imagineering, in general, is actually not so Maalox-laden, but the lab I was in ... Oh, Jon left in the middle. It was a lot like the Soviet Union. It was a little dicey for a while, but it worked out okay. And, if they had said “Stay here or never walk in the building again”, I would have done it. I would have walked away from tenure. I would have just done it. But they made it easy on me. They said, “You can have your cake and eat it too”. And I basically become a day a week consultant

for Imagineering and I did that for about ten years. And that's one of the reasons you should all become professors, because you can have your cake and eat it too. Okay?

I went on and consulted on things like DisneyQuest. So there was the Virtual Jungle Cruise and the best interactive experience, I think, ever done, and Jesse Schell gets the credit for this, Pirates of the Caribbean. Wonderful at DisneyQuest.

And so, those are my childhood dreams. And, you know, that's pretty good. I felt good about that. So, then the question becomes, how can I enable the childhood dreams of others? And again, boy, am I glad I became a professor. What better place to enable childhood dreams? Maybe working at EA, I don't know, that'd probably be a good close second. But, and this started in a very concrete realization that I could do this because a young man named Tommy Burnett, when I was at the University of Virginia, came to me, was interested in joining my research group and we talked about it and he said, "Oh, and I have a childhood

dream.” It gets pretty easy to recognize them when they tell you. And I said, “Yes, Tommy, what is your childhood dream?” He said, “I want to work on the next Star Wars film.” Now, you gotta remember the timing on this. Where is Tommy? Tommy is here today. What year would this have been? Your sophomore year?

TOMMY: It was around 1993.

RANDY PAUSCH: Are you breaking anything back there, young man? Okay. All right. So, in 1993. And I said to Tommy, “You know they’re probably not going to make those next movies.” And he said, “No, they are.” And, Tommy worked with me for a number of years as an undergraduate and then as a staff member, and then when I moved to Carnegie Mellon, every single member of my team came from Virginia to Carnegie Mellon except for Tommy because he got a better offer. And he did indeed work on all three of those films. So ...

And then I said, well, that’s nice but, you know, one at a time is kind of inefficient. And people who know me know that I am an efficiency

freak. So I said, “Can I do this en masse?” Can I get people turned in such a way that they can be turned onto their childhood dreams?

And I created a course, I came to Carnegie Mellon, I created a course called Building Virtual Worlds. It’s a very simple course. How many people have ever been to any of the shows? Okay. So you have a, some of you have an idea. For those of you who don’t, the course is very simple. There are 50 students drawn from all the different departments of the university. There are randomly chosen, randomly chosen teams. Four people per team, and they change every project. A project only lasts two weeks, so you do something, you make something, you show something, then I shuffle the teams. You get three new playmates, and you do it again. And, it’s every two weeks, and so you do five projects during the semester.

The first year we taught this course, it is impossible to describe how much of a tiger-by-the-tail we had. I was just running the course because I wanted to see if we could do it. We had just learned how to do texture mapping on

3D graphics and we could make stuff that looked half decent but, you know, we were running on really weak computers, by current standards. But I said, “I’ll give it a try.” And at my new university I made a couple of phone calls and I said I want to cross list this course to get all these other people. And within 24 hours it was cross-listed in five departments. I love this university. I mean, it’s just, it’s the most amazing place.

And I said, and the kids said, “Well, what content do we make?” I said, “Hell, I don’t know. You make whatever you want.” Two rules: no shooting violence and no pornography. Not because I’m opposed to those in particular but, you know, that’s been done with VR, right? And you’d be amazed how many 19-year old boys are completely out of ideas when you take those off the table. Anyway, so I taught the course.

The first assignment, I gave it to them. They came back in two weeks and they just blew me away. I mean, the work was so beyond, literally, my imagination, because I copied the process



from Imagineering's VR lab but I had no idea what they could or couldn't do with it as undergraduates and how, because their, and their tools were weaker. And they came back in the first assignment and they did something that was so spectacular that I literally didn't, ten years as a professor and I had no idea what to do next. So I called up my mentor. I called up Andy Van Dam. And I said, "Andy, I just gave a two week assignment and they came back and did stuff that if I'd given them the whole semester, I'd have given them all A's. Sensei, what do I do?" And Andy thought for a minute and he said, "You go back into class tomorrow and you look them in the eye and you say, guys, that was pretty good but I know you can do better." And that was exactly the right advice because what he said was, "You obviously don't know where the bar should be and you're only gonna do them a disservice by putting it anywhere." And, boy, was that good advice because they just kept going.

And during that semester it became this underground thing. I'd walk into a class with 50,

with 50 students in it and there were 95 people in the room because it was the day we were showing work. And people’s roommates and friends and parents ... I’ve never had parents come to class before. It was flattering and somewhat scary.

And so, it snowballed and we had this bizarre thing of, well, we’ve gotta share this. If there’s anything I’ve been raised to do, it’s to share. And I said, “We’ve gotta show this at the end of the semester. We’ve gotta have a big show.” And we booked this room, McConomy. I have a lot of good memories in this room. And we booked it, not because we thought we could fill it, but because it had the only A/V setup that would work, because this was a zoo. All right? Computers and everything. And then we filled it. And we more than filled it. We had people standing in the aisle.

I will never forget the dean at the time, Jim Morris, was sitting on the stage right about there. We had to kind of scoot him out of the way. And, the energy in the room was like nothing I had every experienced before. And

President Cohen, Jerry Cohen, was there and he sensed the same thing. He later described it as like an Ohio State football pep rally, except for academics. And, and he came over and he asked exactly the right question. He said, “Before you start, he said, I gotta know, where are these people from?” He said, “The audience, what departments are they from?” And we polled them and it was all the departments. And I felt very good because I had just come to campus. He had just come to campus. And my new boss had seen in a very corporal way that this is the university that puts everybody together. And, and that made me feel just tremendous.

So we did this campus-wide exhibition and people performed down here. They’re in costume and we project just like this. And you can see what’s going on. You can see what they’re seeing in the head-mount. There’s a lot of big props. So there’s a guy whitewater rafting. This is a fan and

E.T. And, yes, I did tell them if they didn’t do the shot of the kids biking across the moon, I would fail him. That is a true story. And I said, I

thought I'd show you just one world. And if we can get the lights down, if that's at all possible. No. Okay. That means no. All right. All right. We'll just do our best then.

ANIMATED: Oh, hello there. I'm lonely. Make me a world. Yay. Yay. Yay. Yay. Make me some trees. Yay. Yay. Yay.

RANDY: Now, now they're gonna turn this on it's head. Watch closely. The world doesn't want to go on to the next thing in the show. So she's ready to move on and it's not.

ANIMATED: What are you doing? You can't end this now.

ON-SCREEN SPEAKER: But there's so many other worlds that have to go. ANIMATED: But our world is the best world. Hey, hey, hey. Hey, No! Here I am. ON-SCREEN SPEAKER: We're gonna shut you down. Control-alt-delete.

ANIMATED: Not control-alt-delete! You left us. You left us. We love you. Goodbye.

RANDY PAUSCH: It was an unusual course with some of the most brilliant, creative students from all across the campus. It just was a joy to be involved with. And they took the whole stage performance aspect of this way too seriously. And it became this campus phenomenon every year. People would line up for it. It was very flattering. And, it gave kids a chance, a sense of excitement, of putting on a show for people who were then excited about it. And I think that that's one of the best things you can give somebody, the chance to show them what it feels like to make other people get excited and happy. I mean, that's a tremendous gift.

We always tried to involve the audience, whether it was people with glow sticks or batting a beach ball around or driving. This is really cool. This technology actually got used at the Spider-Man 3 premiere in LA, so the audience was controlling something on the screen. So that's kind of nice.

And, I don't have a class picture from every year but I dredged all the ones that I do have,

and all I can say is that, what a privilege and an honor it was to teach that course for something like ten years. And, all good things come to an end and I stopped teaching that course about a year ago.

People always ask me, “What was my favorite moment?” I don’t know if you can have a favorite moment but, boy, there’s one I’ll never forget. This was a world with, I believe, a roller skating ninja. And one of the rules was that we performed these things live, and they all had to really work, and the moment it stopped working, we went to your backup video tape. And this was very embarrassing. So we had this ninja on stage and he’s doing this roller skating thing and the world, it did not crash gently. And I come out and, I believe it was Steve, wasn’t it? Was it? Where is he? Okay. Where is Steve? Ah. My man. Steve Audio. And talk about quick on your feet. Right?

I say, “Steve, I’m sorry but your world has crashed and we’re going to go to videotape.” And he pulls out his ninja sword and says, “I am dishonored. Whaa!” And just drops. And so I

think it's very telling that my favorite moment in ten years of this high technology course was a brilliant ad lib. And then, when the videotape is done and the lights come up, he's lying there lifeless and his teammates drag him off. It was really a fantastic moment.

And, the course was all about bonding. People used to say, well, you know, what's gonna make for a good world? I said, "I can't tell you beforehand" but right before they present it, I can tell you if the world's good just by the body language. If they're standing close to each other, the world is good. All right?

And BVW was a pioneering course. And, I won't bore you with all the details but it wasn't easy to do, and I was given this when I stepped down from the ETC and I think it's emblematic. If you're gonna do anything that's pioneering, you will get those arrows in the back, and you just have to put up with it. I mean, everything that could go wrong did go wrong, but at the end of the day, a whole lot of people had a whole lot of fun.

When you've had something for ten years that you hold so precious, it's the toughest thing in the world to hand it over. And the only advice I can give you is, find somebody better than you to hand it to. And that's what I did. There was this kid at the VR studio way back when. And you didn't have to spend very long in Jesse Schell's orbit to go, "The Force is strong in this one." And one of my greatest, my two greatest accomplishments, I think, for Carnegie Mellon were that I got Jessica Hodgins and Jesse Schell to come here and join our faculty. And I was thrilled when I could hand this over to Jesse and, to no one's surprise, he has really taken it up to the next notch and, you know, the course is in more than good hands. It's in better hands.

But it was just one course. And then we really took it up a notch and we created what I would call The Dream Fulfillment Factory. Don Marinelli and I got together and, with the university's blessing and encouragement, we made this thing out of whole cloth that was absolutely insane. Should never have been tried. All the sane universities didn't go near



this kind of stuff, creating a tremendous opportunistic void.

So, the Entertainment Technology Center was all about artisan technologists working in small teams to make things. It was a two year professional Masters degree. And, Don and I were two kindred spirits. We're very different. Anybody who knows us knows that we're very different people. And we like to do things in a new way. And the truth of the matter is that we were both a little uncomfortable in academia. I used to say that I'm uncomfortable as an academic because I come from a long line of people who actually worked for a living. So, I detect nervous laughter. All right. And I want to stress, Carnegie Mellon is the only place in the world that the ETC could have happened. By far. The only place.

So, okay. This picture was Don's idea, okay? And we like to refer to this picture as Don Marinelli on guitar and Randy Pausch on keyboards. But we really did play up the left brain, right brain and it worked out really well that way. Don is an intense guy. And Don and I

shared an office. And at first it was a small office. We shared an office for six years. All right? Now, those of you who know Don know he's an intense guy. Right? And, you know, given my current condition, somebody was asking me ... This is a terrible joke but I'm gonna use it anyway ... because I know Don will forgive me. Somebody said, “Given your current condition, have you thought about whether you're gonna go to heaven or hell?” And I said, “I don't know but if I'm going to hell, I'm due six years for time served.” I kid.

Sharing an office with Don was really like sharing an office with a tornado. Right? There was just so much energy and you never knew which trailer was next, right? But you knew something exciting was gonna happen. And, and there was so much energy. And I do believe in, in giving credit where credit is due. So, in my typically visual way, right? If Don and I were to split the success for the ETC, he clearly gets the lion's share of it. He did the lion's share of the work. Okay? He had the lion's share of the ideas.

It was a great teamwork. I think it was a great ying and a yang, but it was more like ying and yang. Right? And he deserves that credit and I give it to him because the ETC is a wonderful place and, you know, he's now running it and he's taking it global. We'll talk about that in a second. Describing the ETC is really hard and I finally found a metaphor. Telling people about the ETC is like describing Cirque Du Soleil if they'd never seen it. Sooner or later you're gonna make the mistake, you're gonna say, "Well, it's like a circus". And then you're dragged into this conversation about, oh, how many tigers? How many lions? Right? How many trapeze acts? And that misses the whole point.

So when we say we're a Masters degree, we're really not like any Masters degree you've ever seen. Here's the curriculum ... The curriculum ended up looking like this. All I want to do is visually communicate to you that you do five projects in Building Virtual Worlds. Then you do three more. All of your time is spent in small teams making stuff. None of that book learning

thing. Don and I have no patience for the book learning thing. It's a Masters degree. They already spent four years doing book learning, right? By now they should have read all the books. Right?

The keys to the success were that Carnegie Mellon gave us the reigns. Completely gave us the reigns. We had no deans to report to. We reported directly to the provost, which is great because the provost is way too busy to watch you carefully. We were given explicit license to break the mold. It was all project-based. It was intense. It was fun. And we took field trips. Every spring semester in January we'd take all 50 students in the first-year class and we'd take them out to shops at Pixar. We'd take them to Pixar, Industrial Light and Magic. And of course when you've got guys like Tommy there acting as host, right? It's pretty easy to get entrée to these places.

So, we did things very, very differently. The kind of projects students would do, we did a lot of what we'd call edutainment. We developed a bunch of things with the Fire Department of

New York. A network simulator for training firefighters using “videogame-ish”-type technology to teach people useful things. That’s not bad. Companies did this strange thing. They put in writing, we promise to hire your students. I’ve got the EA and Activision ones here. I think there are now, how many? Five? ... So, there are five written agreements. I don’t know of any other school that has this kind of written agreement with any company. And so that’s a real statement. And these are multiple year things. So they’re agreeing to hire people for summer internships that we have not admitted yet. That’s a pretty strong statement about the quality of the program.

And Don, as I said, he’s now, he’s crazy. And I mean that in a wonderful, complimentary way. He’s doing these things where I’m like, “Oh, my God!” He’s not here tonight because he’s in Singapore because there’s gonna be an ETC campus in Singapore. There’s already one in Australia and there’s gonna be one in Korea. So this is becoming a global phenomenon. So, I think this really speaks volumes about all the

other universities. It's really true that Carnegie Mellon is the only university that can do this. We just have to do it all over the world now. Right?

One of the big successes about the ETC is teaching people about ... oh, now I hear the nervous laughter from the students. I had forgotten the delayed shock therapy effect of these bar charts. When you're taking Building Virtual Worlds, every two weeks we get peer feedback. We put that all into a big spreadsheet and at the end of the semester you've had three teammates per project, five projects. That's 15 data points. That's statistically valid. And you get a bar chart telling you, on a ranking of how easy you are to work with, where you stack up against your peers. Boy, that's hard feedback to ignore. Some still managed but ... But for the most part, people looked at that and went, “Wow, I gotta, I gotta pick it up a notch. I better start thinking about what I'm saying to people in these meetings.” And that is the best gift an educator can give is to get somebody to become self ...

... and that is the best gift an educator can give is to get somebody to become self-reflective.

So the ETC was wonderful, but even the ETC and even as Don scales it around the globe, it's still very labor intensive. It's not Tommy one at a time, it's not a research group 10 at a time. It's 50 or 100 at a time per campus times four campuses. But I wanted something infinitely scalable, scalable to the point where millions or tens of millions of people could chase their dreams with something. You know, I guess that kind of a goal really does make me the Mad Hatter.

Alice is a project that we've worked on for a long, long time. It's a novel way to teach computer programming. Kids make movies and games, the head fake — again, we're back to the head fakes. The best way to teach somebody something is to have them think they're learning something else. I've done it my whole career.

The head fake here is that they're learning to program, but they just think they're making movies and video games. This thing has already been downloaded well over a million times.

There are eight textbooks that have been written about it. 10% of U.S. colleges are using it now, and it's not the good stuff yet. The good stuff is coming in the next version.

I, like Moses, get to see the promised land, but I won't get to set foot in it. That's okay, because I can see it, and the vision is clear: millions of kids having fun while learning something hard. That's pretty cool. I can deal with that as a legacy.

The next version's going to come out in 2008. It's going to be teaching the Java language if you want them to know they're learning Java; otherwise, they'll just think that they're writing movie scripts. We're getting the characters from the best-selling PC game in history, The Sims. This is all already working in the lab, so there's no real technological risk. I don't have time to thank and mention everybody in the Alice team, but I just want to say that Dennis



Cosgrove is going to be building this, has been building this. He is the designer, it's his baby. For those of you who are wondering, "Well, you know, in some number of months, who should I be emailing about the Alice project," where's Wanda Dann? Oh, there you are. Stand up, let them all see you.

Everybody say, "Hi, Wanda." AUDIENCE: Hi, Wanda.

RANDY PAUSCH: Send her the email. I'll talk a little bit more about Caitlin Kelleher, but she's graduated with her Ph.D. and is at Washington University, and she's going to be taking this up a notch and going to middle schools with it. So grand vision, and to the extent that you can live on in something, I will live on in Alice.

All right, so now the third part of the talk, lessons learned. We've talked about my dreams. We've talked about helping other people enable their dreams. Somewhere along the way, there's got to be some aspect of what lets you get to achieve your dreams.

First one is the role of parents, mentors, and students. I was blessed to have been born to two incredible people. This is my mother on her 70th birthday. I am back here. I have just been lapped. This is my dad riding a roller coaster on his 80th birthday, and he points out that, you know, he's not only brave; he's talented, because he did win that big bear the same day.

My dad was so full of life. Anything with him was an adventure. I don't know what's in that bag, but I know it's cool. My dad dressed up as Santa Claus, but he also did very, very significant things to help lots of people. This is a dormitory in Thailand that my mom and dad underwrote, and every year, about 30 students get to go to school who wouldn't have otherwise. This is something my wife and I have also been involved in heavily, and these are the kind of things that I think everybody ought to be doing, helping others.

But the best story I have about my dad is ... unfortunately my dad passed away a little over a year ago, and when we were going through his things ... he had fought in World War II in

the battle of the Bulge ... and when we were going through his things, we found out he had been awarded the Bronze Star for valor. My mom didn't know it. In 50 years of marriage, it had just never come up.

My mom. Mothers are people who love you even when you pull their hair. I have two great mom stories. When I was here studying to get my Ph.D. and I was taking something called the theory qualifier ... which I can definitively say is the second worst thing in my life after chemotherapy

... and I was complaining to my mother about how hard this test was and how awful it was, and she just leaned over and she patted me on the arm, and she said, "We know how you feel, honey, and remember, when your father was your age, he was fighting the Germans."

After I got my Ph.D., my mother took great relish in introducing me as, "This is my son. He's a doctor but not the kind who helps people."

These slides are a little bit dark, but when I was in high school, I decided to paint my bedroom. I'd always wanted a submarine and an elevator. The great thing about this ... what can I say?

The great thing about this is, they let me do it, and they didn't get upset about it, and it's still there. If you go to my parents' house, it's still there. Anybody who is out there who is a parent, if your kids want to paint their bedroom, as a favor to me, let them do it, okay? It'll be okay. Don't worry about resale value on the house.

Other people who help us besides our parents: our teachers, our mentors, our friends, our colleagues. God, what is there to say about Andy Van Dam? When I was a freshman at Brown, he was on leave, and all I heard about was this Andy Van Dam who was like a mythical creature, like a centaur, but like a really pissed off centaur, and everybody was really sad that he was gone but kind of more relaxed. I found out why, because I started working for Andy. I was a teaching assistant for him as a sophomore, I was quite an arrogant

young man, and I came in to some office hours, and of course it was 9:00 at night, and Andy was there at office hours, which is your first clue as to what kind of professor he was.

I come bounding in, and, you know, I'm just, I'm going to save the world. There are all these kids waiting for help, da da, da da, da da, da da. Afterwards, Andy literally dutch-uncled ... he's Dutch, right? He dutch-uncled me, and he put his arm around my shoulders, and we went for a little walk, and he said, "Randy, it's such a shame that people perceive you as so arrogant, because it's going to limit what you're going to be able to accomplish in life."

What a hell of a good way to word "You're being a jerk." Right? He doesn't say, "You're a jerk." He says, "People are perceiving you this way," and he says, "The downside is, it's going to limit what you're going to be able to accomplish."

When I got to know Andy better, the beatings became more direct. I could tell you Andy stories for a month, but the one I will tell you is

that when it came time to start thinking about what to do after graduating from Brown, it had never occurred to me in a million years to go to graduate school, just out of my imagination. It wasn't the kind of thing people from my family did. We got, say, what do you call them? Jobs.

Andy said, “No, don't go do that. Go get a Ph.D. Become a professor.” I said, “Why?” He said, “Because you're such a good salesman that any company who gets you is going to use you as a salesman, and you might as well be selling something worthwhile like education.”

Thanks.

Andy was my first boss, so to speak. I was lucky enough to have a lot of bosses. That red circle is way off. Al is over here. I don't know what the hell happened there. He's probably watching this on the webcast going, “My god, he's targeting, and he still can't aim!”

I don't want to say much about the great bosses I've had except that they were great, and I know a lot of people in the world have had bad

bosses, and I haven't had to endure that experience, and I'm very grateful to all of the people that I ever had to report to. They've just been incredible.

But it's not just our bosses. We learn from our students. I think the best head fake of all time comes from Caitlin Kelleher ... excuse me, Dr. Caitlin Kelleher ... who just finished up here and is starting at Washington University. She looked at Alice when it was an easier way to learn to program, and she said, "Yeah, but why is that fun?"

I was like, "Well, because I'm a compulsive male. I like to make the little toy soldiers move around by my command, and that's fun." She's like, "Hmm."

She was the one who said, "No, we'll just approach it all as a storytelling activity." She's done wonderful work showing that, particularly with middle school girls, if you present it as a storytelling activity, they're perfectly willing to learn how to write computer software. So all-time best head fake award goes to Caitlin

Kelleher’s dissertation.

President Cohon, when I told him I was going to do this talk, he said, “Please tell them about having fun, because that’s what I remember you for.”

I said, “I can do that, but it’s kind of like a fish talking about the importance of water.” I mean, I don’t know how to not have fun. All right, I’m dying, and I’m having fun, and I’m going to keep having fun every day I have left, because there’s no other way to play it. Right?

So my next piece of advice is, you just have to decide if you’re a Tigger or you’re an Eeyore. I think I’m clear where I stand on the great Tigger-Eeyore debate.

Never lose the childlike wonder. It’s just too important. It’s what drives us. Help others. Denny Proffitt knows more about helping other people. He’s forgotten more than I’ll ever know. He’s taught me by example how to run a group, how to care about people.

M.K. Haley ... I have a theory that people who



come from large families are better people, because they've just had to learn how to get along. M.K. Haley comes from a family with 20 kids. Yeah, unbelievable. She always says, "It's kind of fun to do the impossible."

When I first got to Imagineering, she was one of the people who dressed me down, and she said, "I understand you've joined the Aladdin project. What can you do?"

I said, "Well, I'm a tenured professor of computer science."

She said, "Well, that's very nice professor boy, but that's not what I asked. I said, 'What can you do?'"

I mentioned sort of my working class roots. We keep what is valuable to us, what we cherish, and I've kept my letterman's jacket all these years. I used to like wearing it in grad school, and one of my friends, Jessica Hodgins would say, "Why do you wear this letterman's jacket?"

I looked around at all the non-athletic guys around me who were much smarter than me,

and I said, “Because I can.”

She thought that was a real hoot, so one year she made for me this little raggedy randy doll. He’s got a little letterman’s jacket too. That’s my all-time favorite. It’s the perfect gift for the egomaniac in your life.

I’ve met so many wonderful people along the way. Loyalty is a two-way street. There was a young man named Dennis Cosgrove at the University of Virginia, and when he was a young man, let’s just say things happened, and I found myself talking to a dean, and the dean ... no, not that dean. Anyway, this dean really had it in for Dennis and I could never figure out why, because Dennis was a fine fellow, but for some reason, this dean really had it in for him.

I ended up basically saying, “No, I vouch for Dennis.” The guy says, “You’re not even tenured yet, and you’re telling me you’re going to vouch for this sophomore or junior or whatever?” I think he was a junior at the time. I said, “Yeah, I’m going to vouch for him, because I believe in him.”

The dean said, “And I’m going to remember this when your tenure case comes up.” I said, “Deal.”

I went back to talk to Dennis, and I said, “I would really appreciate you ... that would be good.” But loyalty is a two-way street. I mean, that was God knows how many years ago, but that’s the same Dennis Cosgrove who’s carrying Alice forward. He’s been with me all these years, and if we only had one person to send in a space probe to meet an alien species, I’m picking Dennis.

You can’t give a talk at Carnegie Mellon without acknowledging one very special person, and that would be Sharon Burks. I joked with her, I said, “Well, look, if you’re retiring, it’s just not worth living anymore.” Sharon is so wonderful, it’s beyond description, and for all of us who have been helped by her, it’s just indescribable.

I love this picture, because it puts her together with Syl, and Syl is great, because Syl gave the best piece of advice pound for pound that I have ever heard, and I think all young ladies

should hear this.

Syl said, “It took me a long time, but I’ve finally figured it out. When it comes to men that are romantically interested in you, it’s really simple. Just ignore everything they say and only pay attention to what they do. It’s that simple. It’s that easy.”

I thought back to my bachelor days, and I said, “Damn.”

Never give up. I didn’t get into Brown University. I was on the wait list. I called them up, and they eventually decided that it was getting really annoying to have me call every day, so they let me in.

At Carnegie Mellon, I didn’t get into graduate school. Andy had mentored me. He said, “Go to graduate school. You’re going to Carnegie Mellon. All my good students go to Carnegie Mellon,” and yeah, you know what’s coming.

He said, “You’re going to go to Carnegie Mellon, no problem.” What he had kind of forgotten was that the difficulty of getting into

the top Ph.D. program in the country had really gone up, and he also didn't know I was going to tank my GREs, because he believed in me, which based on my board scores, was a really stupid idea. I didn't get into Carnegie Mellon. No one knows this till today I'm telling the story. I was declined admission to Carnegie Mellon.

I was a bit of an obnoxious little kid. I went into Andy's office and I dropped the rejection letter on his desk. I said, "I just want you to know what your letter of recommendation goes for at Carnegie Mellon."

Before the letter had hit his desk, his hand was on the phone, and he said, "I will fix this." I said, "No, no, no, I don't want to do it that way. That's not the way I was raised. You know, maybe some other graduate schools will see fit to admit me."

He said, "Look. Carnegie Mellon's where you're going to be." He said, "I'll tell you what. I'll make you a deal. Go visit the other schools." Because I did get into all the other schools. He

said, “Go visit the other schools, and if you really don’t feel comfortable at any of them, then will you let me call Nico?” Nico being Nico Habermann.

I said, “Okay, deal.” I went to the other schools. Without naming them by name — Berkeley, Cornell — they managed to be so unwelcoming that I found myself saying to Andy, “You know, I’m going to get a job.” And he said, “No, you’re not,” and he picked up the phone, and he talked in Dutch. He hung up the phone, and he said, “Nico says if you’re serious, be in his office tomorrow morning at 8:00 A.M.”

For those of you who know Nico, this is really scary. So I’m in Nico Habermann’s office the next morning at 8:00 A.M., and he’s talking with me, and frankly, I don’t think he’s that keen on this meeting. I don’t think he’s that keen at all.

He says, “Randy, why are we here?”

I said, “Because Andy phoned you?” I said, “Well, since you admitted me, I have won a

fellowship, the Office of Naval Research, it's a very prestigious fellowship. I've won this fellowship, and that wasn't in my file when I applied."

Nico said, "A fellowship, money, we have plenty of money." That was back then. He said, "We have plenty of money. Why do you think having a fellowship makes any difference to us?" And he looked at me.

There are moments that change your life, and 10 years later, if you know in retrospect it was one of those moments, you're blessed, but to know it at the moment with Nico staring through your soul ... and I said, "I didn't mean to imply anything about the money. It's just that it was an honor. There were only 15 given nationwide, and I did think it was an honor that would be something that would be meritorious, and I apologize if that was presumptuous." He smiled, and that was good.

So, how do you get people to help you? You can't get there alone. People have to help you, and I do believe in karma, I believe in paybacks.

You get people to help you by telling the truth, being earnest. I'll take an earnest person over a hip person every day, because hip is short-term. Earnest is long-term.

Apologize when you screw up and focus on other people, not on yourself. I thought, how do I possibly make a concrete example of that? Do we have a concrete example of focusing on somebody else over there? Could we bring it out?

See, yesterday was my wife's birthday. If there was ever a time I might be entitled to have the focus on me, it might be the last lecture. But no, I feel very badly that my wife didn't really get a proper birthday, and I thought it would be very nice if 500 people ...

(singing)

Now you all have an extra reason to come to the reception.

Remember, brick walls let us show our dedication. They are there to separate us from the people who don't really want to achieve



their childhood dreams.

Don't bail. The best of the gold is at the bottom of barrels of crap.

What Steve didn't tell you was the big sabbatical at EA. I had been there for 48 hours, and they loved the ETC. We were the best. We were the favorites, and then somebody else pulled me aside and said, "Oh, by the way, we're about to give \$8 million to USC to build a program just like yours. We're hoping you can help them get it off the ground."

Then Steve came along and said, "They said what? Oh God."

To quote a famous man, "I will fix this," and he did. Steve has been an incredible partner, and we have a great relationship, personal and professional, and he has certainly been point man on getting a gaming asset to help teach millions of kids, and, you know, that's just incredible. But it certainly would have been reasonable for me to leave 48 hours into that sabbatical, but it wouldn't have been the right

thing to do, and when you do the right thing, good stuff has a way of happening.

Get a feedback loop and listen to it. Your feedback loop can be this dorky spreadsheet thing I did, or it can just be one great man who tells you what you need to hear. The hard part is the listening to it.

Anybody can get chewed out. It's the rare person who says, “Oh, my God, you're right,” as opposed to, “No wait, the real reason is ...” we've all heard that.

When people give you feedback, cherish it and use it. Show gratitude. When I got tenure, I took all of my research team down to Disney World for a week, and one of the other professors at Virginia said, “How can you do that?” I said, “These people just busted their ass and got me the best job in the world for life. How could I not do that?”

Don't complain; just work harder. That's a picture of Jackie Robinson. It was in his contract not to complain, even when the fans spit on

him.

Be good at something; it makes you valuable. Work hard. I got tenure a year early as Steve mentioned. Junior faculty members used to say to me, “Wow, you got tenure early. What’s your secret?”

I said, “It’s pretty simple. Call me any Friday night in my office at 10:00 o’clock and I’ll tell you.”

Find the best in everybody. One of the things that Jon Snoddy, as I said, told me is that you might have to wait a long time, sometimes years, but people will show you their good side. Just keep waiting, no matter how long it takes. No one is all evil. Everybody has a good side. Just keep waiting. It will come out. Be prepared. Luck is truly where preparation meets opportunity.

Today’s talk was about my childhood dreams, enabling the dreams of others, and some lessons learned. But did you figure out the head fake? It’s not about how to achieve your dreams.

“Achieving Your Childhood Dreams”

It's about how to lead your life. If you lead your life the right way, the karma will take care of itself. The dreams will come to you.

Have you figured out the second head fake? The talk's not for you. It's for my kids. Thank you all. Good night.

THE PINOY ENGINEER

[www.EngineerPH.com](http://www.EngineerPH.com)