

Randy Pausch's Last Lecture: *Really Achieving Your Childhood Dreams*

Given at Carnegie Mellon University

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McConomy Auditorium

Carnegie Mellon

For more information, see www.randypausch.com

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Note that this transcript is provided as a public service but may contain transcription errors.

This translation was done by Lichao Chen (chenlc03@hotmail.com); I don't read Chinese, so I cannot verify it. – Randy

This translation is far from perfect and I presented it in the spirit of old Chinese saying 'throwing a brick to attract jade.' Any comments, suggestions and corrections are highly appreciated. Lichao

译文可能有诸多不当,疏漏之处。但抛砖引玉,望读者不吝指正。

兰迪·波许的最后讲座:真正实现你童年的梦想

2007年9月18日,星期二,于卡内基·梅隆大学

Introduction by Indira Nair, Carnegie Mellon's Vice Provost for Education:

卡内基·梅隆大学副教务长英迪拉·内尔

Hi. Welcome. It's my pleasure to introduce you to the first of our new university's lectures titled *Journeys* – lectures in which members of our community will share with us reflections and insights on their personal and professional journeys. Today's Journey's lecture as you all know is by Professor Randy Pausch. The next one is on Monday, September 24th by Professor Roberta Klatzky.

嗨。欢迎大家。我很高兴向大家介绍我们大学的题为旅途的新系列讲座的首场演讲- 这些演讲是我们的社团成员与我们一起分享他们对个人和专业旅途的思考和洞察。今天旅途演讲的主讲人,你们都知道,是兰迪·波许教授。下一个是9月24日,星期一,罗伯塔·克莱兹基教授。

¹ This is temporary; we will be doing a creative commons license or some such; for now, please consider this footnote your permission to use this transcript for any personal or non-commercial purposes. -- Randy

To introduce Professor Randy Pausch, our first Journeys speaker, I would like to introduce Randy's friend and colleague, Steve Seabolt. Steve has been at Electronic Arts for six years and is the Vice President of Global Brand Development for *The Sims* label at Electronic Arts. As you all know, *The Sims* is one of the most, if not the most successful PC games in the world, with sales approaching over 100,000. Prior to that, Steve was the Vice President for Strategic Marketing and Education at EA, bridging academia and Electronic Arts. His goal was to work with academics so there was an effective educational pathway for kids with building games as their dreams. It was in that role that Randy and Steve became colleagues and friends. Before Electronic Arts, Steve was the worldwide Ad Director for Time Magazine and CEO of Sunset Publishing, which is a very favorite magazine in the Southwest, and as CEO there, one of the things he started was school tours, because like Randy he shares a passion for inspiring kids of all ages to share their excitement for science and technology.

要介绍兰迪·波许教授，我们旅途演讲的第一位主讲人，我希望先介绍兰迪的朋友和同事，史蒂夫·西伯特。史蒂夫在艺电公司六年，是负责该公司“模拟人生”游戏全球品牌发展的副总裁。你们都知道，“模拟人生”起码来说，是世界上最成功的个人计算机游戏之一，销售了接近十万套。在那之前，史蒂夫是艺电公司的战略行销和教育副总裁，与学术界沟通。他的目标是同学术界一起为梦想创造计算机游戏的孩子们找到一条有效的教育途径。因此，兰迪和史蒂夫成为了同事和朋友。在加入艺电公司之前，史蒂夫是时代杂志世界广告部的主任和“日落出版”，一本在西南地区非常受喜爱的杂志，的总经理。在任总经理期间，他开始做的一件事是参观学校，因为他和兰迪一样都热望让所有上进孩子们能分享他们对科技的热情。

So to introduce Randy, his friend Steve Seabolt. Steve?

那，由兰迪朋友史蒂夫·西伯特来作介绍。史蒂夫？

[applause]

[掌声]

Steve Seabolt, Vice President of Worldwide Publishing and Marketing for Electronic Arts (EA):

史蒂夫·西伯特,艺电公司世界出版行销副总裁

Thank you very much. I don't mean to sound ungracious by correcting you, but given that our PR people are probably watching this on webcast, I'd catch heck if I went home and didn't say that it was 100 million units for *The Sims*. [laughter] Not that big numbers matter to Electronic Arts. [laughter]

I don't see any empty seats anywhere, which is a good thing, which means I just won a bet from Randy as a matter of fact. Depending upon who's version of the

story you hear, he either owes me 20 dollars or his new Volkswagen. [laughter] So, I'll take the car.

谢谢。我不想显得很粗鲁地纠正您，但是我们公关人员可能正在看网络直播，如果我没有说“模拟人生”销售额是一亿套，那我回去后要吃不了兜着走[笑声]。当然艺电公司并不在意大数字[笑声]我看不到任何空座位，这很好，这就意味着我和兰迪打赌赢了。根据你听谁说了，他要么欠我 20 美元，要么欠我他的新大众汽车[笑声] 好吧，我要汽车。

It's a pleasure to be here, thank you very much. I'm going to start by covering Randy's academic credentials. It's a little bizarre for me to be standing here at Carnegie Mellon, which is a school I couldn't get into no matter how much I contributed to this institution. [laughter] But, no really, I'm not kidding! You all think, oh gosh he's humble. Really, no, I'm not humble at all. Very average SAT scores, you know, right in the middle of my high school class of 900. Anyway, Randy. Randy earned – it really pisses me off that Randy's so smart—actually I called him, we decided about, what, four weeks, ago and we heard the news went from bad to horrific. It was on a Wednesday night and I said look – we have two choices. We can play this really straight and very emotional, or we can go to dark humor. And for those of you who know Randy well, he was like oh, dark humor! So I called him the next day and I was like, *dude you can't die*. And he's like, *what do you mean?* And I said, *well, when you die, the average of IQ of Seabolt's friends is going to like drop 50 points*. [laughter] To which he responded, *we need to find you some smarter friends*. [laughter] So you're all smart because you're here, so if you want to be my friend, I'll be over in a corner of the reception room.

很高兴能来到这里，非常感谢。我将从兰迪的学术履历说起。我站在这里其实是有点怪异，因为无论我为这个学校资助了多少钱，卡内基梅隆是个我上不了的大学[笑声]但，没有，我不开玩笑！你们想，哎呀，他真谦逊。不是的，没有，我根本不是谦逊。非常一般的学测考试(SAT)成绩，就是说，在我的高中那一届 900 人的正中间。好，兰迪。兰迪得到了- 兰迪太聪明了，这真让我懊恼-实际上大约，嗯，四周前，我们了解到消息从坏变可怕，我打电话给他。那是个星期三晚上，我对他说，你看-我们有二个选择。我们可以把这个搞的非常直接和非常情绪化，或者我们能来黑色幽默。对你们那些了解兰迪的人，他就，呵，黑色幽默！我第二天打电话给他，说，活计，你不能死。他说，什么意思？我说，你死了，西伯特的朋友的平均智商就要下坠 50 点。[笑声] 他的反应是，我们需要给你找一些更聪明的朋友[笑声] 因为你们能在这里，你们都很聪明；如果你们想要做我的朋友，（演讲结束后）我会呆在招待厅的角落里。

Randy earned his undergraduate degree in Computer Science at Brown in 1982. His Ph.D. in CS from Carnegie Mellon in 1988 and taught at the University of Virginia where he was granted tenure a year early. He joined the Carnegie Mellon faculty in 1997 with appointments in the CS, HCI and Design departments. He has authored or co-authored five books and over 60 reviewed journal and conference proceeding articles, none of which I would understand. With Don Marinelli, he founded the

Entertainment Technology Center, which quickly became the gold standard organization for training artists and engineers to work together. It is my view and the view of our company, Electronic Arts, that the ETC is the interactive program by which all others in the world are judged.

兰迪于 1982 年在布朗大学获得计算机学本科学位。1988 年在卡内基梅隆大学获得博士学位。然后他执教于弗吉尼亚大学并提前一年拿到终身教职。1997 年他到卡内基梅隆大学任职于计算机科学系、人机界面和设计系。他单独或与人合作著有五本专著和超过 60 篇经专家评阅的期刊和会刊文章，我对那些是一窍不通。与唐·麦瑞乃里一起，他创立了娱乐技术中心，迅速成为训练艺术家和工程师共同工作的样板机构。本人和所在的艺电公司都认为，娱技中心是裁判世界上其它交互项目的标准。

I met Randy in the Spring of 2004, and when I look back it's sort of hard to imagine it's only been three years given the depth of our friendship. The ETC already had a very strong relationship with EA and with Randy. And Randy as he always does, for those of you who know him well, wanted to learn more, with his own eyes, about how the games business works, and how games really got made. So he spent a summer in residence at EA, and I was his primary contact point. We were in my view the odd couple. Randy the brilliant, charming, Carnegie educated CS professor. And me who went to the University of Iowa on a wing and a prayer. We spent a lot of time together that semester and for those of you who know Randy well, that's a lot of turkey sandwiches on white bread with mayo. [laughter, clapping] My kids tease me about being "white." There's nobody more "white" than Randy. [laughter] We spent an enormous amount of time together. We taught each other about each other's very interesting, strange cultures to the other. Academic versus the corporate world. And we developed a deep friendship woven together with stories about our kids, our wives, our parents, as well as deep discussions about the paramount of integrity in everything you do, family first, religion, our shared joy in connecting people and ideas, and deploying money and influence to do good. And the importance of having a lot of laughs along the way.

我在 2004 年的春天遇见兰迪，回首往事，很难想象在短短三年之间，我们能拥有如此深厚的友谊。那时，艺电公司已与娱技中心和兰迪建立了非常牢固的合作关系。兰迪，了解他的人都知道，他一贯喜欢亲身调研，了解游戏行业的运作，游戏是如何被推出的。所以他在艺电公司蹲点住了一个夏天，而我是他的主要联系人。在我看来，我们是古怪的一对。兰迪聪慧，迷人，卡内基毕业的计算机学教授。我是侥幸上了衣阿华大学。我们那学期一起度过了很多时光。了解他的人知道，那意味着很多白面包加蛋黄酱的火鸡肉三明治。[笑声，鼓掌] 我的孩子取笑我“白”。没人比兰迪更“白”了 [笑声]。我们一起共处了很多时间。我们相互教对方各自的有趣的，奇怪的文化，学界对商界。我们建立了深厚的友谊，它交织着我们的孩子，妻子，父母的故事，关于做任何事都以诚信为纲，家庭第一，宗教信仰的深刻讨论、还有我们让人才和思

想能各得其所, 运用金钱和影响力去做好事共同喜悦。以及在这过程中有很多欢笑的重要性。

Randy's dedication to making the world a better place is self evident to anyone who has crossed paths with him. Whether it's directly influencing students, creating organizations like the ETC, building tools like Alice or doing what he probably does best, which is bridging cultures. As Ben Gordon, EA's Chief Creative Officer, says of Randy, *even more important than Randy's academic, philanthropic, and entrepreneurial accomplishments has been his humanity and the enthusiasm he brings to students, coworkers on a daily basis.*

不管是直接地影响学生, 创建象娱技中心那样的机构, 发明象爱丽斯那样的工具或做他最拿手的, 链接文化, 对任何有缘遇见兰迪的人来说, 他对建立一个更好世界的奉献是不言而喻的。如本·高登, 艺电公司的首席创意官, 所说, 比兰迪的学术, 慈善, 和创业成就跟重要的是他的博爱和每天给学生和同事带来的热忱。

For those of you who know Randy, Randy brings a particular zest for life and humor, even while facing death. To Randy, this is simply another adventure. It is my great honor to introduce Dylan, Logan and Chloe's dad, Jai's husband, and my very dear friend, Dr. Randy Pausch. [applause]

对于那些了解兰迪的人, 他带来对生命的别样热情和幽默, 即使是面对死亡。对兰迪来说, 这只是另一种探险。我极为荣幸地介绍迪伦、娄更和克娄依的爸爸, 洁的丈夫, 我至爱的朋友, 兰迪·波许博士。 [掌声]

Randy Pausch:
兰迪·波许:

[Make me earn it. [laughter]

讲的好再鼓掌 [笑声]

It's wonderful to be here. What Indira 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. [laughter]

能在这里真太棒了。英迪拉没告诉你们的是, 这个系列讲座以前被称为“最后的讲演”。意思是如果你死前最后做一次演讲, 你会讲什么? 我想, 得, 这我可对上号了, 但他们又改名了(旅程系列讲演)。 [笑声]

So, you know, in case there's anybody who wandered in and doesn't know the back story, my dad always taught me that 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 3-6 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. Microphone's not working? Then I'll just have to talk louder. [Adjusts mic] Is that good? All right.

所以，如果有人只是随便进来而不知道背景故事的话，我父亲总是教导我说，当房间里有大象时，先介绍清楚（房间里的大象这个英语成语是指有一件事大家不可能视而不见，但又不愿谈及，译者注）。如果你看看我的电脑断层扫描，我的肝脏大约有 10 个肿瘤，医生告诉我还有 3-6 个月的健康身体。这是一个月前，所以你可以算一算。我有一些世界上最好的医生。麦克风不响？那就得说话大声点。[调整麦克风]好了吗？行。

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 cannot 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. [laughter] 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 am in better shape than most of you. [Randy gets on the ground and starts doing pushups] [Applause] So anybody who wants to cry or pity me can down and do a few of those, and then you may pity me. [laughter]

情况就是这样。我们无法改变它，我们只需要决定如何回应。我们不能改变我们手里的牌，但能调整如何出牌。如果我看起来不够忧郁郁闷，抱歉让你们失望了。[笑] 我向你们保证，我不是否认现实。不是我不知道正在发生的事。我的家人，我的三个孩子，我的太太，我们刚刚撤营。我们在切萨皮克，弗吉尼亚州诺福克附近，买了一个可爱的房子。我们这么做是为我们家的未来打算，那里较好。另一件事是我现在身体惊人的健康。我的意思是这将是你所见到的最大的认知失调，我的体力非常好。事实上，我比你们大部分人的体力都好。[兰迪趴下开始做俯卧撑] [掌声] 所以有人想要哭或可怜我，可以下来先做几个这个，然后你们可以可怜我。[笑声]

All right, so what we're not talking about today, we are not talking about cancer, because I spent 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. [laughter] 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 talking about my kids. Because I'm good, but I'm not good enough to talk about that without tearing up. So, we're just going to take that off the table. That's much

more important. And we're not going to talk about spirituality and religion, although I will tell you that I have achieved a deathbed conversion. I just bought a Macintosh. [laughter and clapping] Now I knew I'd get 9% 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 have 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 here today to achieve your dreams or enable the dreams of others. And as you get older, you may find that enabling the dreams of others thing is even more fun.

好，那么今天我们不谈什么呢，我们不谈癌症，因为我已花了很多时间谈它，我真的没兴趣了。如果您有任何辅助草药或疗法，请别过来。[笑声]我们也不会谈比实现童年梦想更重要的事。我们不谈我的妻子，我们不谈我的孩子。因为我心情不错，但我没好到谈起他们而不落泪。所以，这是更重要我们只好不提。我们不谈精神与宗教，但我要告诉你们，我已做了一个临终转变。我刚刚买了台苹果电脑。[笑声及掌声] 我知道我这样做可得到9%的听众的支持。但今天到底谈什么呢？谈我童年的梦想和我如何实现他们。我在这方面一直很幸运。谈为什么我相信我能够助人梦想成真，也讲一些经验教训。我是一个教授，应该有一些经验教训，以及如何你可以用你今天听到的东西去实现你的梦想，或者助人实现梦想。当你年长些，你可能会发现，助人梦想成真会更有乐趣。

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. And that was just a very gratifying thing. There was our dog, right? Aww, thank you. And there I actually have a picture of me dreaming. And did a lot of that. You know, there's a lot of *wake up's!* I was born in 1960. When you are 8 or 9 years old and you look at the TV set, men are landing on the moon. Anything's possible, and that's something we should not lose sight of, is that the inspiration and the permission to dream is huge.

那么什么是我童年的梦想？你知道，我有一个非常好的童年。我的意思是，不开玩笑，我回去看家里的文档，令人惊奇的是竟找不到任何一张我小时候不笑的照片。这可是一件非常可喜的事。这是我们家的狗，对不对？噢，谢谢。这有一张我做梦的照片。我做了很多的梦。当然，也有很多梦醒时分！我出生在1960年。在8、9岁时，电视上正播放人类登月。任何事情都可能发生，我们不要忽略灵感和允许梦想的巨大力量。

So what were my childhood dreams? You may not agree with this list, but I was there. [laughter] 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. [laughter] 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 think they do get harder, except for maybe the first one.

那么，我的童年梦想？你可能不同意这个列表，但那曾是我的梦想。[笑] 体验零重力，参加全美橄榄球联盟，给世界图书百科全书出一篇文章-我猜你可以看出我很早就是书呆子了。[笑]当柯克船长，在这里有谁有这个童年梦想吗？不会在卡耐基-梅隆大学，没有。我想我能成为一个在游乐园赢得大毛绒玩具动物的人，我也想成为一个迪士尼幻想工程师。这个单子并不按任何特定顺序排练，但我觉得他们越来越困难，可能除了第一项以外。

OK, 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, mmm, I didn't really want the whole astronaut gig, I just wanted the floating. So, and as a child [laughter], prototype 0.0. [slide shown of Randy as a child lying in floating-formation on a table top]

好，体验零重力。有具体的梦想很重要。我没有梦想成为一个航天员，因为我从小就戴眼镜。他们告诉我，哦，宇航员不能戴眼镜。我想，嗯，我并不真的当宇航员，我只是想自由飘浮。因此，作为一个孩子[笑]，原型 0.0。[幻灯片显示小兰迪躺在台面上作漂浮状]

But that didn't work so well, and it turns out that NASA has something called the Vomit Comet that they used to train the astronauts. And this thing does parabolic arcs, and at the top of each arc you get about 25 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 and we put a team together and they won and they got to fly. And I was all excited because I was going to go with them.

但那并不怎么管用。我们知道美国航天局有一种用来训练宇航员的飞机叫做“呕吐彗星”。它以抛弧线飞行，在每个弧顶后有大约 25 秒的时间是如弹道俯冲，大致相当于失重 25 秒。航天局有一个项目让大学生可以比赛提出研究建议，如果他们赢了，他们就能上去飞。我觉得那很酷，我们有一个团队，我们把它组织好我。他们赢了竞赛，获准去飞。我好兴奋，因为我要跟他们一起去。

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. I was like, 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

home town. [laughter] And, Randy Pausch, web journalist. It's really easy to get a press pass! [laughter]

然后，我碰上了第一道砖墙，因为航天局明文规定教员不能跟学生团队一起飞。我可是伤心透顶。我想，我投入了那么多心血！所以，我仔细阅读了文件，原来航天局有一个推广宣传项目，允许学生从他们家乡带一名当地媒体的记者。[笑]，兰迪·波许，网站记者。得到新闻通行证可真容易！[笑]

So I called up the guys at NASA and I said, I need to know where to fax some documents. And they said, what documents are you going to fax us? And 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 going to 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.

于是我就打电话给美国宇航局说，我需要知道传真文件的号码。那边问，你要传真什么文件？我说我要辞去学校顾问头衔，申请做记者。他说，你不觉得这有点太露骨了吗？我说，没错，但我们的项目是虚拟现实，我们将带去一大堆虚拟现实头盔，所有队伍的学生都将试用这个，这样一来，那些随其他队去的真记者就会把它拍下来。

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, right, because that will make you more welcome. And if you're curious about what zero gravity looks like, hopefully the sound will be working here. [slide shows videotape from Randy's zero gravity experience] There I am. [laughter] You do pay the piper at the bottom. [laughter] So, childhood dream number one, check.

吉姆·佛勒在说，你这个混球。接电话的人说，这是传真号码。而事实上我们也实践了我们的诺言，这是你们等会儿会在讲座中听到的主题之一，就是手上要有货，这样你你就会更受欢迎。如果你好奇零重力是什么样子，希望声响没有问题。[幻灯片，录影带，兰迪的零重力体验] 这是我。[笑] 你最后还是要在底部承担后果。[众笑]，所以，童年的一号梦想，画钩。

OK, 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 – no. [laughter] 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.

好吧，让我们谈谈橄榄球。我的梦想是要参加全国橄榄球联盟。你们大部分人不知道我实际上，不[笑]没有，我没能参加向全美橄榄球联盟。但我从这未实现的梦想中得到的恐怕比我任一实现的梦想中得到的还要多。

I had a coach, I 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.

我有一个教练。我入队时 9 岁。我是俱乐部中最小的孩子。我有一个教练，吉姆格雷厄姆，六英尺四高，他曾在宾夕法尼亚州立大学打线卫。

He was just this hulk of a guy and he was old school. And I mean really old school. Like he thought the forward pass was a trick play. [laughter] And he showed up for practice the first day, and you know, there's big hulking guy, we were all scared to death of him.

他是个很传统的大块头。我的意思是非常古董。像他认位前传球是使诈。[笑]，第一天练习他来了，你知道，他是个彪行大汉，我们都怕死他了。

And he hadn't brought any footballs. How are we going to have practice without any footballs? And one of the other kids said, excuse me coach, but there's not football. And Coach Graham said, *right, how many men are on a football field at a time?* Eleven on a team, twenty-two. 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 going to work on what those other twenty-one guys are doing.*

他并没有带来任何橄榄球。我们没球怎么练呢？有个小孩子就说，对不起，教练，但我们没球。教练格雷厄姆说，就是，球场上能上多少人？11 人一队，22 人。教练格雷厄姆说，好，那在一给定时刻有几个人触球？其中之一。他说，对，所以我们要练其他 21 个人的任务。

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

这是一个很好的故事，因为它讲的是基本功。基本功，基本功，基本功。你必须把基础打好，要不然那些花俏的东西就玩不转。

And the other Jim Graham story I have is there was one practice where he just rode me all practice. You're doing this wrong, you're doing this wrong, go back and do it again, you owe me, you're doing push-ups after practice. And when it was all over, one of the other assistant coaches came over and said, *yeah, Coach Graham rode you pretty harsh, 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.

另一个吉姆格雷厄姆故事。有一次我们做练习，他盯着我不依不饶，你这样做不对，你这样做不对，回去再做一遍，你欠我，你练习后还要加做俯卧撑。过后一位助理教练过来说，教练格雷厄姆对你挺苛刻，是不是？我说，是啊。他说，这是件好事。他说，当你搞砸了而没有人对你说任何东西，这意味着他们放弃了。这是一终生铭记的一堂课。就是当你看到自己把事情搞糟而没人劳神告诉你，这处境就很不妙。批评你的人是告诉你他们仍然爱和关心你。

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 them. 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 going to clean somebody's clock for that one play.

经过教练格雷厄姆，我的另一个教练，教练赛特利夫，教了我很多关于的激情的力量。他会把选手在某一场比赛中安排在最不恰当的位置。就象让所有矮个儿都当外接手，对吧？那真是可笑。但是，我们只打一场比赛，对吗？我们的对手真是措手不及。因为当你只在一场比赛中打一个新位置，自由就是无所顾忌的同义词，天啊，那你还不在那一场比赛中痛扁对手。

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, you know, [pulls out a football] 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 it. 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 OK. I've 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.

那种热情真是强烈。直到今天，我感到最惬意的地方还是在橄榄球球场。我的意思是，它只是一个人的东西在那里，你知道，[拿出一个橄榄球]如果我在解决一个难题，人们就会看到我走廊里拿个橄榄球走来走去。因为你知道，当你很年轻时就打球，训练，橄榄球就成为你生活的一部分。我很高兴它是我生命的一部分。如果我没有实现梦想中玩橄榄球，那也没什么。我现在得到的东西可能更有价值。因为看看现在全美橄榄球联盟，我不觉得那些家伙过得有多好。

OK, and so one of the expressions I learned at 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 our kids out to play football or soccer or swimming or whatever it is, and it's the first example of what I'm going to 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. Teamwork, sportsmanship, perseverance, etcetera, etcetera. And these kinds of head fake learning are absolutely important. And you should keep your eye out for them because they're everywhere.

好，那么我从艺电公司学到了的一个说法，我很喜欢，也跟今天的谈话相关，就是经验是你求之不得后的收获。我认为这说法绝对可爱。再谈一点关于橄榄球，我们把孩子送去玩橄榄球或足球或游泳，或任何其它活动，这其实是我称为障眼法或间接学习的第一个例子。事实上，我们不在意我们的孩子学习足球。我的意思是，嗯，我的三点触地预备姿式很漂亮，我知道该怎么做膝下阻挡和其它技能。这都不错，但是，我们把孩子送去是学更重要的东西。团队合作，体育精神，毅力，等等，等等。而这些障眼法学习是绝对重要的。你应该留意这些，因为它们无所不在。

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. [laughter] 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 the World Book would badger. They called me up and I wrote an article, and this is Caitlin Kelleher [shows slide of Caitlin wearing VR headset manipulating a 3D world], and 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 now 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.

下一个简单，但世界图书百科全书的作者。当我还是个孩子，我们书架上有全套世界图书百科全书。对大一学生来说，这只是纸而已。[笑声]我们曾把这些东西叫做书。当我已经有点成为虚拟现实的权威的，但并非真正重要的一个，所以我正好在世界图书要骚扰的人的水平上。他们给我打电话，叫我写一篇文章，这是凯特琳·凯乐荷 [凯特琳戴耳机操纵三维世界幻灯]，如果你当地的图书馆还收藏这百科全书的话，你可以看到这篇文章，看V字母下面的虚拟现实词条，它就在那里。我所要说的是被选为世界图书百科全书的作者后，我现在相信维基百科是一个绝对优良的资讯来源，因为我知道真正的百科全书质量控制水平了。他们让我去写。

All right, next one. [laughter] [shows slide "~~Being like~~ Meeting Captain Kirk"] At a certain point you just realize there are some things you are not going to do, so maybe you just want to stand close to the people. And I mean, my god, what a role model for young people. [laughter] [shows slide of Captain Kirk sitting at his control station on the Starship Enterprise]

好，下一个。[笑] [幻灯显示"**成为**会见柯克船长"] 有时候你会认识到有些事你不会去做，所以你也也许只想接近那些做这些事的人。我的意思是，天啊，真是年轻人的楷模。[笑] [放柯克船长坐在他星舰企业号控制站的幻灯]

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 Scotty was the engineer. And you sort of go, *and what skill set did he have to get on this damn thing and run it?*

我的意思是，这是你要的一切，我所学到的并帮助我提升领导能力的是，其实，他不是飞船上最聪明的人。我的意思是，斯波克相当聪明，麦科伊是医生，斯科特是工程师。你就想，他有什么能耐就在这飞船上当船长？

And, you know, clearly there is this skill set called leadership, and, you know, 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! [laughter] [shows slide of Star Trek gadgets] I mean, my god, I just thought it was fascinating as a kid that he had this thing [Takes out Star Trek Communicator] 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. [takes out cell phone] So that's kind of cool.

但你知道，很显然有种能耐叫领导能力，而且，不管你喜欢这个电视系列与否，你可以从观察他的行动中学习到很多如何领导别人。另外，他还有最酷的玩具！[笑] [放星际迷航小玩具的幻灯] 我的意思是，天啊，我小时候为他有这玩意儿而着迷[拿出星际迷航报话机]他可以用它跟飞船通话。我觉得那可真抢眼，当然现在我自己有一个，尺寸还小些。[拿出手机] 这个挺酷。

So I got to achieve this dream. James T. Kirk, and his alter ego William Shatner, wrote a book, which I think was actually a pretty cool book. It was with Chip Walter who is a Pittsburgh-based author who is quite good, and they wrote a book on basically the science of Star Trek, you know, what has come true. And they went around to the top places around the country and looked at various things and they came here to study our virtual reality setup. And so we build a virtual reality for him, it looks something like that. [shows slide of virtual Star Trek command center] We put

it in, put it to red alert. He was a very good sport. It's not like he saw that one coming. [laughter] 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. And that was just a great moment.

最终我实现了这个梦想。柯克船长和他的本尊威廉·夏特纳，写了一本书，我认为这是一本很酷的书。与CHIP·沃尔特，一个在匹兹堡的挺好的作者，合写的。他们的书，基本上关于星际迷航的科学，就是，电视中的科幻有那些变成现实了。他们去全国各处最高学府访问参观，他们来这里研究我们虚拟现实的设置。我们为他建了一个虚拟现实系统，它看起来就像这样。[放显示星际迷航指挥中心幻灯]我们把系统放到红色警报。他是一个非常有趣的人。他可没预见到这个。[笑]遇见你儿时的偶像是很酷，但他来你的实验室看你做的精彩工作就更酷。而这真是一个让我得意的时刻。

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 the 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. [laughter] [shows slides of several large stuffed animals] 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. In this age of digitally manipulated things, maybe those bears really aren't in the pictures 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. [several large stuffed animals are brought onto the stage] [laughter and clapping] Just put them back against the wall.

赢得玩具毛绒动物。这对你们可能看起来很平常，可当你是一个小孩子，你会看到大壮汉们在游乐园走来走去，拿着那些大毛绒动物，对不对？这是我可爱的妻子，我有很多我赢的毛绒动物的照片。[笑][放几个大毛绒动物的幻灯]就是我的爸爸跟我赢的毛绒动物的合影，我赢过很多。这还有我爸爸，他的确赢了那个。这些是我和我家生活的一个重要部分。但你知道，我能听到玩事不恭的人怀疑“在这个数码技术操控现实的时代，也许那些相片中玩具熊并没有真的和我在一起，也许我付了某人五块钱在主题公园的玩具熊旁照相”。我想，如何在这个犬儒主义的时代，使人信服？我说，我知道，我可以让他们看见那些熊！带出来。[舞台上搬来几个大毛绒动物][笑声及掌声]就把它们靠着墙放。

Jai Pausch (Randy's wife):
洁·波许(兰迪的夫人):

It's hard to hear you. [adjusts Randy's microphone]

很难听到你的声音。[调整兰迪的麦克风]

Randy Pausch:

Thanks honey. [laughter] So here are some bears. We didn't have quite enough room in the moving truck down to Chesapeake, and anybody who would like a little piece of me at the end of this, feel free to come up, first come first served.

谢谢，亲爱的。[笑] 我们的搬家卡车没有足够的空间把这些熊载到至切萨皮克，所以要有有人在演讲结束时想要我生命的一部分，请自便上来拿，先到先得。

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! [laughter] It was a quest. [shows slides of family at Disneyland] And these are real vintage photographs, and there I am in front of the castle. And there I am, and for those of you who are into foreshadowing, this is the Alice ride. [laughter] And I just thought this was just the coolest coolest environment I had ever been in, and instead of saying, *gee, I want to experience this*, I said, *I want to make stuff like this*.

好，下一个，做迪士尼幻想工程师。这个很难。相信我，去体验零重力比做迪士尼幻想工程师容易。我小时候，8岁时家人带我横跨美国去迪士尼乐园玩。如果你看电影“假期历险记”，跟哪个很像！[笑]那是一次远征。[放全家在迪士尼的幻灯]这些都是好老的照片，这有我在城堡前面照的。还有，对在座的爱讲先兆的人，这是爱丽丝飞车。[笑]我想这是我所呆过的最酷最酷的地方了。但我不是说，哎呀，我想体验这个，我说，我要造这些东西。

And so I bided time and then I graduated with my Ph.D. from Carnegie Mellon, thinking that meant me infinitely qualified to do anything. And I dashed off my letters of applications to Walt Disney Imagineering, and they sent me some of the damned nicest go-to-hell letters I have ever gotten. [laughter] 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*.

所以我十年寒窗，由卡内基梅隆大学博士毕业，以为我的有资格干任何工作。我匆匆忙忙的给迪士尼幻想工程寄去申请信，他们给我一些我所受到的最超级友好的“见鬼去”式的回信。[笑]信是这样一来的，我们已经仔细审查了你的申请，目前我们没有任何需要你特定资历的职位。

Now think about the fact that you're getting this from a place that's famous for guys who sweep the street. [laughter] So that was a bit of a setback. But remember, the brick walls are there for a reason. 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 the brick walls are there to stop the people who don't want it badly enough. They're there to stop the *other* people.

现在想想你是从个以扫大街的人闻名的地方得到这些回绝信。[笑]，所以这是有点挫折。但请记住，砖墙在那里是有原因的。砖墙不是要挡住我们。砖墙是要给我们机会说明我们有多迫切的想得到。因为砖墙是要阻挡那些不诚心的人，那些其他人。

All right, fast forward to 1991. 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 Van Dam, 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 just out of nowhere just gives me this huge bear hug and he says, *that was from Andy*. And that was when I thought, *ok, maybe I can make it*. Maybe I do belong.

好，快进到 1991 年。我们早在维吉尼亚大学时做了个叫虚拟现实一天 5 元的系统。只是那些令人难以置信的精彩东西的其中之一。那时候作为一个资浅的教员，我非常战战兢兢。吉姆·佛勒在这里，我很爱讲这个故事。他认识我的本科导师，安迪·凡丹，我在我的第一次学术会议上，我怕得要死。这个用户界面圈的偶像走过来突然紧紧拥抱我说，这是来自安迪。自当时我就想，好吧，也许我能够成功。也许我确实属于这一行。

And a similar story is that this was just this unbelievable hit because at the time, everybody needed a half a million to do virtual reality. And everybody felt frustrated. And we literally hacked together a system for about five thousand dollars in parts and made a working VR system. And people were just like, *oh my god*, you know, the Hewlett Packard garage thing. This is so awesome. And so in giving this talk and the room has just gone wild, and during the Q and A, a guy named Tom Furness, 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 were Tom Furness? And he said yes. I said, *then I would love to answer your question, but first, will you have lunch with me tomorrow?* [laughter] 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. [laughter]

另一个类似的故事是，我们的系统是超乎意外的成功，因为在那个时候，大家都需要 50 万做虚拟现实。大家都为此感到沮丧。而我们实际上用了 5 千元部分的零件拼装了一套能用的系统。人们的反应是，我的上帝，惠普车库的故事又重来了。令人震撼。因此，我做报告时屋里都沸腾了，在其后的问答时间里，一个叫汤姆·弗奈斯的人走到麦克风前介绍了他自己，他是虚拟现实界那时的大腕。我虽不认识他，但可是久闻大名。他接着问了一个问题。我说，对不起，你说你是汤姆·弗奈斯？他说是的。我说，那么我很愿意回答你的问题，但首先，你

愿意明天一起跟我吃午饭吗？[笑]，这个小插曲寓意很深，这里面有很多谦卑，但也让那人无法拒绝。[笑]

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 start running the TV commercials, and I had been asked to brief the Secretary of Defense on the state of virtual reality. OK, Fred Brooks and I had been asked to brief the Secretary of Defense, and that gave me an excuse. So I called them. I called Imagineering and I said, *look, I'm briefing the Secretary of Defense. I'd like some materials on what you have because 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, *hmm, ok*. [laughter]

几年后迪士尼幻想工程在做一个绝密的虚拟现实项目。他们在宣传部门播了电视广告后，还否认存在一个虚拟现实的景点。所以迪士尼幻想工程真是把保密工作做的滴水不漏。这就是阿拉丁景点，在那里你可以飞魔毯，用头盔显示器，有时又称为短嘴鳄视像仪。那是我已不是默默无闻。当项目刚，你知道，它们开始放电视广告，我被要求向国防部长介绍虚拟现实的发展。嗯，是弗雷德布鲁克斯和我被要求做简报，这给了我一个借口。所以我打电话给他们说，你看，我要给国防部长做简报。我想从你们那里拿些材料，因为你们的虚拟现实是世界上最好的系统之一。他们有点不愿意。我说，你们看，你们整天在迪士尼乐园讲的爱国心都是装样的吗？他们说“嗯，好吧。[笑]

But they said this is so new the PR department doesn't have any footage for you, so I'm going to 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 Jon 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 and he sent me some stuff, and I said, *hey, I'm going to 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! [laughter] And so Jon 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 that knows me knows that I have no memory at all, because I couldn't go in looking like a dweeb with, you know, [in dweeby voice] *Hi, Question 72*.

但他们说这项目很新，公关处没有任何视频给你，所以我必须要直接和做这个系统的部门直接联系。中大奖！所以，我就跟一个叫乔恩史诺地的人通电话，他是我曾见过人中最令人印象深刻的家伙，也是这个部门的头，难怪他们做出的活也让人印象深刻。所以他送我一些东西，我们短暂交谈，他送我一些东西，我就说，嘿，我不久要到你那里参加一个会议，你不想在一起吃午餐？翻译：我会撒谎找个借口说我要到你那里，这样显得我不是上赶着见你，但即使你在海王星我也会去和你吃午饭！[笑] 乔恩说，好啊。然后我花了大约 80 个小时跟世界上所有虚拟现实的专家交谈，说如果你有机会访问这个令人难以置信的项目，您会问什么问题？然后，我把他们所说的整理好，背熟。熟悉我的人都知道我记不住事。因为我不能去像个呆子，你知道，[傻傻声音]嘿，第 72 个问题。

So, I went in, and this was like a two hour lunch, and Jon must have thought he was talking to some phenomenal person, because all I was doing was channeling Fred Brooks and Ivan Sutherland and Andy Van Dam and people like that. And Henry Fuchs. So it's pretty easy to be smart when you're parroting smart people. And at the end of the lunch with Jon, I sort of, as we say in the business, made "the ask." And I said, *you know, I have a sabbatical coming up.* And he said, *what's that?* [laughter] The beginnings of the culture clash. And so I talked with him about the possibility of coming there and working with him. And he said, *well 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 Jon Snoddy Jon Snoddy was he said, *but we'll work it out,* which I really loved.

所以，我去了，这是个约两小时的午餐，乔恩一定以为我是个非比寻常的人，因为我所做的就是当弗雷德布鲁克斯，伊凡·萨瑟兰，安迪·凡丹和亨利·福克斯等人的传声筒。所以你要跟聪明人学舌就非常容易显得聪明。在午餐结束时，我就，像我们在商业界说的，投石问路”。我说，你知道，我要有一个学术假。他说，那是什么？[笑]文化冲突的开端。所以，我跟他谈到能否到他那里与他一道工作。他说，很好，只是，你知道，你这一行的工作是告诉别人的东西，而我们这一行是保守机密。但乔恩史诺地就是乔恩史诺地，他接着说“但我们会想办法解决”，我听了很高兴。

The other thing that I learned from Jon Snoddy – I could do easily an hour long talk just on what have I learned from Jon 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.

另一点我从乔恩史诺地那里学到的 --我可以很容易地花一个小时谈我从乔恩史诺地那里学到东西—是他告诉我，等足够长的时间，人们会让你惊讶，让你叹服。他说，当你对别人怨恼愤怒时，你只是还没有给他们足够的时间。给他们多一点时间，他们将几乎总能让你叹服。我觉得他说得真对。长话短说，我们达成了一项法律合同。迪士尼幻想工程将发表第一篇-有些人说是第一篇和最后一篇—学术文章。

That the deal was I go, I provide my own funding, I go for six months, I work with a project, we publish a paper. And then we meet our villain. [shows slide of a picture of a former dean of Randy's] I can't be all sweetness and light, because I have no credibility. Somebody's head's going to 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 Wermer. [laughter]

协议是是我去哪里，自己提供资金，干六个月，做个课题，发表一篇论文。然后我们上了坏人。[放兰迪的前院长的照片]，我不能全都和风细雨，那样我就没有信用了。要拿个人的首级示众。这个人是我在维吉尼亚大学的院长。他的名字并不重要。让我们称他为沃莫院长。(沃莫院长为电影动物屋角色,译者注)[笑]

And Dean Wermer has a meeting with me where I say I want to do this sabbatical thing and I've actually got the Imagineering guys to let an academic in, which is insane. I mean if Jon hadn't gone nuts, this would never have been a possibility. This is a very secretive organization. And Dean Wermer looks at the paperwork and he says, *well it says they're going to own your intellectual property.* And I said, *yeah, we go the agreement to publish the paper. There is no other IP. I don't do patentable stuff.* And says, *yeah, but you might.* And so deal's off. *Just go and get them to change that little clause there and then come back to me.*

沃莫院长跟我见面。我说我想要休学术假，幻想工程允许一个学术界的人参与，这可是闻所未闻。我的意思是如果乔恩要是头脑清醒，这事就绝不可能。这是一个非常秘密的组织。沃莫院长看着文件说，嗯，这上面说他们将拥有你的知识产权。我说，是啊，我们同意发表论文。没有其他知识产权的问题。我也不申请专利。他说，没错，但你可能申请。所以这协议不行。你去让他们改变这一小条，然后再找我。

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 going to go there and I'm going to do this thing.* And he said, *hey, I might not even let you do that. I mean you've got the IP in your head already and maybe they're going to suck it out of you, so that's not going to fly either.* [laughter] 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.

我想，什么？然后我对他说，我希望你了解这有多重要。如果我们不能达成共识，我会停薪留职，我还是要去那里做这件事。他说，嘿，我连这都可能不允许。我是说你脑子里已经有知识产权，而他们可能会把它挖出来，所以那样也不行。[笑] 及早知道你在与人斗气非常重要，同样重要的是尽快从中解脱。

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, *OK, 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.* I said, *but so if he's happy you're happy?* [So he says] *Yeah, then I'd be fine. Whoosh!* Like Wile E. Coyote [inaudible] And I find myself in Gene Block's office, who is 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. *So 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 about how they said it, right? [In a loud, barking voice] *I don't know!* [In a pleasant voice] 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.

所以我对他说，好，让我们先退一步。你觉得幻想工程这事对我们是个好主意吗？他说，我也心中无数。我想，好，我们有共同点。然后我说，关于知识产权问题，是以你说的为准吗，这不应该是赞助研究院院长来判断吗？他说，嗯，那是。我说，如果他同意你就同意？[他说] 嗯，那我没问题。呼的一下，像大笨狼怀尔去追逐必必鸟必必鸟[卡通]，嗖的一下，我已经在基因布若克的办公室，他是世界上最棒的人。我跟他谈，让我们从宏观谈起，因为我不想再重蹈前辙。那在总体水平，你觉得这是不是个好主意？他说，如果你问我，我手头资料有限，但我知道我的明星教员在我的办公室而且他真的很为此兴奋，所以跟我仔细说说。这里是给管理人员的一个教训。他们都表示了同样的事。但想想他们是怎么说的？[大嗓门咆哮]：我不知道！[宜人声音]好，我知道不多，但我的明星教员在我这里很兴奋，所以我想进一步了解。他们两个人都在说，我不知道，但一个是很好的方式，一个坏的方式。不管怎样，最后我们解决了问题。我去了幻想工程。皆大欢喜，如愿以偿。

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. [Shows slide of Christopher on Aladdin apparatus] 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 is very interesting because it had two parts, and it was a very very clever

design. To get throughput through, the only part that touched the guest's 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 during the sabbatical. [laughter]

一些砖墙是由人组成。我的工作阿拉丁项目。这是美妙绝伦，简直难以置信。这里是我的侄子克里斯托弗。[放克里斯在阿拉丁装置上的幻灯]这是装置。你坐在这种像摩托车样的东西上。你可以驾驶你的魔毯，戴上头盔显示器。这头盔显示器是非常有趣，因为它有两个部分，这是一个非常巧妙的设计。只有一个小帽接触客户的头部以传输数据，其它部分，--所有昂贵的硬件--都可以卡在帽子上。所以你可以大量生产帽子，它们基本上没有成本。所以我在学术假期间实际上就是洗帽子。[笑]

I loved Imagineering. It was just a spectacular place. Just spectacular. Everything that I had dreamed. I loved 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 of when I went there and people said, *do you think the expectations are too high?* And I said, *you ever see the movie Charlie and the Chocolate Factory? Willy Wonka and The Chocolate Factory? Where Gene Wilder says to the little boy Charlie, he's about to give him the chocolate factory. 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."* [laughter]

我热爱幻想工程。这是个令人叹为观止的地方。真是壮观。有我所梦寐以求的一切。我喜欢模型工作室。人们在这个房间大小的实体模型上爬来爬去。在那不可思议的地方走走，你会受到激励。我总是记得当我去那里时有人问，你认为期望是不是太高？我说，你们都过电影“查理和巧克力工厂”吗？或威利·旺卡和巧克力工厂？当王尔德对小男孩查理说，他把巧克力工厂给他。他说：“查理，有没有人告诉过你小男孩突然得到他所想要的一切的故事”？查理瞪大眼睛说：“没有，他后来怎么样了”？王尔德说，“他从此生活在幸福快乐中”。[笑声]

OK, so working on the Aladdin VR, I described it as a once in every five years opportunity, and I stand by that assessment. And 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 Ph.D.s and masters degrees. And you know, until you got ice cream spilled on you, you're not doing field work. And more than anything else, from Jon Snoddy I learned how to put artists and engineers together, and that's been the real legacy.

好的，参与阿拉丁项目，我认为这是五年一次的机会。它彻底改变了我。不仅仅是因为我参加了一个很好的项目，而且是让我震撼接触社会，解决真正的的人机界面问题。大多数做人机界面的人生活在这个由博士和硕士学位的白领劳工组成的幻想世界中。你知道，要是冰淇淋没洒到你身上，你就不算做实地工作。最重要的，我从乔恩史诺地那学到了如何让艺术家和工程师一起工作，这是真正的遗产。

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?* [laughter] 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. So I've changed the world in a small way. [laughter] And then at the end of my six months, they came to me and they said, *you want to 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're what?* He said, *since you were, you know, all you wanted, and now that you got it, and you're... 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. And it was a lot like the Soviet Union. It was a little dicey for awhile. But it worked out OK. 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.

我们发表了一篇文章。那真是一个学术文化丑闻。当我们写文章时，幻想工程的人说，也让我们放一张漂亮大照片上去。就像你在商业杂志上看见的那样。对计算机图形学专业组，尽管接受了文章，这是离经叛道的行为。能允许他们这样做？[笑]真是没有规矩！所以，我们发表了文章，而令人惊奇的是从此以后计算机图形学专业组接受的论文都有了在第一页放彩图的传统。所以我把世界改变了一点点。[笑]，六个月结束后，他们来对我说，你想真的做幻想工程师吗，你可以留下来。我说不。这是我一生唯一一次我让我的父亲出乎意料。他说，“你什么？你打小就，你就要这个，现在你得到了，你又… …啊”？我书桌抽屉里曾放有一瓶抗酸药。当心你许下的愿望（译者注：实现愿望会带给你一些你不想要的东西）。那是一个特别紧张的工作。幻想工程总体上压力并不是那么压抑，但我在的哪个室，--哦，乔恩中途就离开了。它很多地方像前苏联。曾经有点鹤唳风声。不过最后还好。如果他们说，“留下来，要不就再别走进这座楼”，我可能就干了。我可能就不要再终身教职，而留下来。但他们让我很容易选择。他们说，你可以因为你们可以既有蛋糕，又吃蛋糕。所以我基本上成了幻想工程一星期干一天的顾问，而我做了10年左右。这也是你们都应该做教授的原因。因为你们可以既吃蛋糕，又有蛋糕。

I went 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.

我接下来咨询了项目如迪士尼探索，虚拟的丛林巡航。我觉得最好的互动体验是“加勒比海盗”杰西谢尔对此功不可没。非常美妙。

And so those are my childhood dreams. And 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? Eh, maybe working at EA, I don't know. That'd probably be a good close second. 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 got to remember the timing on this. Where is Tommy, Tommy is here today. What year would this have been? Your sophomore year.

所以这些都是我童年的梦想。挺好，我也感觉不错。那么接下来的问题是，我如何能让别人实现他们的童年梦想？我再次为我当教授感到高兴。还有什么比学校更能让人实现童年梦想？嗯，也许是在艺电公司，我不知道。可能是仅次于这里吧。当我在弗吉尼亚大学时，有个年轻人名叫汤米巴内特的，找到我说，他有兴趣加入我的研究小组。这使我具体认识到我可以助人圆梦。因为我们谈论时，他说，哦，我有一个童年的梦想。当别人告诉你，你就很容易发现他们的梦想。我说，好啊，汤米，什么是你的童年梦想？他说，我想给下一个星球大战电影工作。你们要记住那是什么时候。汤米在那里，他今天来了，哪是那一年？你上大二。

Tommy (汤米):

It was around '93.

大约 93 年

Randy Pausch:

Are you breaking anything back there young man? OK, all right, so in 1993. And I said to Tommy, *you know they're probably not going to make those next movies*. [laughter] 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 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.

你在那打破什么东西吗，年轻人？好，1993年。我对汤米说，你知道他们很可能不会拍下一部星战电影了。[笑]他说，不，他们会。汤米和我工作了好几年，先作为本科生，然后作为职工，然后我转到卡内基梅隆大学，我研究组的每个人，除汤米外，都从弗吉尼亚来了。因为他有一个更好的机会。他的确参与了三部星战电影的拍摄。

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'm an efficiency freak. So I said, *can I do this in mass? 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 and I created a course called Building Virtual Worlds.

然后我说，很好，但你知道，一次一个效率可不高。了解我的人都知道我特别个注重效率。所以，我说，我能大批量这么做吗？我可以那样改变人，让他们为儿时梦想而兴奋呢？我开了一门课。我来到卡内基梅隆大学，我开了一个叫建立虚拟世界的课。

It's a very simple course. How many people here have ever been to any of the shows? [Some people from audience raise hands] OK, so 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 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 get five projects during the semester.

它是个很简单的课程。有多少人在这里曾参加过？[有些观众举手]好，有些人知道。对于你们这些人不了解的人，其实很简单。从学校不同系来的50名学生。每4个人随机编成一小组，每个课题小组成员都不同。一个课题只持续两个星期，所以你做一点，造一点，展示一点，然后我从新编组，你与三个新组员再做一个课题。每两星期一个，所以一个学期你可以做五个课题。

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 the most amazing place. 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? [laughter] And you'd be amazed how many 19-year-old boys are completely out of ideas when you take those off the table. [laughter and clapping]

第一年我们教着这门课，那完全是摸着石头过河。我开这门课只是看我们能做什么。我们刚学会了如何在三维图形上做纹理映射，我们可以做出有点像样的东西。但是你知道，我们是用按现在标准很差的电脑。但我想试试看。在我的新大学，我打了几个电话，我说我要把这门课列在其它系的课表上以让那些非计算机系的人能参与。不到 24 小时，有五个系就列了这门课。我爱这所大学。我的意思是这是最了不起的地方。学生们，那我们做什么内容呢？我说，见鬼，我不知道。你们想做什么就做什么。但有两条规则：没有枪击暴力，没有色情。并不是因为我特别反对这些，但你知道，已经有人用虚拟现实做过这些了，对不对？[笑]当你不允许想暴力，色情时，你会惊奇的发现有那么多 19 岁男孩完全没了主意。[笑声及掌声]

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 had 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 their tools were weaker, and they came back on 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, and 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 had given them a whole semester I would have given them all As. Sensei, what do I do?* [laughter]

总之，我教了课。布置作业，两周内他们回来让我大吃一惊。他们的作品远超出我的想象。我是从幻想工程那学的这套做法，但我对本科生能不能做这个是完全没数，而且他们的工具也差。可他们第一次交的作业就如此出色以至于我从当教授十年以来，第一次不知道下一步该怎么办。于是我打电话给我的本科导师，安迪·凡丹。我说，安迪，我给了他们两周的作业，而他们交上来的功课像是用一学期做出来的水平。请夫子教我？[笑]

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."* [laughter] 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 going to 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.

安迪想了想，说，你明天到课堂，看着他们的眼睛说，“伙计，赶得不错，但我知道你们能做得更好”。[笑声]这是至好的建议。因为他说的是，很显然你不知道标准要定多高，你主观的

把标准定在哪儿对他们都不好。这意见真棒，因为他们不断提高。就在那个学期，这成了前卫课程。

I'd walk into a class 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'd 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 got to share this. If there's anything I've been raised to do, it's to share, and I said, *we've got to show this at the end of the semester. We've got to 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 AV setup that would work, because this was a zoo. Computers and everything. And then we filled it. And we more than filled it. We had people standing in the aisle.

我走进课堂，一班 50 个学生中，却坐了 95 个人。因为那是我们的展示工作日。学生的室友、朋友和父母-我从来没见过家长来上课的！这个让我受宠若惊。这现象就像雪球般愈演愈大，已至于我们有这样奇怪的念头，嗯，我们得分享这个。我从小到大就被教育要分享，所以我说，我们要在学期末做展示。我们得搞个大的。我们就订了这个麦可诺密礼堂。我在这礼堂里有很多美好的回忆。我们订这礼堂并不是因为我们觉得它会被坐满，而是因为它有唯一管用的影音系统，因为这就象是个动物园。电脑和其它东西。但后来真坐满了。坐满了还不够。有人要站在过道上。

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 ever 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 he came over and he asked exactly the right question. He said, *before you start, he said, 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 that made me feel just tremendous.

我永远不会忘记 那时的莫里斯院长坐在台上，大约是这样。我们不得不把他挪到边上。而室内充斥的能量也是我从没经历过的。科恩校长，杰瑞·科恩也在场，他也有同样感受。后来他形容这就像一个俄亥俄州橄榄球赛前动员大会。只是这次是为学术。他走过来，问了个很恰当的问题。他说，在你们开始前，我想知道这些观众都是从那些系来的？我们做了调查，所有的系都有人来。我感觉非常好，因为我是新来的，他也是新来的，而我的新老板以一种很贴身的方式看到这是个能把大家凝聚到一起的一个大学。这使我感到很了不起。

So we did this campus-wide exhibition. 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 white water rafting. [shows slides of a BVW show] This is Ben in 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 thought I'd show you just one world, and if we can get the lights down if that's at all possible. No, ok, that means no. All right. All right we'll just do our best then. [Shows "Hello.world" world] 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. 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.

所以我们做了全校展览。学生在这里表演。他们穿着戏服，而我们象这样放投影，你可以看是怎么回事。你可以看他们在头盔上所看到的。有很多大道具，象这个人在做漂流。[放建立虚拟世界的展示]这是本在“外星人”，我告诉他们，如果他们做出小孩骑车横跨月亮的场景，我将不会让他们通过。这是真的。我想给你们放只有一个世界，如果我们能把灯光调暗。不能，好的。没关系我们尽力而为。[放“你好.世界”]这是一个不寻常的课程。有来自各校园一些最聪明的，最负创造力的学生，能参与这个课程真是乐事。他们对舞台表演方面太过认真。每年都有人排队报名上这个课，成为校园一景。真是非常抬举我。

And it gave kids a sense of excitement of putting on a show for people who were 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 try 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 Spiderman 3 premiere in L.A., 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.

而且这给同学们一种女为悦己者容的的激动感觉。我认为这是你能给最好的东西之一，让他们知道让别人兴奋和快乐是什么感觉。这是个无以伦比的礼物。我们总是试图让观众参与。无论这节目是持辉光枝或追逐沙滩球... ..或开车。这真是酷。这项技术其实被用于蜘蛛侠3的首映式上，观众可以控制屏幕的放映，这样挺有意思。我没有全部的历年班级合影，但我找出了我所有的，我所能说的是十年来教这门课对我来说是一种非常的恩典和荣誉。

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 could have a favorite moment. But boy there is one I'll never forget. This was a world with, I believe a roller skating ninja. And one of the rules was that we perform

these things live and they all had to really work. And the moment it stopped working, we went to your backup videotape. And this was very embarrassing. [Shows image of Roller Ninja world presentation]

天下没有不散的宴席。一年前我再教这门课。人们经常问我，什么是我最喜爱的时刻。我不知道你可以只有一个最喜欢的时刻。但有一个我是永远忘不了的。这是一个，我想，有滚轴溜冰忍者的虚拟世界。有一条规则是，我们做现场表演，系统得正常运转，一旦它停止工作，我们切换到备用录像上。这是很窘的事。[放滚轴溜冰忍者的虚拟世界展示]

So we have this ninja on stage and he's doing this roller skating thing and the world, it did not crash gently. Whoosh. And I come out, and I believe it was Steve, Audia, wasn't it? Where is he? OK, where is Steve? Ah, my man. Steve Audia. And talk about quick on your feet. 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! Whaaa!* And just drops! [applause and laughter] And so I think it's very telling that my very 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! [laughter] It really was a fantastic moment.

所以我们有这个忍者在舞台上做滚轴溜冰，而这个虚拟世界，呼啦一下就崩溃了。我出来，我相信是史蒂夫，奥地利，不是吗？他在那？啊，是你。史蒂夫·奥地利。他真是反应机敏。我说，史蒂夫，抱歉，但你的世界已经崩溃了，我们要转到备用录像上。他拔出忍者剑说，我受辱了！哇！倒地！[掌声和笑声]，所以我认为这是非常说明问题，10年来这一高科技课程中我最喜爱的时刻是一个出色的随机应变。然后当录像带放完，灯光回来，他躺在那跟死了一样，他的队友把他给拖下去！[笑]那真的是一个美妙时刻。

And the course was all about bonding. People used to say, you know, what's going to 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.*

而这课程的关键是合作团结。人们总是问，做一个好的虚拟世界需要什么呢？我说，我不能事先告诉你，但在他们展示前，我可以从他们的身体语言告诉你，这世界好不好。如果他们互相站在很靠近，那这个虚拟世界就是好的。

And BVW was a pioneering course [Randy puts on vest with arrows poking out of the back], 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 going to do anything that 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 studios 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 was 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 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.

建立虚拟世界是一个创业的课程[兰迪穿上一件背心插满箭头的背心]，我不会跟你们唠叨细节，但确实是不容易。当我从娱乐技术中心退下来时他们送给我这个，我觉得它特有象征意义。枪打出头鸟，你只能面对现实。我的意思是一切可能出问题的地方都出了问题。但回头看来，有很多人得到了很多乐趣。当你在你如此珍惜的事业上干了10年，把它交给别人真是难舍难分。我能给的唯一的忠告就是，把它交给比你更优秀的人。而那正是我所做的。很早以前，你在虚拟现实工作室的这个年轻人，杰西·谢尔，身边呆一会儿，就会觉得，天命非他莫属。我在卡内基梅隆的一个最大的--两个最大的成就，请到杰西·卡·霍金斯和杰西·谢尔加入我们学院。我很高兴当我可以把这交给杰西，不出所料，这课程不但是后继有人，而且更上一层楼。但这仅仅是一门课程。然后我们真的把它上升一个档次。我们创立了我称为的“圆梦工厂”。唐·麦瑞乃里和我一起，在学校的支持和鼓励下，从零开始，化空白为神奇。这简直是异想天开。所有理智的大学都不去碰这种东西。而这创造了巨大的机会真空。

So the Entertainment Technology Center was all about artists and technologists working in small teams to make things. It was a two-year professional master's degree. And Don and I were two kindred spirits. We're very different – anybody who knows us knows that we are very different people. And we liked to do things in a new way, and the truth of the matter is that we are both a little uncomfortable in academia. I used to say that I am uncomfortable as an academic because I come from a long line of people who actually worked for a living, so. [Nervous laughter] I detect nervous laughter! 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. [Shows slide of Don in tie-dyed shirt, shades and an electric guitar, sitting on a desk next to Randy, wearing nerd glasses, button-up shirt, staring at a laptop. Above their heads were the labels "Right brain/Left brain"] [laughter] OK, this picture was Don's idea, OK? And we like to refer to this picture as Don Marinelli on guitar and Randy Pausch on

keyboards. [laughter] But we really did play up the left brain, right brain and it worked out really well that way.

所谓娱乐技术中心是让艺术家和技术家组成小团队创作。这是一个为期两年的专业硕士学位。唐和我志同道合。我们非常不同——任何了解我们的人都知道我们是非常不同的人。我们都喜欢用新方法做事，事实上，我们在学术界都有点不习惯。我曾说我不习惯做个学者是因为我来自一个靠实际打工为生的家庭背景，所以 [紧张的笑]我听见有紧张的笑声！我想强调的是卡内基梅隆大学是在世界上唯一的能让娱乐技术中心产生的地方。到目前为止是唯一的地方 [放幻灯片显示唐麦瑞乃里穿扎染衬衫，戴墨镜，抱电吉他，坐在兰迪旁的办公桌上，兰迪戴着学究眼镜，衬衫钮扣全系，盯着笔记本电脑。头上的标题是“右脑/左脑”] [笑]这张照片可是唐的主意。我们把这张照片叫作吉他手唐麦瑞乃里和键盘手兰迪波许。 [笑]但我们确实发挥了左脑，右脑的分工，而且合作的很好。

[Shows slide of Don looking intense] 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. You know, those of you who know Don know he's an intense guy. And you know, given my current condition, somebody was asking me, this is a terrible joke, but I'm going to use it anyway. Because I know Don will forgive me. Somebody said, *given your current condition, have you thought about whether you're going to 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!* [laughter] I kid. Sharing an office with Don was really like sharing an office with a tornado. There was just so much energy and you never knew which trailer was next, right? But you know something exciting was going to happen. And there was so much energy, and I do believe in giving credit where credit is due. So in my typically visual way, if Don and I were to split the success for the ETC, he clearly gets the lion's share of it. [Shows image of a pie chart divided 70/30 (Don/Randy)] He did the lion's share of the work, ok, he had the lion's share of the ideas. It was a great teamwork. I think it was a great yin and a yang, but it was more like YIN and yang. And he deserves that credit and I give it to him because the ETC is a wonderful place. And he's now running it and he's taking it global. We'll talk about that in a second.

[放唐看起来很激动的幻灯] 唐是一个爱激动的人。我与唐共用一间办公室，在一开始是间很小的办公室。我们有六年共用一间办公室。你们那些了解道唐的人知道他是个爱激动的人。你知道，鉴于我目前的情况，有人问我，这是挺糟糕的笑话，但我还是要用它。因为我知道唐会原谅我。有人说，鉴于你目前的状况，你有否想过你是会去天堂还是去地狱？我说，我不知道，但是如果我去地狱，要减我六年已服刑期！ [笑]我开玩笑。和唐共用办公室就象和龙卷风共享办公室。那里有那么多能量和你永远不知道那一辆拖车要被卷走，对吗？但你知道会有令人兴奋的事情发生。而这能量是如此之大，我相信归功于有功者，所以，以我常用的视觉表达方式，如果唐和我分配娱乐技术中心的成功，他显然获得的大部份份额。 [显示一个饼分图 70/30 (唐/兰迪)]，他做了大部分的工作，他提出了大部分的想法。那是一个美

好的合作。我认为那是一个了不起的阴和一个阳，但更象是阴阳。他值得我称赞，娱乐技术中心是一个美妙的地方。他现在是掌舵人，他还要把它推向全球。我们马上将谈到这一点。

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've never seen it. Sooner or later you're going to make the mistake. You're going to say, *well it's like a circus*. And then you're dragged into this conversation about *oh, how many tigers, how many lions, how many trapeze acts?* And that misses the whole point. So when we say we're a master's degree, we're really not like any master's degree you've ever seen. Here's the curriculum [Shows slide of ETC curriculum] [laughter] 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 had no patience for the book learning thing. It's a master's degree. They already spent four years doing book learning. By now they should have read all the books.

描述娱乐技术中心真的很难，我最终找到了一个比喻。告诉别人娱乐技术中心就象是描述（加拿大的）太阳马戏团。如果别人从来没有见过，那迟早你会犯错误说，它就像一个马戏团。然后你就被拖进那种关于，哦，有多少只老虎，有多少狮子，有多少吊秋千的表演的谈话中而错失关键。因此，当我们说这是一个硕士学位，我们可不是你所见过的硕士学位。这是课程安排[显示娱乐技术中心的课程] [笑] 课程安排最后变成这样。我想要做的是以视觉表达的方式让你们知道，你在建设虚拟世界做五个项目，然后再做3个。你的所有时间都花在跟小团队作东西。没有这本书学习。唐和我没耐心学书本。这是硕士学位。他们已经用了4年时间作书本学习。现在他们应该已经读过所有的书了。

The keys to success were that Carnegie Mellon gave us the reins. Completely gave us the reins. 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. [laughter] 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 took all 50 students in the first year class and we'd take them out to shots at Pixar, we 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*.

我们成功的关键是卡内基梅隆大学放手让我们去干。完全放手。我们不必向任何院长报告。我们直接向教务长报告，这样非常好因为教务长忙的根本固不上费心管我们。[笑声]我们有明确的打破旧模式的授权。我们的教学是以课题为刚。紧张有趣，我们还出外考察！每年一月春季学期，我们带全部50名学生到皮克斯动画工作室和光魔影视特技制作公司，当然当你有像汤米这样的人作东，你进那些地方就很容易。所以我们做的事非常与众不同。我们把很多很多学生做的课题工作称为“娱教”。

We developed a bunch of things with the Fire Department of New York, a network simulator for training firefighters, using video game-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? Drew knows I bet. 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. 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 going to be an ETC campus in Singapore. There's already on in Australia and there's going to be on 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.

我们为纽约消防局做了一堆东西，训练的消防队员的网络模拟器，用视频游戏类的技术来教人们有用的事。干得不错。几家公司也开先例的提出书面承诺聘用我们的学生。我这里有艺电公司和视动公司的保证书。我想现在有，多少，五个？我肯定不知道。所以有五个书面保证书。我不知道任何其他学校同任何公司有这样的书面协议。所以这是一个真正的声明。这些保证是多年有效的，所以，他们同意雇佣我们还没入取的学生做暑期实习生。这是对我们教学质量的一个很强力的声明。如我所说，唐，他现在啊，以一个美妙赞美的角度来说，疯了。他做的事情让我情不自禁的想，天哪。他今晚不在这里，因为他在新加坡，因为娱乐技术中心将出那里办一个分校园。澳大利亚已经有了一个，韩国也要有。因此，这正成为一个全球性的现象。所以，我觉得也很清楚的说明了其它大学（的水平）。真的是只有卡内基梅隆大学能做到这个。现在我们把这扩展到全世界。

One other big success about the ETC is teaching people about focus – oh 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 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 stacked up against your peers. Boy that's hard feedback to ignore. Some still managed. [laughter] But for the most part, people looked at that and went, *wow, I've got to 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 reflective.

娱乐技术中心的另一巨大成功是教人把握人生焦点--哦，我听到有学生在紧张地笑，从。我忘记了那些条状图的迟发休克疗法效应。当你门上建设虚拟世界课时，我们每两周会得到组员的反馈。我们把数据放到一个大表格里，在学期末，你有五个课题，每个课题三个组员，这就是 15 个数据点，可以做有效统计。你会得到一个条状图表告诉你是否如何容易一起工作的排名，你和你的同侪相比如何。这样的硬反馈很难忽视。但还是有人做到了。[笑]，但大部份人看到这个都会说，哇，我要向上提升。我要开始思考在讨论会上对人说些什么。一个教育工作者能给的最好的礼物就是让人能自我反省。

So the ETC was wonderful, but even the ETC and even as Don scales it around the globe, it's still very labor intensive, you know. It's not Tommy one-at-a-time. It's not a research group ten 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. And you know, I guess that kind of a goal really does make me the Mad Hatter.

所以娱乐技术中心非常成功，但即使唐在把它向全球扩展，它仍然是个劳力密集型项目。这不是汤米一对一，它不是 10 人一次的研究小组，它是每校区 50 或 100 人乘以 4 个校区。但我想要做的是能够无限扩展。能扩展到让百万，千万的人用它追逐自己的梦想。你知道，我猜那种目标让我变成了疯帽匠（爱丽斯梦游仙境人物）。

So Alice is a project that we 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. And 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. Ten percent 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.

爱丽丝软件是我们长期致力发展的一个项目。它是用一种新颖的方式来教计算机编程。孩子们喜欢做电影和游戏。障眼法-我们又回到障眼法来。教别人东西的最好方法是让他们认为他们在学其它的东西。我的整个职业生涯都在做这个。这里的障眼法是，他们在学习编程时却以为是在拍电影和视频游戏。这件软件已被下载超过 100 万次。已经出了八本关于它的教科书。10 % 的美国院校正在使用它。但它还不够好，下一版会更好。

I, like Moses, get to see the promised land, but I won't get to set foot in it. And that's OK, 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. And we're getting the characters from the

bestselling PC video game in history, *The Sims*. And this is 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. This is his baby. And for those of you who are wondering, *well, 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*.

我，就像（先知）摩西，能看到上帝的应许之地，但却不能涉足。那也行，因为我可以看到它。远景是很清楚的。上百万年轻人一边玩，一边学习困难的功课。这很酷。我可以接受这个作为我的遗产。下一版要 2008 年出来。如果你想让他们知道他们在学习什么的话，它将教 Java 计算机语言。否则，对他们来说只是创作电影剧本。而我们将加入最畅销的电脑游戏，模拟人生，中的卡通人物。这在实验室中已经可以运行，所以没有真正的技术风险。我没有时间去感谢和提到在爱丽丝团队的每个人，但我只想对丹尼斯·科斯格罗夫说，已经在建造这个。他是设计师。这是他的孩子。对那些心存疑虑，不知在几个月后该给谁发关于爱丽丝项目的电子邮件的人，旺达·丹在那里？哦，你在这儿。请站起来，让他们都看到你。大家说，旺达好。

Audience(听众):

Hi, Wanda.

旺达好。

Randy Pausch:

Send her the email. And I'll talk a little bit more about Caitlin Kelleher, but she's graduated with her Ph.D., and she's 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.

给她发电子邮件。我要多讲一点凯特琳·凯乐荷，但她博士毕业，现在华盛顿大学，她将把这个项目更进一步发展，带到中学去。所以，讲到大远景和你可以继续活在什么之中的话，我会活在爱丽丝中。

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 roles of parents, mentors and students. I was blessed to have been born to two incredible people. This is my mother on her 70th birthday. [Shows slide of Randy's mom driving a bumper car on an amusement park race course] [laughter] I am back here. I have just been lapped. [laughter] This is my dad riding a roller coaster on his 80th birthday. [Shows slide of dad] And he points

out that 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.

好，那么第三部分，教训。我们已经谈了我的梦想。我们已经谈到帮助别人，使他们的梦想成真。在这过程中总应有一些方面谈到是什么让你实现你的梦想。首先就是父母，导师和学生的角色。我很有福的成为两个了不起的人的孩子。这是我妈妈过她 70 岁生日。[放兰迪的妈妈开着碰碰车在游乐园赛车场] [笑]我在这里。我已经被甩了一圈。[笑]这是我爸爸 80 岁生日时坐过山车。[放爸爸的幻灯]，他说，他不但勇敢，而且机智，因为那天他还赢了那个大熊回来。我父亲是如此的充满生命力，与他在一起的任何事都是一种探险。我不知道袋子里是什么，但我知道它一定有趣。我爸爸打扮成圣诞老人，但他也做了非常，非常有意义的事去帮助很多人。这是在泰国的一个由我的妈妈和爸爸出资的学生寝室。每年约有 30 名学生因而能去上学。这是我和我的夫人积极参与的事情。我认为大家都应该去做这样的事：帮助别人。

But the best story I have about my dad – 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.

但关于我爸爸的最好故事，可惜我父亲一年多前去世了-当我们整理他的遗物时，他曾参加过二战中的凸出部战役（又名阿登战役，1944 年冬，德军在比利时阿登高原对盟军发动最后一次战略反攻，双方伤亡惨重，译者注）-，当我们整理他的遗物时，我们发现他曾因作战勇敢而被授予铜星勋章。我妈妈一点都不知道。在 50 年的婚姻中我爸爸从未提过。

My mom. Mothers are people who love even when you pull their hair. And 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. [laughter] 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.* [laughter] 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 that helps people.* [laughter] These slides are a little bit dark, but when I was in high school I decided to paint my bedroom. [shows slides of bedroom] I always wanted a submarine and an elevator. And the great thing

about this [shows slide of quadratic formula painted on wall] [interrupted by laughter] – what can I say? And 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 parent's house it's still there. And 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. It'll be OK. Don't worry about resale value on the house.

我妈妈。母亲是即使你们拽它们头发也仍爱你们的人。我有两个有趣的母亲故事。当我在这里攻读博士时，我要通过计算机理论资格考试，而我可以明确地说这是我一生中仅次于化疗的第二糟糕的事。[笑] 我跟我妈妈抱怨这考试有多难，有多可怕，她只是靠过来，拍拍我的胳膊说，我知道你的感受，小鬼，可记住你爸爸在你的年龄，正在和德国人打仗呢。[笑]我拿的博士学位后，我的母亲宣读津津乐道介绍我，这是我的儿子，他是一名博士，但不是帮助人的那种（医学博士，英语医生/博士为同一词，译者注）。[笑] 这些幻灯片有点暗，但是当我上高中时我决定漆我的卧房。[显示卧室的幻灯]我一直想要一艘潜艇和电梯。了不起的是，[幻灯显示画在墙上的二次方程式] [被笑声打断] -我能说什么呢？了不起的是他们允许我去做。他们并没有不高兴。这个现在还在。如果你去我的父母家，它仍然存在。如果在座的有家长，如果您的孩子想画自己的卧室，作为对我的好意，让他们去画。没问题。不必担心房子的转售价值。

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. He was like a mythical creature. Like a centaur, but like a really pissed off centaur. And everybody was like really sad that he was gone, but kind of more relaxed? And I found out why. Because I started working for Andy. I was a teaching assistant for him as a sophomore. And I was quite an arrogant young man. And I came in to some office hours and of course it was nine o'clock at night and Andy was there at office hours, which is your first clue as to what kind of professor he was. And I come bounding in and you know, I'm just I'm going to save the world. There're all these kids waiting for help, da da, da da, da da, da da. And 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 way to word your being a jerk. [laughter] 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.

除了我们的父母，我们的老师，我们的导师，我们的朋友，同事，都会帮助我们。上帝，有怎么说安迪凡丹呢？当我在布朗大学上大一时，他正在休假。但他的名字却是如雷贯耳。他像一个神话动物。就像（西希腊神话中的）半马人，而且像一个愤怒的半马人。每个人都因他

不在而难过，可又因此而觉得放松？我找到了原因。因为我开始为安迪工作。我上大二时做他的教学助理。我那时是一个很傲慢的年轻人。在他的一些开放咨询时段去，当然是在晚上9点钟，而安迪总在那里，这也是你知道他是什么样的教授的第一个线索。我就蹦着走进来感觉自己像个救世主。这些孩子都等着我帮助，哒哒，哒哒，哒哒，哒哒，哒哒。之后，安迪做了我的“荷兰叔叔”-他是荷兰人，对吧？他做了我的“荷兰叔叔”（英文“荷兰叔叔”意为严厉、不讲情面的“教诲者，译者注）。他用手臂圈着我的肩膀在外面走了走，兵然后说，兰迪，人们觉得你很傲慢，这真遗憾，这会影响到你人生的发展的。这是怎样一个表达“你是个混蛋”的方式啊！[笑]对吗？他不说你是混蛋。他说，人们觉得你是，而这样会限制你的发展。

When I got to know Andy better, the beatings became more direct, but. [laughter] 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 about 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. And Andy said, *no, don't go do that. Go get a Ph.D. Become a professor.* And I said, *why?* And he said, *because you're such a good salesman that any company that gets you is going to use you as a salesman. And you might as well be selling something worthwhile like education.* [long pause] Thanks.

当我更安迪熟了后，批评就直接多了。但，[笑]我可以给你们讲一个月安迪的故事，但我要告诉你们的是，当到了开始思考从布朗毕业之后怎么做的时候，我没有一点要上研究生的想法。从未想过。它不是我们家人做的事。我们有，怎么称呼来着？工作。但安迪说，不，别去找工作。拿个博士学位，做一名教授。我问，为什么？他说，因为你是这么好的一个推销员，任何公司雇了你以后都会用你作推销员。你不如卖点有用的东西，比如教育。[稍长停顿]谢谢。

Andy was my first boss, so to speak. I was lucky enough to have a lot of bosses. [shows slide of various bosses] That red circle is way off. AI is over here. [laughter] 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!* [laughter] 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 that have had bad bosses, and I haven't had to endure that experience and I'm very grateful to all the people that I ever had to have worked for. They have just been incredible.

安迪算是我的第一个老板。我是幸运有很多老板。[幻灯片显示各老板]这个红圈太偏了。艾而是在这里。[笑]我不知道这是怎么回事。他大概正在看网路转播，说，我的上帝，他有目标，他他仍不能瞄准！[笑]我不想说太多我的好老板们，只是要说，他们都很好。我知道有

很多人有坏老板，我还没有过那种经验，我也很感激所有的人我曾经为之工作的人。他们简直令人难以置信的好。

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, *Doctor Caitlin Kelleher*, who just finished up here and is starting at Washington University, and 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, *'cause uh, I'm a compulsive male... like to make the little toy soldiers move around by my command, and that's fun.* She's like, *hmm.* And she was the one who said, *no, we'll just approach it all as a storytelling activity.* And 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.

但我们不仅从我们的老板那里学，我们也从我们的学生那里学。我认为有史以来最好的障眼法是来自凯特琳·凯乐荷。对不起，凯特琳·凯乐荷博士。她刚刚毕业，开始在华盛顿大学工作。她审视爱丽丝软件，那时这只是让学习编程变容易的一个方法，她说，是啊，但这为什么好玩呢？我当时想，因为，啊，我是个冲动的男生... ..我喜欢让由我指挥玩具士兵走来走去，那对我来说很有趣。她就，嗯。然后她说，不，我们应该把它作为一个讲故事活动。她的杰出工作表明，尤其是对女中学生，如果你把编程作为一个讲故事的活动，他们非常愿意学习如何写计算机软件。所有有史以来最好的障眼法奖去授予凯特琳·凯乐荷的论文。

President Cohen, 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.* And 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. 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.

科恩校长，当我告诉他我要做这个讲座时，他说，请告诉他们乐趣，因为这是他们所记得你。我说，我可以做到，但这有点像让鱼谈水的重要性。我的意思是我不知道怎么没有乐趣。我在死去可我仍要玩乐。我还会继续开心玩乐每一天直到最后。因为我不知道任何其它的活法。

So my next piece of advice is, you just have to decide if you're a Tigger or and Eeyore. [shows slide with an image of Tigger and Eeyore with the phrase "Decide if you're Tigger or Eeyore"] I think I'm clear where I stand on the great Tigger/Eeyore debate. [laughter] Never lose the childlike wonder. It's just too important. It's what drives us.

所以我的下一条建议就是，你必须决定你是跳跳虎还是依唷驴(童话中小熊维尼 Winnie the Pooh 的两个朋友，性格一乐观，一悲观。译者注)。[放画有跳跳虎和依唷驴的幻灯，文字内容为“

决定你是跳跳虎还是依唷驴”]我想我已表明了我对这跳跳虎/依唷驴大辩论的立场。[笑]不要未失去童心惊奇。它太重要了。它驱动我们前行。

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.

帮助别人。丹尼·普若非特比我懂帮助他人。我是不能望其项背。他身体力行教我如何带动团队，如何关心人。

M.K. Haley – I have a theory that people who come from large families are better people because they've just had to learn to get along. M.K. Haley comes from a family with 20 kids. [audience collectively “aaahs”] Yeah. Unbelievable.

M.K. 哈利--我有一个理论，来自大家庭更好的人较好，因为他们必需学会和睦相处。M.K. 哈利在来自一个有 20 个孩子的家庭。[听众“啧啧”] 是啊。难以置信。

And 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?* And I said, *well I'm a tenured professor of computer science.* And she said, *well that's very nice Professor Boy, but that's not what I asked. I said what can you do?* [laughter]

她总是说，做不可能事很有乐趣。当我第一次到迪士尼幻想工程，她是教训我的人之一，，她说，我知道你已经加入阿拉丁项目。那你能做什么？我说，那么我是一个有终身职位的计算机科学教授。她说，很不错啊，教授男孩，但我问的问题是，你能做什么？[笑]

And you know 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?* And I looked around at all the non-athletic guys around me who were much smarter than me. And I said, *because I can.* [laughter] And so she thought that was a real hoot so one year she made for me this little Raggedy Randy doll. [takes out Raggedy Randy] [laughter] 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. So, I've met so many wonderful people along the way.

你知道我提到一点我来自工薪阶层。我们把对我们弥足珍贵的东西都留者。我一直保留着我的高中优秀运动员外套。我在上研究生的时候喜欢穿它，我的一个朋友杰西卡霍金斯问，你为什么穿这运动员外套？我看看周围那些不爱运动但比我要聪明得多的人说，因为我能。[笑] 她认为这很有意思，有一年，她就作了这个小破兰迪玩偶。[拿出破兰迪] [笑]，他也有一个小优秀运动员外套。这是我的最爱。它是个送给你生活中自大狂的完美礼物。所以，我的人生路上遇到了很多极好的人。

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. No, not that dean. And 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. And I ended up basically saying, *no, I vouch for Dennis*. And 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*. And the dean said, *and I'm going to remember this when your tenure case comes up*. And 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. 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. [laughter] 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 here 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. Sil 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*. And I thought back to my bachelor days and I said, *damn*. [laughter]

忠诚是相互的。在弗吉尼亚大学有个年轻人叫丹尼斯科斯格罗夫，而他年轻时，让我们只说出了些事情。我要跟一个院长谈话。不，不是那个院长。不管怎样，这院长真的想整丹尼斯。我一直不懂为什么，因为丹尼斯是个不错的人。但出于某种原因，这院长想整他。我最后就所，不能，我给丹尼斯担保。这个家伙就说，你连终身教职都没拿到，你还给这个大二，大三或什么的担保？我想他那时是大三。我说，是，我给他担保，因为我相信他。这院长就说，当我们评议你的终身教职时我会记住这点。我说，一言为定。我回去跟丹尼斯和我说，我很希望你... ..那就好。但忠诚是双向的。这是天晓得多少年前的事，但现在就是这个丹尼斯科斯格罗夫在推动爱丽丝软件前进。这么多年他一直跟着我。如果我们只能用空间探测器送一个人去与外星物种会面的话，我要选丹尼斯。[笑]你不能在卡内基梅隆做讲座而不感谢一个非常特殊的人，那就是萨郎伯克斯。我跟她开玩笑说，唉，如果你退休的话，活着就没有意义了。萨郎出色到不能用言语描述，对我们这些受助于她的人来说，真是无法形容。我喜欢这张照片，因为萨尔也在上面，萨尔的出色在于，论真正价值，她给了我世上最好的忠告。我想所有的年轻女士们应该要听这个。她说，我花了很长时间但我最终搞明白了。跟男人谈恋爱实际上很简单。不理睬他们说什么，只注意他们做什么。就那么容易。我回想起我的单身汉日子，我说，得。[笑声]

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 everyday 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.* Yeah, you know what's coming. And so he said, *you're going to go to Carnegie Mellon no problem.* What he had kind of forgotten was that the difficulty of getting to the top Ph.D. program in the country had really gone up. And he also didn't know I was going to tank my GRE's because he believed in me. Which, based on my board scores was a really stupid idea. And so I didn't get into Carnegie Mellon. No one knows this. 'Til today I'm telling the story. I was declined admission to Carnegie Mellon. And I was a bit of an obnoxious little kid. I went into Andy's office and I dropped the rejection letter on his desk. And I said, *I just want you to know what your letter of recommendation goes for at Carnegie Mellon.* [laughter] And before the letter had hit his desk, his hand was on the phone and he said, *I will fix this.* [laughter] And I said, *no no no, I don't want to do it that way. That's not the way I was raised.* [In a sad voice] *Maybe some other graduate schools will see fit to admit me.* [laughter] And 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 and I said, *OK deal.* I went to the other schools. Without naming them by name -- [in a coughing voice] 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. [laughter] And he hung up the phone and he said, *Nico says if you're serious, be in his office tomorrow morning at eight a.m.* And for those of you who know Nico, this is really scary. So I'm in Nico Habermann's office the next morning at eight 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. And he says, *Randy, why are we here?* And I said, *because Andy phoned you? Heh.* [laughter] And I said, *well, since you admitted me, I have won a fellowship. The Office of Naval Research is a very prestigious fellowship. I've won this fellowship and that wasn't in my file when I applied.* And 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 ten 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. [laughter] 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. And he smiled. And that was good.

永不放弃。我没有被布朗大学入取。我在候选名单上。我就给他们打电话，他们最终决定让我入学因为他们不想我天天打电话烦他们。在卡内基梅隆大学，我没有被研究生院入取。安迪是我的导师。他说，到研究生院，你去卡内基梅隆大学。我所有的好学生都到卡内基梅隆大学。嗯，你知道下面是什么。他说，你去卡内基梅隆大学没问题。他有点忘了的是，进入国内顶尖博士学位计划的难度越来越大。因为他相信我，他也并不知道我的研究生入学考试的成绩会是一塌糊涂，我的分数让这变成了一个很愚蠢的想法。所以我没有被卡内基梅隆大学入取。直到今天，我讲这个故事。没有人知道我被卡内基梅隆大学拒绝。我那时是个有点令人烦的小孩子。我走进安迪的办公室并把拒绝信件仍在他桌子上。我说，我只希望你知你的推荐信在卡内基梅隆大学的份量。[笑]信还没落，他的手就放在电话机上说，“我来解决”。[笑]我说，别别别，我可不想这样做。那不符合我的教养。[悲哀的声音]或许有些其他学校的研究生院会同意入取我。[笑]他说，不，你要去卡内基梅隆大学。他说，我跟你订个协议。去参观其他学校。因为我的确被其他所有学校入取了。他说，去参观其他学校，如果你确实没有一个你喜欢的，那你让我给尼科打电话？尼科是尼科海伯曼。我说，好，就怎么定。我去了其他学校。再次就不说它们的名字-[咳嗽]伯克利，康乃尔。他们让我觉得如此不喜欢以至我对安迪说，你知道，我要找一份工作。他说，不，你不要找。他抄起电话用荷兰语讲话。[笑]他挂了电话说，尼科说，如果你是当真的，明天上午八时到他的办公室去。对你们这些人知道尼科的人，这实在很可怕。所以第二天早上8时到了尼科海伯曼的办公室跟他谈。坦白的说，我觉的他并不多想跟我会面，他一点也不热衷于此。他说，兰迪，我们为什么在这里？我说，因为安迪打电话给你？哈哈[笑]我说，自从你接受我的申请后，我有赢得了个奖学金。海军研究办公室是一个非常有声望的奖学金。我赢得这项奖学金但我的申请材料上没有记录。尼科说，奖学金，钱，我们有的是钱。这是那时候了。他说，我们有足够的钱。为什么你觉得拿了奖学金，会对我们有任何差别吗？他看着我。有些改变人生的时刻，如果10年后，你回想起来，知道这些时刻，你就是有福的人。但当尼科凝视你的灵魂，（我）当时就知道....[笑]我说，我并不是指什么钱。这只是一项荣誉。全国只有15人拿到。我确实认为这是有价值的荣誉。我抱歉如果这显得狂妄。他笑了。一切都好了。

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.

所以。如何让别人去帮助你？你不能单打独斗。你需要人来帮你。我相信因果报应。我相信回报。你讲真话，人们就来帮你。真挚做人。我会毫不犹豫的选择一个真诚的人，而不是一个时髦的人，因为时髦是短暂的。真诚是长远的。

Apologize when you screw up and focus on other people, not on yourself. And 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— [a birthday cake is wheeled onto the stage] [applause] Happy—

当你做砸了，道歉。注意力在别人身上，而不是自己。我在想怎么能做出一个具体的例子？我们那里有没有一个把重点放在别人那里的具体例子？能不能把它拿出来？昨天是夫人的生日。如果我配有一个焦点集中在我的时间的话，那可能就是这最后一次演讲。但不行，我太太没有真正过一个合适的生日，我觉得很糟糕。所以我想最好，有 500 人能- [一个生日蛋糕被推上讲台] [掌声]

Everyone (众人):

...birthday to you [Randy: *her name is Jai*], happy birthday to you. Happy birthday dear Jai, happy birthday to you! [applause]

...生日快乐[兰迪：她的名字叫洁]，祝你生日快乐。亲爱的洁生日快乐，祝你生日快乐！ [掌声]

[Jai walks on stage, teary-eyed. She walks with Randy to the cake. Randy: You gotta blow it out. The audience goes quiet. Jai blows out the candle on the cake. Randy: All right. Massive applause.]

[洁走上讲台，眼中含泪。她与兰迪走向蛋糕。兰迪：你把蜡烛吹灭。观众安静下来。洁吹灭蛋糕上的蜡烛。兰迪：好。热烈鼓掌。]

Randy Pausch:

And now you all have an extra reason to come to the reception. [laughter] 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's at the bottom of barrels of crap. [Shows slide of Steve Seabolt next to a picture of The Sims] [laughter] 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 pulled me aside and said, *oh, by the way, we're about to give eight million dollars to USC to build a program just like yours.* We're hoping you can help them get it off the ground. [laughter] And then Steve came along and said, *they said what? Oh god.* And 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 that's just incredible. But, you know, it certainly would have been reasonable for me to leave

48 hours after 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.

现在大家又多了一个来参加(稍后)招待会的理由了。[笑声] 记住砖墙让我们显示我们的热诚。它们在那里把我们从那些并不真正想要实现自己的童年梦想的人分开。不要逃避。最好的黄金是在粪桶的底部。[显示幻灯片史蒂夫西伯特和模拟人生游戏的照片] [笑] 史蒂夫没有告诉你们的是在艺电公司的公休假，我已经在那有 48 小时，他们喜欢娱乐技术中心，我们是最好的，我们最被看好，然后有人把我拉到一边说，哦，顺便说一下，我们即将给南加州大学 800 万美元，建一个跟你们一样的项目。我们希望你可以帮他们开个头。[笑]，然后来到史蒂夫来了问，他们说啥？哦上帝。再次引述一位著名人士的话，“我来解决”。他解决了。史蒂夫是个宁人令人难以置信的伙伴。无论于私于公，我们都有非常好的关系。他的确是让游戏资产用于帮助教育数百万孩子的急先锋。但是，你知道，我要是在那公休假后 48 小时离开，那也无不妥，但那不是件正确的事情，当你做正确的事情，好事情就会飘然而至。

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 were 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.

得到并听取反馈。你的反馈回路可以是我做的这学究气的表格，或者是一个伟人告诉你你应该听到的。听取意见才是难点。每个人都会被训斥。鲜有人说，我的上帝啊，你说得对。常见的是，不，等一下，真正的原因是... 我们都听过这种辩解。当人们给你的反馈时，珍惜并使用它。

Show gratitude. When I got tenure I took all of my research team down to Disneyworld 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?*

表达谢意。当我拿到终身教职我带我的研究团队到迪士尼乐园玩了一个星期。另一位在弗吉尼亚的教授同事说，你怎么能这么做？我说，这些人拼死拼活让我得到世界上最好的工作。我怎么能不这么做？

Don't complain. Just work harder. [shows slide of Jackie Robinson] That's a picture of Jackie Robinson. It was in his contract not to complain, even when the fans spit on him.

不要抱怨。而要加倍努力。[放济臣的幻灯(美国棒球大联盟的第一位黑人球员,译者注)] 这是济臣的照片。在他的合同中规定即使是球迷向他吐唾沫也不能抱怨，。

Be good at something, it makes you valuable.

有一技之长，它使你有价值。

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 my any Friday night in my office at ten o'clock and I'll tell you.*

努力工作。史蒂夫提及我提前一年拿到终身教职。一位下级教员对我说“哇，你提前拿到终身教职。你有什么诀窍？我说，非常简单。任何周五晚上十点钟给我办公室打电话，我会告诉你。

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.

每个人都有闪光点。我提到的乔恩·史诺地曾告诉我说，人们会向你展示自己善的一面，但你可能要等待很长的时间，有时甚至好几年才能见到。但不论多久都要等待。没人是完全邪恶。每一个人都有善的一面，只要继续等待，它就会显现。

And be prepared. Luck is truly where preparation meets opportunity.

有所准备。运气真的是机会与准备的结合。

So 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. 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.

所以，今天谈的是我童年的梦想，让别人实现梦想，以及一些教训。但是你们看透了其中的障眼法吗？这不是关于如何实现你们的梦想。它的关于如何引领你的生活。如果你正确引领你的生活，因缘自有报应。梦想会成真。你们看清楚了第二个障眼法吗？这讲座不是为你们，它是为了我的孩子。谢谢大家，晚安。

[applause; standing ovation for 90 seconds; Randy brings Jai onto the stage and they take a bow; they sit down in their seats; standing ovation continues for another minute]

[掌声;全体起立鼓掌 90 秒钟;兰迪带洁走上讲台一起鞠躬致意;然后他们坐在自己的座位上;全体继续起立鼓掌一分钟]

Randy Bryant:
兰迪.布莱恩特

Thank you everyone. I'd like to thank all of you for coming. This really means a lot I know to Randy. He had this theory even up to yesterday that there wouldn't be anyone in the room.

多谢诸位. 多谢大家的参与. 这对兰迪很重要. 他昨天还认为没人会来.

Randy Pausch [from seat]: After CS50...

兰迪.波许[从座位上]: 在上完计算机学课 50...

Randy Bryant:
兰迪.布莱恩特

I know. I'm the other Randy. That's been my role here for the past 10 years ever since Randy Pausch came here on the faculty. And what I mean by that is, I introduce myself. I'm Randy Bryant from Computer Science. They go, oh, Randy from CS. You're the one that does all that cool stuff of building virtual worlds and teaching children how to program. And I go, no, no, sorry. That's the other Randy. I'm the wrong one. Sorry, I'm just like a dull nerd. [laughter]

我知道. 我是'兰迪乙'. 自从兰迪到这里任教后, 我已经当了十年'兰迪乙'了. 我的意思是, 我自自我介绍说, 我是计算机系的兰迪. 布莱恩特. 人们就说, 噢, 计算机系的. 你就是那个做那些做那些有趣的虚拟世界, 教小孩如何编程的. 我说, 不, 不, 对不起. 那是另个兰迪. 我不是. 对不住, 我只是个没趣的'讷人'. [笑声]

So, but I'm very pleased today to be able to sort of run a brief series of ways in which we want to recognize Randy for his contributions he's made to Carnegie Mellon, to computer science and to the world at large. So we have a few - it will be a brief program. We have a few people I'll be bringing up one after the other. I'm sort of the MC here. So first I'd like to introduce who you've already met, Steve Seabolt from Electronic Arts. [applause]

但我今天很高兴能做一个简短的系列节目以多种形式来彰显兰迪对卡内基梅隆大学, 对计算机科学和整个世界所做的贡献. 所以我们请了几位 - 这将不会很长. 我们将依次请几位嘉宾上来. 我来客串典礼主持人. 第一位你们已经认识了, 艺电公司的史蒂夫. 西伯特. [掌声]

Steve Seabolt:
史蒂夫.西伯特

My family wondered whether or not I would make it through the introduction. [voice starts to crack up] And I did that but I might not do so well now. So bear with me. As Randy mentioned, he and I, Carnegie Mellon and Electronic Arts share a particular passion about nurturing young girls and trying to encourage young girls to stay with math and stay with science. Every geek in the world shouldn't be a guy. You know,

it's such a twist of fate that there's so many people that are worried about offshoring, and at the same time companies are forced to off-shore, there are fewer and fewer students entering computer science.

我的家人担心我可能连介绍都不能平静做好。[声音哽咽]我做好了但现在可能不行了。请大家见谅。如兰迪所说,他和我,卡内基梅隆大学和艺电公司都对培养女孩子,鼓励她们学习数理课程情有独钟。世上的理工人才不应该都是男的。你们看,那么多人担心工作流向海外,但同时公司不得不要这样,因为学计算机学的学生越来越少了。

And the number of women entering computer science just keeps dropping like a rock. There are way too few Caitlins in this world. And Caitlin, we need so many more of you. And with that in mind, Electronic Arts has endowed a scholarship fund. It's the Randy Pausch endowed scholarship fund, established in 2007 by EA. In honor of Randy's leadership and contribution to education, computer science, digital entertainment, and his commitment to women in technology. This scholarship will be awarded annually to a female undergraduate CMU student who demonstrates excellence in computer science and a passion in the pursuit of a career in video games. Randy, we're so honored to do this in your name. [applause]

而学计算机学的女生更是日异锐减。像凯特琳这样的人太少了,我们太需要更多的你了。因此,艺电公司捐赠设立了一个奖学金,兰迪·波许捐助奖学金,由艺电公司在2007年设立。为纪念兰迪在教育,计算机科学,和数码娱乐领域的领导和贡献,以及他对妇女参与科技事业的努力。该奖学金将每年一次授予一位计算机学成绩优异并立志于从事视频游戏业的卡内基梅隆大学女学生。兰迪,我们非常荣幸能以你的名字设立这个奖学金。[掌声]

Randy Bryant:
兰迪·布莱恩特

Next I'd like to introduce Jim Foley. He's on the faculty at Georgia Tech and he's here representing the ACM Special Interest Group in Computer Human Interaction. Jim. [applause]

接下来,我想介绍吉姆·佛勒。他执教于乔治亚科技大学,他在此代表美国计算机学会人机交互专业组。吉姆。[掌声]

Jim Foley:
吉姆·佛勒:

[motions to Randy Pausch to come on stage; gives him a hug] That was for Jim. [applause]

[示意兰迪·波许上台来;给他一个拥抱]这是为吉姆(我自己)。[掌声]

ACM, the Association for Computing Machinery is a group of about 100,000 computing professionals. One of their special areas of interest is computer human interaction. A few weeks ago, someone who's a very good friend of Randy's wrote a citation which was endorsed by a number of people and went to the executive committee of SIGCHI, which on behalf of the SIGCHI membership, has authorized this special presentation. The citation was written by Ben Schneiderman and worked on then by Jenny Preese and Ben Peterson, and endorsed by a whole bunch of your friends and now from the executive committee.

美国计算机协会是一个有约 10 万计算专业人士的组织。他们中的一个特别兴趣领域是人机交互。几周前，兰迪的一个好朋友写了一份奖状申请并得到多人签名支持。代表人机交互专业组成员的专业组执行委员会已授权此特别颁奖仪式。该奖状由本·斯奈德曼起草，然后由詹妮·普瑞丝和本·彼得森润色，并得到你诸多朋友和执行委员会的认可。

So let me read to you the citation. Special award for professional contributions. Randy Pausch's innovative work has spanned several disciplines and has inspired both mature researchers and a generation of students. His deep technical competence, choice of imaginative projects and visionary thinking are always combined with energy and passion. We've seen that from his early work on the simple user interface toolkit to his current work on 3D Alice programming language, he has shown that innovative tool design enables broad participation in programming, especially by women and minorities.

现在让我来宣读奖状。专业贡献特别奖。兰迪的创新工作跨越多个学科领域，成熟研究人员和一代学生感受启迪。他的精深技术能力，对创意项目的选择和远见卓识与他的精力和热情水乳交融。我们见到，从他早期的简化用户界面工具包到他目前的三维爱丽丝编程语言，他展示了创新的工具设计能让更多的人，特别是妇女和少数族群，参与计算机编程。

Randy Pausch has vigorous commitment to engaging students at every level by compelling and intellectually rigorous projects, and his appealing lecture style for a role-model for every teacher and lecture. Yes, yes yes. [voice starts to crack up]

兰迪·波许诲人不倦，以有力和学术严谨的课程吸引所有学生，他的精彩演讲风格是每位老师和讲座的典范。是的，不错，不错。[声音哽咽]

His work has helped make team project experiences and educational computing research more common and respected. As a National Science Foundation Presidential Young Investigator, a Lilly Teaching Foundation Teaching Fellow, co-founder of the CMU ET Center and consultant for Disney Imagineering and EA, Randy's done pioneering work in combining computing interface design and emotionally rich experiences. For these and many other contributions, the ACM SIGCHI executive council is proud to present to Randy Pausch a special award for

professional contributions. [applause] [Randy comes back on stage to receive award]

他的工作使团队经历和教育性计算机研究更加普遍和受人尊重。作为国家科学基金的总统年轻学者,百合教育基金会优秀教员,卡内基梅隆大学娱乐技术中心的共同创始人,迪士尼幻想工程和艺电公司顾问,兰迪所做的开拓性工作将计算机界面设计和情绪丰富的经历有机结合。由于上述原因和其它诸多贡献,美国计算机学会人机交互专业组执行委员会自豪地向兰迪·波许颁发专业贡献特别奖。[掌声][兰迪上台领奖]

Randy Bryant:

兰迪·布莱恩特

Thank you, Jim. Next I'd like to introduce Jerry Cohen, the President of Carnegie Mellon University. [applause]

谢谢你,吉姆。接下来,我想介绍杰瑞·科恩,卡内基梅隆大学校长。[掌声]

Jerry Cohen:

杰瑞·科恩

Thank you other Randy. [Tries to move Randy Pausch's bag of props to the side of the podium] You know you're traveling heavy, buddy. Many of us have been thinking about and talking about how we can recognize you on this campus in a way that is lasting and fitting in terms of what you meant to this university. A lot of people are involved in this.

多谢兰迪乙。[试着把兰迪·波许的道具包往讲台边挪]伙计,你旅途可不轻省啊。我们中的很多人都在思考和谈论着如何在这个校园能以一种持久的,与你对这所大学的重要性相称的方式来铭记你。很多人都参与了。

You thought the provost wasn't paying attention all those years. [laughter] Actually, one of the ways we're going to remember you is this \$50,000 bill for stuffed animals. \$47,862.32 for pizza. You've made great contributions, Randy, we really appreciate it. [laughter]

你以为教务长这些年来都没注意你[笑声]。实际上,有一条我们要记住你的是花在玩具填充动物上的5万块钱帐单。还有花在比萨饼上的47,862.32元。兰迪,你真是贡献巨大,我们对此非常感激。[笑声]

One thing we could not do, regrettably, is figure out a way to capture the kind of person that you are. Your humanity, what you've meant to us as a colleague, as a teacher. As a student. And as a friend. There's just no way to capture that. There is our memories, however. And there is a way to remember you every day, as people walk this campus.

遗憾的是, 有件事我们做不到, 那就是如何把你那个具体的人记录下来. 你的人性, 你作为同事, 老师, 学生, 和朋友对我们意味着什么. 我们没办法抓住哪个. 但我们有记忆. 我们应有办法让走在这个校园的人们每天都记得你.

So we've come up with an idea. You've done great things for this campus and for computer science and for the world. Surely Alice will live on. But the one we're going to focus on right now is what you've done to connect computer science with the arts. It was remarkable, it was stunning. It's had enormous impact, and it will last, I daresay forever. So to recognize that, we are going to do the following.

因此, 我们想出了一个方法. 你为这所校园, 为计算机科学乃至全世界都做出了杰出贡献. 当然爱丽丝软件将继续成长. 但此刻我们关注的是你为计算机科学与艺术之融合所做的贡献. 了不起, 惊世骇俗的贡献. 它影响深远, 并将, 我敢说, 永远持续下去. 所以为了铭记它, 我们要做以下的工作.

Good job, other Randy. [laughter, as Randy Bryant gets the projector to show the next slide] In order to effect this, we had to build a building. [Shows slide of mockup of Gates building] A hundred million dollar building which will allow us to do the following. You'll note, by the way, to orient people. So the Purnell Center for the Arts is the home of the School of Drama. That modern looking new thing, half of which has a green roof, is the new Gates Center for Computer Science. And we had long planned to connect these two physically, both to allow people to get down from the Cut to lower campus, and you have to admit it carries tremendous symbolic importance.

干得好, 兰迪乙. [笑声, 兰迪.布莱恩特让投影仪放了下一张幻灯] 为了做到这一点, 我们要造一个建筑, [显示盖茨中心实体模型的幻灯] 一个一亿美元的建筑. 你们会注意到, 顺便说一下, 让大家搞清方位. 佩奈尔艺术中心是戏剧系所在地. 那一半有屋顶绿化的有现代味的新建筑, 是新盖茨计算机科学中心. 我们早就计划连接这两座建筑, 既能让人从校园绿化带下到低校园区, 而且你也得承认它有着巨大的象征意义.

Well on behalf of the Board of Trustees of Carnegie Mellon and on behalf of the entire university, I'm pleased to announce today that the bridge connecting these two will be known as the Randy Pausch Memorial Footbridge. [shows slide of mockup of bridge] [applause] Now actually based on your talk today we're thinking now about putting up a brick wall up at either end, and let students see what they can do with it. [laughter]

我今天很高兴地代表卡耐基梅隆校董会和整个大学宣布:这座连接两座建筑的人行桥将被命名为把兰迪.波许纪念步行桥. [放人行桥的实体模型][掌声]现在基于你今天的演讲, 我们在考虑要在桥的两边砌上砖墙, 看看学生们能作些什么. [笑声]

Randy, there'll be generations of students and faculty to come here who will not know you, but they will cross that bridge, they will see your name, and they'll ask those of us who did know you. And we will tell them that unfortunately they were not able to experience the man, but they are surely experiencing the impact of the man. Randy, thank you for all that you've done for Carnegie Mellon. We're going to miss you. [applause] [Randy walks on stage and gives Jerry a hug]

兰迪，今后会有一代代的学生和教员来到这里，他们不认识你，但他们会经过这座桥，他们将看到你的名字，他们会向我们这些知道的人询问。我们会告诉他们，可惜他们没有和你接触的机会，但他们一定都在感受到你的影响。兰迪，谢谢你为卡内基梅隆所做的一切。我们会怀念你。[掌声][兰迪走上讲台拥抱杰瑞]

Randy Bryant:

兰迪·布莱恩特

So every good show needs a closing act, and so to do that I'll invite Andy Van Dam. [applause]

所有的好戏都要有人收场，所以有请安迪·凡丹。[掌声]

Andy Van Dam:

安迪·凡丹

Oh how I love having the last word. [applause] But to have to go on after that fabulous show, I don't know whether that was good planning. Well I started in Brown in 1965 and it has been my pleasure and great joy not just to teach thousands of undergraduates and some graduates, but also to work one-on-one with a couple hundred of them. And over 35 have followed me into teaching I'm proud to say. Out of those best and brightest it was very clear that Randy would stand out. He showed great promise early on and a passion about our field and about helping others that you've seen amply demonstrated today. It was matched by fierce determination and by persistence in the face of all brick wall odds. And you've heard a lot about that and seen that demonstrated as he fights this terrible disease. Like the elephant's child, however, he was filled with 'satiabile curiosity, you remember that. And what happened to the elephant's child, he got spanked by all of his relations, and you've heard some of that.

哦，我最爱说结束语了。[掌声]，但在这精彩的讲演后，我不知这是否还是个明智安排。我自1965年开始在布朗大学执教以来，让我感到欣慰和非常喜悦的是不只教导了成千上万的大学生和一些研究生，而且还与他们中的数百人一起并肩工作。我要自豪的说，他们中有至少有35人跟随我走上了教书育人的道路。兰迪在这群尖子学生中仍然是鹤立鸡群。他很早就显得不同凡响，对我们学科，对帮助他人充满热忱，这些今天已被表现得淋漓尽致了。而这份热忱也与他百折不挠的坚毅相得益彰。你们已经听说了许多他这方面的事迹，也目睹他正与病魔顽强抗争。但你们记得，他如同那象孩儿（源于英国著名小说家、诗人鲁德亚德·吉卜林

<Rudyard Kipling>上世纪初写的一个童话故事集中的一个故事 The Elephant's Child. 译作“大象的孩子”，“大象的鼻子为什么这么长”，或“跟鳄鱼拔河的小象”。译者注)，有着永不满足的好奇心。也正像好奇小象，他也吃了很多苦头，你们也了解了一些。

He was brash, he had an irrepressible, raucous sense of humor, which led to the fantastic showmanship that you saw today. He was self-assured, occasionally to the point of outright cockiness. And stubborn as a mule. And I'm a Dutchman and I know from stubbornness. The kind way to say it is he had an exceedingly strong inner compass, and you've seen that demonstrated over and over again. Now, having been accused of many such traits myself, I rather thought of them as features, not bugs. [laughter]

他的率性而为，幽默暴笑，造就了他非凡的表现才能，你们今天都见到了。他偶尔会自信到自大的地步。犟起来象头骡子。我是荷兰人，我知道什么是固执。往好了说就是他心中有个稳定明确的指南针，对此你们应已屡见不鲜了。那，我自己也被指控有许多这些特点，在我看来，它们是功能特色，而不是缺陷漏洞。[笑声]

Having had to learn English the hard way, I was a fanatic about getting students to speak and write correct English from the get-go. And Randy the mouth had no problem with that. But he did have one problem. And I'm having a problem with my machine here, here we go. [gets slide to project on screen]. And that was another part of my fanaticism which dealt with having American students learn about foreign cultures. And specifically about food cultures, and more specifically yet, about Chinese food culture. So I would take my students to this wonderful Chinese restaurant where they cooked off the menu using a Chinese menu. And I tried to get Randy to sample this. But would Mr. White Bread touch that stuff? [laughter] Absolutely not. And worse, he refused to learn to eat with chopsticks. I was chairman at the time and I said, Randy, you know, I'm not going to let you graduate if you don't learn to eat with chopsticks! [laughter] It's a requirement, didn't you see that? He of course didn't believe that. And so it came time for graduation and I handed him his diploma. And this was the picture one of my friends took. [Shows slide of Brown University commencement, 1982, Randy dressed in his cap and gown, opening his diploma, his mouth wide open in surprise] And what you see is Randy opening his diploma to show it to his parents, and there was an autographed copy of the menu in Chinese and no diploma. [laughter, applause]

因为当初学英文走了弯路，我严格要求学生们一开始就说写正确的英语。能说会道的兰迪在这方面没有问题。但他确有一个问题。我的电脑有点问题。[将幻灯打到屏幕上]。我的另一个癖好是让美国的学生了解其他国家的文化，特别是饮食文化，更具体说就是中国饮食文化。所以，我会把我的学生带到一家很棒的中餐馆，让他们做只在中文菜单上有的菜。我试着让兰迪尝尝。但这位‘白面包’先生会碰这东西吗？[笑声]绝对不会。和更糟的是，他拒绝学习用筷子吃饭。那时我是系主任，我对他说，兰迪，我可告诉你如果你不学会怎么用筷子吃

饭，我是不会让你毕业的！[笑]这是必修课，难道你不明白吗？他当然不相信这个。好，等到毕业的时候，我把他的文凭交给他。这张照片是我的一个朋友拍的。[放布朗大学 1982 年毕业典礼的幻灯，兰迪一身学士服，打开他的学位证书，嘴巴吃惊的大张着]你们所看到的是兰迪打开学位证书给他的父母看，但实际上那只是一个我亲笔签名的中文菜单复印件。[笑声，掌声]

It was one of the few times I got the better of him, I have to confess. Well here we are today, all of us, and hundreds and hundreds of people all over the country, I dare say all over the world, participating in this great event to celebrate you and your life. Randy is the person, the Mensch, as we say in Yiddish. Your manifold accomplishments as a model academic, especially as a mentor to your students, your Disneyland expeditions not only were unique but they are legendary.

我得坦白，这样站上风的时刻可为数不多。我们今天在这里，我们大家，还有遍布美国，甚至，我敢说遍布全世界的成百上千的人参与这个伟大的活动来庆祝你和你的人生。兰迪是个大写的人，一个我们犹太语所称的“君子”。你作为一个模范学者，特别是作为学生导师的多方面成就；你的迪士尼乐园探险不仅是独特的，而且已成为传奇。

You have more than fulfilled the terms of Brown University Charter, which are: to discharge the offices of life with usefulness and reputation. Your utter devotion to your family and your career are exemplary, and continue unabated as you cope with the immensity of your situation. You exemplify undaunted courage and grace under pressure. The most terrible pressure one can imagine. Randy, you have been and you will continue to be a role model for us. [Voice starts cracking up] Thank you so much for all you have done for us. And to allow us to tell you privately and in such a public way how much we admire, honor, and indeed love you. [applause] [standing ovation]

你已经超额履行了布朗大学的校训：过一个有益和光荣的人生。你对家庭和事业全身心投入堪称典范，并在面临巨大逆境时仍有增无减。你表现了在压力下，可以想见的最可怕压力下的无比勇气 and 风范。兰迪，你一直是，也将继续是我们的榜样。[声音开始哽咽]谢谢你为我们所做的一切。并让我们以私人的名义和这公开的方式告诉你，我们是多么钦佩，荣耀，而且实实在在的，爱你。[掌声] [全体起立鼓掌]

Retrieved from <http://www.cs.cmu.edu/~pausch/shortsummary.html> on 10/24/07.

兰迪的病情简报

Late in the **summer of 2006**, I started having some unusual symptoms, culminating with [jaundice](#). Scans revealed it was **pancreatic cancer**. At this time, my wife Jai and I had a 4 year old, a 2 year old, and a three month old baby.

2006年夏末, 我开始有一些异常的症状, 最后出现了黄疸。扫描发现是**胰腺癌**。那时, 我的妻子洁和我的三个孩子分别是 4 岁、2 岁, 和三个月大。

Pancreatic cancer is the most deadly of cancers, with only a **4% 5-year survival rate**. The only hope is to be one of the 20% of patients (which I was) where surgery is possible. I had a [Whipple surgery](#) on Sept 19th, 2006; [Dr. Herbert Zeh](#) removed the (4.5cm) tumor, my gallbladder, 1/3rd of my pancreas, 1/3rd of my stomach, and several feet of my small intestine. I was in the hospital 11 days. Even with a successful Whipple surgery, only 15% of pancreatic cancer patients make it to 5 years, and there is no concensus about which chemotherapy and/or radiation after surgery helps. I found the [Virginia Mason protocol](#), where early trials were claiming to get 45% of people to 5 years. However, it was an **extremely toxic** combination of chemotherapy and daily radiation: a nation-wide trial was shut down because **several patients died from the treatment**. There were two centers still offering the treatment: [Virginia Mason](#) in Seattle, and [MD Anderson](#) in Houston, and I was able to quality for the treatment in Houston. This happened in a whirlwind: the treatment needed to start within 6-8 weeks of the surgery. And Jai & I needed to figure out how to have somebody stay with me full time, and also take care of our 3 kids.

胰腺癌症是最致命的癌症, **5 年生存率仅 4%**。唯一有希望的是那些 20%可手术治疗的患者(我是其中之一)。我在 2006 年 9 月 19 日接受了胰十二指肠切除术(Whipple); 赫伯特.泽医生切除了我的 肿瘤(4.5cm), 胆囊, 1/3 的胰腺, 1/3 的的胃, 和几英尺的小肠。我在医院住了 11 天。即使在成功的 Whipple 手术后, 只有 15%的胰腺癌患者存活 5 年, 而对于术后的化疗和/或放疗方案, 医界也无共识。我找到维吉尼亚梅森方案, 初期临床试验提高 5 年生存率到 45%。但是, 这是**毒性很大**的化疗和每日放疗的组合。因为有几名患者死于该治疗, 全国性的临床试验被终止了。有二个中心仍提供该疗法: 西雅图的维吉尼亚梅森医疗中心, 和在休斯敦的德州大学安德生癌症中心, 而我有资格在休斯敦接受治疗。说时迟, 那时快: 治疗需在手术后 6-8 周内开始。洁和我需要想办法既能照顾我们的 3 个小孩, 有要有人全时陪护我。

I spent November and December at MD Anderson receiving IV Cisplatin once a week, interferon injections three times a week, continuous infusion 5-FU, and daily radiation. Fortunately, Jai's brother and sister-in-law took in our three kids (on top of their 8 and 12 year old), in Norfolk Virginia, while Jai stayed with me in Houston. Every weekend, Jai flew to Norfolk to be with our kids, and my sister Ruby or one of my friends (thank God for [Jessica Hodgins](#), Scott Sherman, and Jack Sheriff) would come stay with me. I was also blessed with my colleague [Chris Hoffmann](#), a CS professor at Purdue who had been through this exact ordeal two years prior: his encouragment and practical tips were invaluable in getting through the treatment. The less I say

about Houston the better, but by the end I was barely able to walk, and my weight (starting at 182) dropped to 138.

我在安德生癌症中心度过了 11 月和 12 月,每周一次静脉注射顺铂,干扰素注射每周三次,5-氟尿嘧啶持续滴注,和每日放疗。幸运地是,当洁和我一起在休斯敦时,她在弗吉尼亚州诺福克的哥,嫂为我们看了三个小孩(再加上他们的 8 岁和 12 岁的孩子)。每个周末,洁飞到诺福克跟我们的孩子在一起,而我姐姐如碧或我的朋友(非常感谢杰西卡·霍金斯,斯科特·谢尔曼,和杰克·谢若夫)会来和我呆在一起。我也有幸我的同事克里斯·霍夫曼,一位两年前经历过同样磨难的普渡大学计算机学教授,给予无价的鼓励和熬过治疗的实用窍门。关于休斯敦我说的越少越好,但最后我几乎不能走路,我的体重(原来 182 磅)掉到 138 磅。

The next four months of chemo (continuous infusion 5-FU) was back in Pittsburgh, through May 2007. Now, I'm 168 pounds and look normal. (To answer everybody's first question, no, my hair never fell out). One additional treatment is a vaccine done at Johns Hopkins: I don't expect it will change my odds much, but it can't hurt. I still have digestive inconveniences from the Whipple surgery: I have to eat 5 small meals a day and take pills with each meal, and I have some abdominal cramping from time to time. A small price to pay for walking around.

接下四个月的化疗(5-氟尿嘧啶持续滴注)回到匹兹堡做,直到 2007 年 5 月。现在,我 168 磅,看起来正常。(回答每个人的第一个问题,没有,我从未脱发)。另外还有在约翰霍普金斯大学做的疫苗治疗:我不期望它扭转乾坤,但总是有益无害。我仍然有手术后的消化问题:我必须一天吃 5 小顿饭,每顿饭都要吃药,有时肚子还会抽筋。为活着而付的一个小代价。

In August of 2007, we learned that the cancer had returned, having metastasized to my liver and spleen, which is a death sentence. At that time, the doctors gave me an estimate of having 3-6 months of healthy living left. On Oct 1st, we learned that the first round of palliative chemotherapy was working, and that I would likely be "more like the 6 than like the 3 in that estimate."

2007 年 8 月,我们获悉,癌症已复发,且转移到肝,脾,这意味着死亡。那时,医生估计我有 3-6 个月的健康生存期。在 10 月 1 日,我们获悉第一轮姑息化疗有效,我的预后更可能是"6"而不是"3"。

My wife Jai has been an incredible source of stability and courage through all this. We both agree that "you can't control the cards you're dealt, just how you play the hand."

[Randy Pausch](#), October 2007

在整个过程中,我妻子洁一直是一个超乎寻常的稳定和勇气的源泉。我们都同意,"你不能控制发给你的牌,只能控制如何打牌。"

兰迪·波许,2007 年 10 月