

INNOVATION

PETER DIAMANDIS

IS FOCUSED ON

BUILDING

A BIGGER BRAIN

STORY JOANNE GRAY



Engineer, physician, author, entrepreneur and founder of two universities, Peter Diamandis has been fascinated by space since he was a child. He runs an ambitious global incentive competition, XPRIZE, which aims to solve the biggest problems we have in ocean and space exploration, life sciences, energy and environment, education and global development. And that's just one of his big ideas.

#### Why did you found Singularity University?

I had just recruited [futurist and inventor] Ray Kurzweil to my board of trustees at XPRIZE Foundation. I was on a three-week trek in Patagonia, Chile, and I had brought with me a copy of Ray's book, *The Singularity is Near*, and I read the book in detail. I realised there was no place on the planet you could go to get a true overview of all the exponentially growing technologies that were materialising. You could get a PhD at MIT or Stanford or Harvard or any of the world's great institutions that would enable you to know a particular narrow field very well, but there was no place you could go to get a true overview of all the technologies that are doubling in

power year-on-year-on-year. I had started the International Space University some 15 years earlier and I understood the importance of multidisciplinary international experience. By the time I finished Ray's book, I'd had the idea of creating a university to give graduate students and executives an overview of the most powerful technologies and I approached him when I got back. We had a dinner; he agreed on the spot that it was a good idea.

#### Why didn't universities have this idea?

They could have. One of the things that is antithetical is that universities and their programs are all accredited and one of the issues with accreditation is you freeze your program and figure out what you want to teach. We decided not to go after any accreditation because we constantly update our program and our curriculum; there is nothing frozen. The problem with the old way is that our education system was based on the fact that 100 years ago you would go and spend four years learning a trade and an area of expertise and that would serve you for the rest of your life. That's a crazy idea today.

#### What have been the best ideas out of Singularity so far, in terms of the impact?

We are hoping people understand the rate of change that's coming, that the rate of change is increasing, that this is going to change how we run our companies. I'm also really focused on the notion that the biggest problems are the biggest business opportunities. Instead of building another meaningless app, I'm trying to focus entrepreneurs on working on solving grand challenges. The best way to become a billionaire is to help a billion people. The mindset is that the exponential change that technologies are enabling will transform every industry, every aspect of lives – and people are fearful of the future if they don't understand it. Part of our goal is to help people understand what's coming down the line and how it will change our world and that this kind of change ultimately is making the world more peaceful and more prosperous – and that's a good thing.

#### You've set up a kind of corporate innovation exchange. How does it work?

The corporate program at SU labs is designed to help companies that want to drive internal

innovation. Part of the issue is that any company trying to reinvent itself and drive breakthrough innovation has effectively a corporate immune reaction. No company likes changes and, typically, inside your organisation employees will kill it. They will say "it's a crazy idea" or "do you realise if you do that, you eliminate my job?" There's just a negative mindset and it dilutes the effort.

A lot of the time true innovation takes place outside your four walls. It's a concept Lockheed pioneered with Skunk Works ages ago. When [Steve] Jobs created the Macintosh, he set up his team in a different building and flew a pirate flag over it. That kind of mindset is sometimes required. So what we have done is created this SU lab where we incubate start-ups; we have some 30 start-ups that have come out of SU. Companies like Lowe's or Hershey's or Coca-Cola can set up their young innovators at SU labs and effectively have their small team in an environment where anything is possible. They are working next to a 23-year-old focused on drones and a 25-year-old focused on synthetic biology or artificial intelligence and 3D printing, so you have this very unusual mix.

#### Does that diversity of components drive the innovative mindset?

It's two things. The day before something is truly a breakthrough, it's a crazy idea. Most companies don't experiment with crazy ideas, most companies don't allow it and most thinking is effectively linear and incremental.

This approach allows non-traditional thinking. It's the people who are there, it's a positive mindset. The terminology that Google uses is "moonshot thinking" and it's the concept that I talk about in my next book. It's about bold thinking as an entrepreneur, realising that you have the abilities that 20 years ago were only resident in government and large corporations.

My next book is called *Bold: How to Go Big, Create Wealth and Impact the World*, a follow-on to my book *Abundance*. We are rapidly driving towards a world of abundance. Scarcity is very much a mindset and technology is a force that turns abundant what used to be scarce. *Bold* is written for entrepreneurs inside companies, outside companies, young or old, and it's focused on the tools you now have as an entrepreneur. I look at how Google

does what they do and how Lockheed Skunk Works did what they did. I have interviews and detailed lessons from Larry Page, Elon Musk and Richard Branson. I also look through the lessons I've learned in the 17 companies I've started, at how to do things at scale.

### **How does the executive program work?**

It's a seven-day executive program, about 80 executives per program. In the room are folks who just sold their company or family business, VC [venture capital] or hedge fund managers, CEOs, a few government people. It's immersive, living and breathing from breakfast through late night wine-enhanced conversation, a deep dive into all of the accelerating technologies, the concepts behind infinite computing, networks and sensors, artificial intelligence, robotics, synthetic biology, 3D printing. You don't need a maths degree or a physics degree, it is not technical, the detail is in the concepts. The idea is to give you a real understanding of the technology and where it's going to be in two to five years. A week is enough time to get people to see the world or their industry in very differently.

### **How will this affect the workplace?**

We will see people upgrading their skills as artificial intelligence and robotics take the more menial jobs causing people to move up the food chain.

### **As these technologies are introduced at scale, do you foresee a period of disruption between people losing jobs and upskilling?**

AI and robotics have the potential to significantly impact the economy and the job marketplace but I think a number of adjustments will occur. We will start creating new jobs that are man-machine collaborations. We will see a lot of the more meaningless jobs go. There was a recent poll by Gallup showing that 70 per cent of workers don't enjoy their jobs and are disengaged. They're doing it not because it's their purpose in life but because they're trying to put food on the table. Those jobs will disappear and be carried out by robots. The question is, can those people upgrade. Can they become artists, teachers, creative agents because they can do something that they love enabled and supported by technology?

### **How do you choose which prize you will offer at XPRIZE?**

Every year we get together with major donors and sponsors called our visionaries. We discuss the grand challenges that should be solved. We have 150 CEOs, philanthropists, big thinkers who debate and come up with 80 prize concepts over three days; they will compete against each other. We come up with the top 10, then the top five and ultimately the top one. That's one mechanism for generating the prizes; others come from our conversations with donors or sponsors of prizes.

### **XPRIZE Foundation partnered with Virgin Galactic. But SpaceShipTwo crashed in late October. What was the impact on the project?**

My considered opinion is that it was unfortunate, it was sad, but it is not a significant issue for the company or industry. It was pilot error: he triggered the re-entry system upon ascent – no idea why – at the worst possible time. The vehicle went through aerodynamic turbulence beyond the design parameters and fell apart. That's not to say there is anything wrong with the

design. In fact they are building an exact duplicate. If you took a 747 and tried to fly it backwards in midflight, it would fall apart as well. The vehicle is a good design and George Whitesides, the CEO, and Richard Branson, the chairman, are doing exactly what they should do – expanding the vehicle's performance envelope incrementally; they are testing it and ensuring it is safe. I've got my tickets – I am ready to fly as soon as they tell me it's ready.

### **You want to make sure the human error doesn't happen again.**

This is par for the course for any new vehicle. Not necessarily human error but the idea that you will find problems and you will push them. That's what a test program is all about.

### **I saw a few commentaries that said maybe space entrepreneurs are putting their products out too fast.**

That's exactly what's not happening. The whole point was Richard was getting a lot of hassle from the media, the same media that was hassling him for being late is now saying maybe he's gone too early. It's such bullshit.



Sheriff's deputies look at a piece of debris near the crash site of Virgin Galactic's SpaceShipTwo near Cantil, California November 1, 2014.

**Has climate change come up as one of the problems to be solved?**

We have two Xprizes in development there. One is a battery Xprize that we hope will launch in the first half of 2015. This would be an Xprize for increasing battery energy by almost 300 per cent. If we have batteries that are 300 per cent better, it changes everything. We can get to an electric car economy, electric aircraft. It helps move towards a full solar economy. There is an Xprize under development to extract carbon out of the smokestacks from natural gas and coal plants and turn the carbon into products that are more valuable than the cost of extraction. There are lots of others but those are the two big ones that are in prospect.

**How did you get so good at persuading tech billionaires to be involved in solving these big problems?**

Out of necessity. I don't have that level of wealth myself yet, I hope to soon with some of my ventures, in which case I'll fund these things myself. In the interim, my option is to convince other people of the importance and to partner with them; and necessity is the mother of invention. It's about leading a meaningful life and, if I think about what drives me in life, I have two major drivers: one is exploring the space frontier and the second one is attacking and trying to solve as many of the grand challenges out there as possible. Some are easier than others. I don't get involved in solving the political mess.

**When did you start figuring out that prizes were the best way to drive innovation?**

It came out of a personal frustration that the space program was not moving forward and my dream for space flight would not materialise through NASA. The question then was: how would I do that?

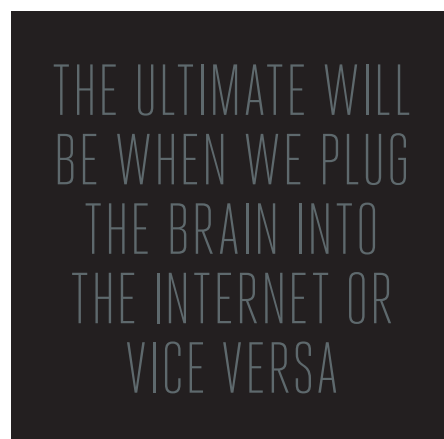
I had the luck of reading Lindbergh's biography that a friend of mine, [XPRIZE Foundation board member and energy and space expert] Gregg Maryniak, gave me. And I learnt about incentive prizes and I focused on the first one for space flight.

Then I realised how powerful a tool it was and he helped me understand the perspective of also running Singularity University, that the entrepreneur is more powerful than ever

before. Given technology, entrepreneurs can do more and more and more. So if you can incentivise them to focus on the world's biggest problems, there's an innovation engine, if you will.

**You have a vision that ultimately there will be a meta-intelligence of 7 billion brains working together. How far off is that?**

To take it incrementally, what is going on right now is we are building this extraordinary



nervous system called the internet, where we are going from 2 billion people connected to 7 billion people connected in the next decade. And that connection is becoming more and more robust. We are having conversations on opposite sides of the planet, there is an increasing level of experiential connection.

At the same time, you and I are collections of 10 trillion human cells. Each cell is a living being, a living life form. And 10 trillion cells work collaboratively because of their interconnection. They form tissues and organisms and ultimately you and me. Evolution has done this. We went from single-cell life forms to multi-cell life forms to complex organisms. And we humans are undergoing that same evolutionary process as we are connecting ourselves.

The ultimate will be when we plug the brain into the internet or the internet into the brain, whatever the case may be. It's not a matter of if, but when. And it will allow us each to have massive capabilities. We have a limited memory, a limited cognitive ability, a

limited input-output of learning and seeing and hearing. Those limits will come off when you plug into what they call meta-intelligence – plugging into a greater whole. If you ever unplugged from that you'd feel so lonely.

I'm sure there are great religious analogies to be used but I think we are heading towards that direction. And ultimately it will create a much more peaceful world because this level of intimacy, of understanding people, has increased the level of peacefulness on the planet.

There's a book by Steven Pinker called *The Better Angels of Our Nature*, in which he talks about how we are living in the most peaceful time in human history. The increase in peace comes from understanding each other and understanding that the hardship of a mother on the other side of the planet is the same as your hardship. Her hopes and dreams are the same as your hopes and dreams.

**Is that your spirituality, may I ask?**

I think so. I grew up in a very religious Greek Orthodox family and I think my view of organised religion is, basically I've become non-religious. Am I spiritual? Sure. Do I think that there is something much greater than the individual? I think there is. Are we headed towards creating something greater? Absolutely. If I have a spirituality, it's that notion that there is an energy, there is a force that we're reaching, an evolution. **BOSS**

*Peter Diamandis will speak at Creative Innovation 2015, March 23-25 in Melbourne.*

Singularity University is a non-profit corporation that provides educational programs, innovation partnerships and a start-up accelerator to help individuals, businesses, institutions, investors, NGOs and governments understand new technologies and how to use these technologies to have a positive impact on billions of people.

XPRIZE Foundation is a non-profit organisation that designs and manages public competitions aimed at encouraging technological development that could benefit mankind.