

The Tim Ferriss Show Transcripts

Episode 90: Peter Diamandis

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Tim Ferriss: Hello my frisky little kittens. This is Tim Ferriss and welcome to another episode of the Tim Ferriss show where I interview and deconstruct world class performers of all types, ranging from chess prodigies to actors like Arnold Schwarzenegger to people in the military, to people in sports, and including Peter Diamandis.

Peter had his first debut a while back on this podcast. It was a huge hit with Tony Robbins and he did a separate standalone interview with me and that was titled, How To Think Like Elon Musk and Jeff Bezos. That was a huge hit and he has come back to answer your tough questions, which you submitted and voted up.

Who is Peter? Well Dr. Peter Diamandis has been named one of “The World’s 50 Greatest Leaders” by *Fortune Magazine*. His accomplishments are far too many to list and it would bore you. It would not bore you; it would actually be fascinating, but it would be super long, but here is a taste. So, Peter is Chairman and CEO of X Prize Foundation. He is also the Co-Founder along with Craig Venter and Bob Hariri of Human Longevity Inc., HLI, and Co-Founder of Planetary Resources. A company designing spacecraft to mine asteroids for precious materials, and that is serious. That is not a joke. His latest book, *Bold*, has endorsements from people like Bill Clinton, Eric Schmidt, and Ray Kurzweil.

Peter knows how to think and play big and he can show you how to do the same thing, step by step. This episode answers the top ten most popular questions you all had for Peter, including things like how do we disrupt the education system? How do your first ten minutes after you open your eyes in the morning look? Do you have a morning routine? What are some unrealistic goals you think entire nations could aspire to solve? And it goes on and on. These questions are actually really, really good and I’m excited for you to hear Peter’s answers. So, without further ado, please enjoy yet another with Peter Diamandis.

Peter Diamandis: Hi, this is Peter Diamandis and it is a pleasure to be back to answer these questions for Tim Ferriss’s podcast. Finn in England asks a question, how do we disrupt our education system? So, Finn, first of all education has a couple different parts. There is the part of

socialization of getting to know kids, getting to know people, how to be a good citizen, how to interact with people socially.

Then there is the part about learning and the challenge with our education system – and you know this. We all know this – is, it is a 150 or 200 years old and it just sucks. I do not know how else to put it. In any classroom, half the class is bored. The other half of the class is lost and even the best teachers can only teach to the median. As classroom sized grown, our ability to really provide personalized education just is not happening. So, for me, the ability to scale is the use of the technology.

I always ask the question, how do you dematerialize, demonetize, and democratize different systems? In the case of education, I believe is going to happen is that we are going to develop artificial intelligence systems, AIs, that are using the very best teaching techniques.

That basically an AI can understand a child's language abilities, their experience, their cognitive capabilities, where they have grown up, even know what their experiences are through the days and give that individual an education that is so personalized and so perfect for their needs in that moment, that you could not buy it. The beautiful thing about computers and AI is that they can scale at minimal incremental costs.

So, you can imagine a world in the future, in which the son or daughter of a billionaire or the son or daughter of a poor African villager have equal access to the best education. We are seeing that today in knowledge because Larry Page on Google has access to the same knowledge and information that the poorest person on Google has. It is a flattening of the capability.

So, AI for me, is the answer to global dematerialized, demonetized, and democratized education. We have to separate learning things from actually socialization and being inspired and so forth. Humans are going to be part of that; always will be, but AI is going to be the way that I learn something. Where AI can really deliver the information in a way that is compelling and meaningful. In fact, we are going to have a situation where – that AI may be watching my pupillary dilation or how I tilt my head or ask me questions to really understand did I understand that concept or was I just sort of faking it by nodding my head?

How many times you are speaking to someone, they are trying to teach you something and you say, “Yeah, yeah, yeah.” And really,

in the back of your mind, you are going, “I have no idea what this person just said.” Well, I think education driven by neuroscience and by artificial intelligence will know that you did not get it, will back up to the point you lost the idea, and then bring you step by step so you really do learn these things.

I think we are going to really transform education very quickly and it is a huge and critically important part of our society. So, as the father of two four year olds, I am personally passionate and excited about solving that challenge.

HGH asks the question, what is your first ten minutes in the morning look like? What do you do after you open your eyes? What is your morning routine? Well HGH, I get up typically – because I have two four-year-old boys jumping on the bed and asking me to watch cartoons with them. That has not been the routine for years, but it is the routine at this very moment. The first thing I do is I scan my email. Turns out I personally read and return all of my email. I delete most of the things that are junk, forward the things that I can forward to individuals, and then save the things I am going to respond to later in the day. So, I will do a quick email review from the night before.

I will – If I – depending on where I am, do a quick workout. Typically, 20 or 30-minute job and then shower, change, and then go to X Prize if I am in Los Angeles, go to Singularity University if I am in the Bay Area, Human Longevity in San Diego, or Planetary Resources up in Seattle. My schedule is pretty much set. I have an amazing team who manage me minute to minute. If I am in the midst of reading a book, I will be reading it on my phablet and basically squeezing in minutes where I can to be inspired by it.

I have my go to team, called my PhD ventures team, an amazing group who I work with and I will be on the phone with them brainstorming when I have free time. But, basically for me, it is a matter of juggling four ventures through the day and trying to have fun. For me, the most important thing is having fun and being inspired just to keep up the pace because it will go 24/7 if you let it.

Anyway, nothing routinely special. Oh, I will do a whole stretching routine in the shower if you wanted to know.

Mike from Santa Cruz asks a fun question, what are some unrealistic goals that you think an entire nation could aspire to? So, Mike, I think that there are some smaller nations – take Holland or

UAE or Israel that could actually aspire to some real transformation goals and those goals might be something like going to a complete digital currency. Imagine if paper money was gotten rid of and everything was digital. The ability that you have all of the sudden to get rid of all bribery, all – a good amount of crime.

The second part is going to a full digital election, where it is one digital vote per person, going to a pure democracy. That is an aspirational goal that I think a nation could go for. Another is basically providing a guaranteed minimum income for every person in the country. I think that is something that is as we start to head towards a world of AI and robotics beginning to displace jobs, which it will do. These technologies will also help elevate jobs. Elevate people to higher levels of jobs. I think a guaranteed minimum income provides people with a floor revenue so it takes away that anxiety.

But, along that lines I think giving everybody access to a free education and free healthcare, but not just any free education or free healthcare.

Imagine if the aspiration of the nation was access to the world's best education and the world's best healthcare. So, what does that look like? For me, the world's best education is going to be sort of a digital version where the best teachers are digitized and I can learn anything I want and it is free from the best people on the planet, delivered to me in a way that is compelling, it is personalized for me. It is sort of the future of where we are going with AI professors.

On the healthcare side, I think nations will begin to sequence their entire population. So, imagine if in a population of a few million citizens, you were able to do a full genome sequence on every single individual. But besides their genome sequence, imagine if you did their microbiome, in other words all the bacterial, viral, and fungal DNA that inhabits us. We as humans are a collection of 10 trillion human cells and 100 trillion members of the microbiome.

And besides that, it might be your phenotypic data, your MRI data. All of that data represents your physical state. But, if we had that for every citizen of a country, we would be able to predict what that citizen is likely to come down with. Will they come down with heart disease? What type of cancers? Neurodegenerative disease? And actually provide those people with preventative services

before they come down with it. It's a way of dropping the healthcare costs precipitously for a nation and providing people a healthier, longer life. So, I think those are some really great moon shot goals that countries in fact can and will and should take.

So, Carlson BJJ from Lincoln, Nebraska asks a question. What are some of the most exciting changes happening in healthcare? And what are the time tables for them to effect the general population?

So, Carlson, you may know I am one of the co-founders of a company called Human Longevity Inc. with Craig Venter who sequenced the first human genome and Bob Hariri who is one of the pioneers of stem cells – placental stem cells to be exact and we've started a company called HLI that is the largest genome sequencing facility in the world. We've sequenced more human genomes at this medical grade level, than the entire world combined to date and we are heading towards a world in which we are going to be sequencing millions of individuals. Not only the 3.2 billion letters from their mother and their father, but your microbiome. Getting your full digital MRI, your health records, all of this information compiled into an integrated health record per individual.

Now, imagine millions of these integrated health records and our next step is to data mine that information. So, if you came to HLI, to our health nucleus, which is sort of our medical hub where we intake people to join this. We fully are digitizing your body, your DNA, your microbiome, your brain structure.

All of this goes into the database and you are in this database now with millions of individuals and your data, along with those individuals' data, is mined to look at – look, everybody who had this genome sequence had a high probability of living over 100. In fact, they had no probability of cancer, but they did have a probability of this kind of heart disease. So, we are able to really mine the largest data mining project in history. Understanding the correlation between genome and outcome. So, this is what is going on right now. It is going to transform all of healthcare. It is going to make healthcare predictive and preventative.

The other side of the equation of what we are doing at HLI, which is part of what we are talking about here, is actually the STEM cell side of the company. One of our investors is a company called Cell Gene. It is a \$100 billion company that has done a lot of work in STEM cells and our mission is to look how do we rejuvenate your STEM cell population?

Because it appears to be that the STEM cell are your rejuvenating engine of your body. So, if you have children or when you were a kid, you had STEM cells coursing through your body and those STEM cells were able to repair any kind of damage to any kind of tissue, or muscle, or skin, or connective tissue, whatever it is. But, as we get older, our STEM cell population does two things. 1.) It begins to dwindle and our STEM cell reserves get reduces. 2.) Is our STEM cells undergo these epigenetic changes, these mutations, deletions, insertions, and our STEM cells become less and less able to repair our body's injured tissues.

So, one of the ideas for Human Longevity Inc. is can we in fact extract your STEM cells, identify what epigenetic changes have taken place, repair your STEM cells, proliferate them, provide them back to you, and restore your regenerative engine?

So, our mission is to extend the healthy human lifespan 30 to 40 years to make 100 years old the new 60 and the goal is at 100, that you'll have the cognition, the aesthetic, and the mobility. Look good, think clearly, and be strong at 100 that you did at 60. So, I think this is where we are heading.

I think the other big revolutions in healthcare are going to be around making it data centric. We will all be wearing biometric sensors on your Apple Watch, your Google Watch, whatever it might be. Sensors that are in our clothing, sensors that are we have swallowed, sensors that are under our skin. All of these things measuring constantly what we eat, what we breath, our glucose levels, blood pressure, looking in your blood for micro RNAs and it is effectively an onboard sensor system like your car or your refrigerator or your airplane has.

That is constantly making sure things are working well because right now the way the healthcare system works is when you break down, when you end up with cancer, heart attack, that's when you go. So, it is like imagine an airplane in the sky that only got serviced after the engines quite. You have a lot of lethal accidents. But, today we actually, in our airplanes – GE jet engines for example have 100's of sensors monitoring every aspect of the jet engine. When anything goes out a little bit of tune, what happens? That jet engine goes into immediate service before anything dangerous occurs.

So, we are heading that way. We are going to be monitoring your body and looking for anything that might be out of whack. Your

check engine light goes on and you get preventative service, instead of critical care service at the end.

The next question is from Mikey in Laguna Beach, California. Mikey asks, a problem well defined is a problem half solved. How do you go about defining a problem? Or how do you ask better questions?

So, that is, Mikey, a really important question for an entrepreneur. I think of problems as gold mines and when I am trying to help a Fortune 500 CEO move his company forward, my question to him is why do you not hire a bunch of 20 something year olds who have – do not know about your business, but can go and interview your customers, your suppliers, your employees, and ask the question what do you wish was different? What is not working for you? If you can get a list of the problems that your business has or that you have in your life or that you have in your products or services – really being able to define what people do not like, what is not working for people, that list is incredibly valuable.

As targeting data for improving your business, but also creating new business. I like telling people that the world's biggest problems are the world's biggest business opportunities. You want to become a billionaire? Help a billion people.

So, defining a problem is critically important. Now, the question is, can you define the problem yourself or are you blind to it? And that is a challenge, right? We do not know how to think any other way than the way we do think. So, defining a problem sometimes comes best in conversation or by asking other people to come in, look at what is going on, evaluate, and generate a list of problems. And then review it with them and see, oh well you did not understand that or maybe they did and you did not. So, I agree with you, a problem is a terrible thing to waste.

Next question comes from Bob Capel in Texas. Bob asks, what is the most important thing for a 16-year-old to do this summer vacation to keep moving forward and be prepared?

So, that is a great question and one which when I speak to high school students, I try and address off the bat. The single most important thing for a high school student, college student, even for anyone listening here. But, in particular for a high school student, is understanding what his or her passion is. I consider myself lucky and you may as well, that I got my passion in life, my mission and my purpose in life, when I was a child. It happened when I was

about eight or nine. It was Apollo, it was Star Trek, it was a complete love affair with opening the space frontier.

And that passion drove me to want to learn, drove me to do research on my own, drove me to build rockets, build rocket engines, blow things up, all kinds of crazy stuff. But, it was – it drove me. It was not something that my parents made me do, my teachers made me do. I did it because I wanted to and so when I am in the classroom – in fact, just a couple of days ago I was at Singularity University. We have 80 graduate students and those graduate students come from 40 countries around the world. Top 5,000 applicants for 80 spots and I asked the question of them, how many of you know your mission in life? Know what your purpose is? Know what why you are on this planet? Are driven by something big that excites you every morning?

And only about a third of them raised their hands, which was kind of surprising to me and I said to them, “listen, for the other two thirds, your goal this summer is to find your passion, to figure out what it is – or at least what you think it might be and explore that.”

So, it goes double or triple for high school student because if you know your passion at that age, you can start to really use that to drive where you go to college, what you learn in college, what you do in building companies. So, this summer I would ask if that is your son or daughter or your cousin, whatever it might, the question do you know what your passionate about?

Now, where might one identify their passion? I have two tests that I use. One is what did you want to do when you were a kid? Before your mom or dad or your teachers told you what you were supposed to do, what was exciting for you? For me again, it was space. It was really simple. So, make a list of those things.

The second is, if I gave you a billion dollars and said you cannot spend on yourself but I want you to spend it to make the world a better place. Where would you spend that money? What would you try to do with that money?

So, if you asked that 16-year-old to make a list of what they think their passions might be and then spend a week, come up with the top five or six and then spend a week investigating each of those and narrow it down to a top two or three. That would be an amazing summer well spent.

Alright, next question comes from Mike in Santa Cruz, California

and Mike asked the question, whenever the question of ending hunger in Africa arises, someone always says, “There is no sufficient distribution system.” And the question is, why couldn’t we just feed African countries with a mere billion dollars using food and a small army of powerful delivery drones. So, Mike, I think yes distribution is one part of it, but it’s also reinventing how we produce food, where we produce food, and how food is delivered. If you think about what is food? What is food?

Food is a mechanism for converting sunlight, which is energy, into useful energy ourselves, our body, can consume. Like, if we were photosynthetic organisms, we just convert the sunlight directly into energy in our bodies, but that is not what happens, right? The sunlight hits the trees or the grass, the trees grow oranges, your oranges have fructose and various hydrocarbons. The grass is eaten by cows that build muscle tissue or produce milk and ultimately we consume the oranges, or the milk, or the cows and we live by that conversion process.

The question really is how could we actually produce that food product in a much more efficient way? And what I am interested in is the impact of technology. Now, drones are one mechanism, but I think that we can now grow food in much more efficient ways, in a much more decentralized fashion.

Because today what happens if we are living in New York for example – actually, you are from Santa Cruz, so if you are living in Santa Cruz and you have a dinner at a nice restaurant, your meal travels an average of 1,600 miles, right? Your wine may come from France. Your beef may come from Brazil, Argentina. Your corn may come from – I don’t know. Where does corn come from? Middle American. And ultimately, it ends up on your dinner plate. But, imagine a future in which in Santa Cruz or LA or New York – I will get to Africa in a second.

The food is actually produced in what are called urban or vertical farms, where it is built a farm that is a multi-story – maybe 30, 40 stories high, but it is operating 24 hours a day, 7 days a week, with artificial light at the perfect frequency providing humidity and rain at the perfect PH, going plants in a 24 hour, 7 days a week growth cycle, and that is part of a perhaps protein based fish system.

And you can imagine sort of vertical farms that are in cities and town around the world where the distribution is not 1,600 miles, but 10 miles. So, the food is always locally grown.

The other side of the equation is work being done by various companies, one of them is Modern Meadows, which came out of Singularity University, which it turns out that a cow is the most efficient way to generate meat. Think about it, again the sun grows the food stock. The grass – the cow eats it, over this long period of time. You basically slaughter the cow, which is a – if you have ever seen a slaughter house, not a pretty sight and most of the cow is thrown away and you basically use the meat of the cow.

Imagine instead if you could take some cells from the cow and grow those cells at scale in culture and actually have those cells generate the perfect proteins with the right vitamins and grow them at scale. We could produce various meat products that are 1,000 more efficiently grown from an energy standpoint and have exactly the proteins and exactly the vitamins and have the flavors and tastes that are perfect. And if you – people say, my God that's disgusting. Listen, go visit a slaughter house and you tell me what is disgusting.

But, I think it is about reinventing how we generate food. The distribution system? Sure. Drones? Absolutely. But, I think it is more about regenerating at 100 times more efficiently where we have an overabundance of food and food becomes much more nutritious.

So, the next question comes from Jeremiah in Chicago and Jeremiah asks have you considered crowd funding the X Prize? I would love to regularly contribute on a micro level. \$100.00 or \$1,000.00 a year.

So, Jeremiah, absolutely we have. In fact, we ran a crowd funding campaign for part of our global learning X Prize and it is something that I am passionate about and want to experiment with. And one of the areas I would commend you to look at is a spin out from X Prize called Hero X. H – E – R – O X. Herox.com. And Hero X is a platform that X Prize has spun out where what we have learned and having designed X Prize, run X Prizes, judge X Prizes is actually created on a platform where you can go and see right now dozens – soon hundreds of prizes out there that you can fund. You can fund part of the purse. You can register as a team and compete. You can be part of that ecosystem.

So, if part of my goal is the whole notion to change the conversation that we go from complaining about problems, to fixing problems and Jeremiah, I am grateful for your support.

I think you'll start to see much more crown involvement in the X Prize Foundation in helping us design our prizes, choose which prizes we launch, and launch and fund our prizes than ever before. In the interim, please go check out Hero X, get involved. It is an amazing platform. It is a chance, in my mind, to take this concept of incentive prizes globally to scale and change our culture of complaining to a culture of solving.

Our next question comes from Spiro in Montreal and Spiro asks the question, will technology increase unemployment and will robots replace many of the blue collar workers, as well as white color worker jobs as the media is lately reporting? Or is that a myth? So, Spiro, the answer is yes, but. So, yes, a lot of today's blue color and even white color jobs will be replaced by AI and robots.

The statistic from the Martin School at Oxford says that 48 percent of today's jobs in the United States will be replaced in the next 20 years, but here is the catch. Those jobs will be replaced by AI and robots, but new jobs will be created for those people who lost their jobs and to give you some examples here – 150 years ago, in the mid 1800's, two thirds of Americans were farmers. We were all farmers. Two thirds of your friends would have made their living working on a farm some place.

Today it is under 2 percent and those farmers displaced by automation, tractors and the like, got new jobs. They job jobs as Wall Street investment bankers or accountants or website designers or people who on second life designed virtual clothing.

The challenge is that we do not realize – we recognize the jobs today that will be lost, but we cannot conceive of the jobs that are going to be created that do not yet exist.

I will add a couple of points here, the stat from a recent poll that was taken says that 70 percent of Americans hate their jobs and I know the stats for the US – I realize you are from Montreal, but 70 percent of Americans hate their jobs. They do not like stacking boxes, or cleaning toilets, or taking money at a toll booth. That's something they do to put money and food on their table and get insurance. But, imagine instead if a robot or an AI could take that job, but you could collaborate with a robot or collaborate with an AI to take on something that really inspires you instead of stacking boxes at the local store.

You could become someone who worked as a healthcare worker in

the hospital and you did that by virtue of collaboration with artificial intelligence. So, I think we're going to be creating lot of jobs. I think we are going to be changing the meaning of work from something that you do because you have to, to you do something you love empowered by technology that helps you do that.

So, for example, if you are a trucker, let the robot drive the truck and instead maybe you should be doing sales and marketing and maybe you should be painting, or maybe you should be reading books out loud to your elderly parent. I do not know, but do the things that you love to do and let automation do the stuff that is the scut work that you hate.

The next question comes from Biggie in Medlin. So, Biggie asks the question, will Google, Facebook, or Elon Musk win the race to providing global internet? Will the FCC allow it?

So, I think that there is a race and we are going to see four players. There are four potential players right now. There is Facebook with internet.org. There is Google with a couple of different solutions, principally Google Loon. There is Greg Weiler in partnership with Paul Jacobs and Richard Branson for OneWeb, which is a satellite solution and there is Elon Musk with his multi thousand satellite solution.

I think that all four are going to make an attempt. My guess is that it will be two of those will deploy. There will probably be a satellite solution and an atmospheric solution. When I say atmospheric solution, I mean drones or balloons.

And the FCC of course will allow it because the FCC only governs US and I think it is going to be a lot of these different solutions are working with local telecom authorities – PTTs where they are local service providers. There is opportunity for global spectrum. I know that Greg Weiler at OneWeb has harmonized global spectrum to provide a solution. Others might go with unlicensed spectrum or laser. But, I think it is a giant market. It is one of the most important things.

We effectively are building the last mile of this global nervous system of planet earth and one of the biggest impacts for global economy is going to be five billion new minds coming online over the next five years. So, I am excited to see this deploy. I think it is a huge business opportunity and one that is just really exciting.

The next question comes from Salty T in New Jersey. Salty asks the question, how will Human Longevity differentiate itself from other biotechs?

So, HLI, Human Longevity Inc., is actually providing services to the biotech pharma. We have built the largest genome sequencing facility in the world. We have more of the Illumina X Ten machines and the pack bio machines than anyone. But besides just the brute force large scale sequencing of human genomes, our goal is 100,000 a year by the end of this year, a million a year by the 2020. So, we have millions of genomes in our database. Much more important than that is going to be the data mining of that.

So, we are going to distinguish ourselves by being a data driven company that is mining the most valuable data set in the known universe and understanding what these integrated health records – we are integrating the 3.2 billion letters from your mother, from your father, the sequencing of your microbiome, your health records, your MRI, your digital imaging of your body.

All of this stuff is going in and being machine data mined to extract knowledge and information and to understand what makes you tick. What is the sort of deck of cards that you as an individual were dealt and how does it compare to the public at large? And wow, look you have this gene sequence that this same person has and this protects you from heart disease, protects you from cancer, this is going to allow you to live to well over 100. So, it is going to change healthcare.

So, how HLI is different is we are the largest scale genome sequencing facility in the world, massive data mining capability. Franz Och, who runs our machine learning team out of Mountain View, California was the guy who built Google Translate for over ten years. Then thirdly, is that the work we are doing right now with STEM cells under the leadership of Bob Hariri. We are really becoming a pioneer in how do we use STEM cells to rejuvenate your regenerative engine of your body?

The next question comes from Jepe Rasmussen and Jepe asks, if you were 20 and had no experience what so ever, what would you do to get into Singularity University and after that create a change in the world?

So, it is a great question. I think the first thing I would do, Jepe, is I would do something, and then I would something bigger, and then

something bigger. I would not expect to get into SU at age 20 not having done anything yet. First of all, I am going to say that part of the SU's plans is to going to take its content and curriculum and make it available online for everybody, so you will get the benefit of that. But, I definitely hope you that you continue to aspire to be part of Singularity University because I think being there is an extraordinary experience.

But, it is taking one step at a time. So, the best predictor and – I serve as part of the admissions team. The best predictor for a person's future success is what they've done historically and everybody typically starts with zero. And so for me, my first effort was really getting a petition going to support space when I was a freshman in college and then I started a space organizations called SEDS. Then I started my next organization and so it is getting people who know you and love you and believe in you, maybe it is your mom, your dad, your cousins, teachers, whoever it might be, to back some small venture where you call your shot and you say I am going to achieve this goal, would you support me? And it should be a small first goal and then achieve that goal.

Then, once you achieve that goal, set your next goal and then achieve that goal. When the people want you to achieve that, they will be willing to back you for your next one. And so, you cannot expect to go from zero to a billion in one step. But, you can go from one to two, two to four, four to eight and 30 steps later be at a billion. So, I think the most important thing is to begin and call your first shot, have your friends watch you pull it off, something that you can achieve, and then build on top of that a step at a time. And a few doublings later, you'll be amazed where you end up.