she wrote a very beautiful song

The song entered the top five in 2005, the song "Beijing's Nine Million Bicycles."

It's a love song about how she loves her lover and compares it to 90,000 bicycles, because she's the Norah Jones of England.

Here's a verse from the song

♫We're 120,000 light years away from danger ♫ ♫Just imagine ♫ ♫Nobody's gonna say it's true ♫ ♫But I'll always be there for you ♫

Wouldn't it be nice, at least she got this close

In America, it would be "We are 6,000 light years away from danger."

(Laughter) My friend Simon Singh, a particle physicist turned science educator who wrote "The Big Bang" and all that, he used every chance he got to promote good science.

And he wrote a commentary on Katie's song for The Guardian, in which he said that we know exactly how long and how far we are from the end of the universe.

It's 13.7 thousand light years instead of 12..that's not expected

we know within the precision error bars

So I can say that this is very close to the truth, even if it's not completely true.

To his honor, Katie called him up after this commentary was published, and she said, "I'm so embarrassed. I was a member of the Astronaut Club and I should have known better."

and she re-edited this song

So let me finish by telling you about the new version.

♫We're at the edge of the observable universe♫ ♫We're 1.37 billion light years away♫

♫ Measured with precise error bars and available information ♫

♫ It's a number you can count on ♫ ♫ I predict I'll be with you forever ♫

(Applause) That would be nice. (Applause)

My name is Joseph and I am a Member of Parliament in Kenya.

It's about a Maasai village, and one evening, government soldiers came and surrounded the village and asked each elder to send one boy to school.

Government officials pointed their guns at my father and said, "Make a decision." And so I went to school.

I was so happy that I walked over to the mission school, which was run by American missionaries.

The first thing the missionaries gave me was candy

I had never eaten candy before

There were a few hundred other boys, but I figured this was where I was.

(smile)

All other students have dropped out

My family has moved, we are nomads.

The school was a boarding school, and at the age of 7, I found my family's home and returned every vacation.

50 miles, 40 miles, no matter how far

Sleeping in the grass and walking again

I stayed in school, I don't know why, but I did.

All of a sudden, I passed the national exam and was sent to a very beautiful high school in Kenya.

After graduating from high school, I met someone

I got a full scholarship to go to America.

My mother still lives in the cow dung barn. None of my brothers went to school. This man said, "Let's go."

And then I got a scholarship to St. Lawrence College in upstate New York, and after I graduated, I went to Harvard Graduate School.

After graduating, I worked for a while in Washington, D.C.

I wrote a book for National Geographic and taught American history.

And every time I go back home, I hear about the problems that the local people are having: sick people, people with no drinking water.

Long ago there was a great battle between the tribes

One tribe was really afraid of the Ruiya tribe.

I was always sending out reconnaissance to avoid being attacked by anyone.

One day, when the scout ran back, he said to the villagers, "The enemy is coming. Only half an hour later. Here they are."

So people hurriedly packed their things and started to move.

But there were two men, one was blind, the other had no legs, he was born

The leader of the tribe said, "I'm sorry, but I can't take you with me. It's slowing me down.

We must leave our women and children and hurry."

These two were left alone to die.

But these two came up with something

The blind man said, "I'm a very strong man, but I'm blind."

The man with no legs said, "I can see the ends of the world, but I can't protect myself from cats and other animals."

So the blind man got down on his knees like this, put the legless man on his back, and stood up.

The man above was able to see and the blind man could walk.

The men set off, followed in the footsteps of the villagers, and when they finally found them, they caught up.

This is the story an elder told me

It's a really poor area, and I represent Northern Kenya.

It's a nomadic area, isolated from the rest of the world.

The elder said, "Well, what about you?

You got a good education in America You have a good life in America So what are you going to do for us?

I want you to be our eyes, we'll give you our feet

We walk for you, you guide us."

What can we do for local people in Kenya? I had been thinking about this for a long time, and an opportunity came to me.

No matter when you visit this region, which has been independent for 43 years, you still don't have even basic medical facilities.

man riding a unicycle

I go to a hospital 20, 30 kilometers away I don't have clean drinking water I said, "I want to help you.

I want to leave America and run for election.”

Last July, I left the United States in June and was elected in July.

It's for them that I'm back. This is my goal.

Now, I've been doing this work for the last nine months, and I've created a five-year plan to ensure that every nomad has access to clean drinking water.

Constituency is building clinics

I also asked my friends in America for help and asked them to send nurses and doctors.

We are also trying to improve our infrastructure

I'm trying to use the knowledge I've gained in America and the knowledge I've gained from my local community to develop my hometown, and I'm trying to solve our own problems.

Outsiders can come and help, but we know that if we don't do it ourselves, there's nothing we can do.

We're currently planning to send students to different fields, some to become doctors, some to become lawyers, and we want to go back to the country and create a wider group of people and students who can help grow the region.

So I will continue to serve in Congress, and I will continue to listen to you, talk about pasture, health, democracy, and new inventions. My hope is that my little community, 26,000 square kilometers, five times the size of Rhode Island, and currently without roads, will one day become a model and help other communities develop.

thank you

I've spent the last two years trying to figure out how people make their dreams come true.

When I think about the dreams we have and the achievements we want to leave behind in the world, it's surprising how much of our dreams overlaps with projects that never see the light of day.

(Laughter) Today, I'm going to talk to you about five ways to stop chasing your dreams.

The first is to believe in overnight success.

have you ever been asked

A mobile app developed by an engineer became a big hit and made a lot of money overnight.

It sounds real, but there's actually a flip side to that story.

And if you look closely, you'll find that the engineer -- he'd developed 30 apps before, had a master's degree in the right field, and had a Ph.D.

I've been doing research along those lines for 20 years.

very funny

I myself have a story that in Brazil is considered an overnight success.

I was born and raised in an ordinary family, but two weeks before the application deadline, I started applying to the Massachusetts Institute of Technology (MIT).

and I passed successfully

It might sound like an overnight success, but the reason it was successful is because I've been really serious about everything for the past 17 years.

An overnight success is the culmination of everything you've accomplished in your life up to that moment.

The second is to believe that someone has the answer.

Because everyone wants to help

Your family, your friends, your business partners, all of these people will give you their opinions on which path you should take.

But once you step inside, there are many other options.

you have to decide for yourself

No one has the perfect answers for your life.

you'll have to make your own decisions

The roads are endless, and eventually you'll hit a wall, but it's a necessary process.

And the third thing, it's kind of obscure, but it's very important, is to settle in when growth is certain.

When life is going great, you've got a great team, your sales are skyrocketing, and everything's in order, take a break.

When I published my first book, I tried really hard to sell it all over Brazil.

As a result, more than 3 million people downloaded e-books and more than 50,000 people bought paper books.

When I wrote the sequel, I expected a certain amount of response.

Even without much effort, the sales would have been decent.

But "so-so" is not enough

If there is still room for growth, we should work harder than ever and aim for even higher heights.

My book could have been read by hundreds of thousands of people with very little effort, and that alone would be great.

But if we work harder than ever, we can make that number into the millions.

So when I came out with my new book, I decided to travel to all the states of Brazil.

because I can see higher

there's no time to stop

Fourth, and really important, is to blame others for your failures.

People often say, "I had a great idea, but the investor was blind."

"I was the one who made this wonderful product. It's just that the economy wasn't good and it wasn't selling very well."

"We don't have good people. Our team is disappointing."

If you have a dream, it is your responsibility to make it come true.

It's true that finding good people can be difficult.

There may be times when the economy is bad

But if no one invests in your idea, if no one buys your product, you are partly to blame.

(laughs) Absolutely.

You have to take your dreams into your own hands and make them come true

You can't reach your goals alone

But it's my fault that my dreams don't come true, no one else's.

take responsibility for your dreams

And the last piece of advice, which is also very important, is to believe that what matters is the dream itself.

I've seen advertisements like this: A lot of my friends are climbing mountains. It's a very high mountain.

Everyone is drenched in sweat and it's really hard

Keep climbing until you finally reach the top

Of course everyone will celebrate, right?

Throw in congratulations, "You did it, you're finally at the top!"

Two seconds later, everyone looks at each other and says, "Let's go down."

(Laughter) Life isn't all about results.

life is a journey

Of course, we should enjoy the results too. When you have so many dreams, it seems like if you reach one of them, it will be a magical place full of happiness.

Dreams come true in an instant, but your life is different.

The only way to really make all your dreams come true is to enjoy the journey to get there, step by step.

that's the best

Your journey is simple, step by step

Even if there are times when things are going smoothly

There will be times when you stumble

If it's going well, let's celebrate.

When you stumble, treat it as an opportunity to learn.

If every step becomes an opportunity to learn and celebrate, then the journey will surely be enjoyable.

I gave you five tips: believe in overnight success, believe that someone else has the answer, settle in when growth is certain, blame others for your failures, and believe that the result is everything.

It's okay, you can ruin your dreams

(Laughter) (Applause) Thank you.

Everyone has always been concerned about their health, but until now, they didn't always understand what was important.

For example, if you look at ancient Egypt, the parts of the body that were deemed necessary for the afterlife were treated with great care, while certain parts were left out.

in short

Stomachs, lungs and livers were carefully preserved, but brains were crushed, extracted from the nose and discarded.

But what other vital organ in our bodies weighs as much as our brains, and it's almost as little as we know and care about.

But if new scientific advances are just beginning to reveal important things that help us understand

Would you like to know more about it

In fact, there's another thing that's similar to that brain: our gut, or I'd better call it the microbes in our gut.

But it's not just the gut microbes that matter.

It has become clear that microbes inside and outside the body have a wide range of effects and greatly affect health.

As an example, have you ever noticed that some people are more susceptible to mosquito bites?

Everyone has a similar experience at camp.

I don't get many mosquito bites myself, but my wife, Amanda, gets swarms of mosquitoes because each person's skin has different microbes that secrete unique chemicals.

Microorganisms are also very important in medicine.

For example, intestinal microbes can produce painkillers that are toxic to the liver,

determine which drugs are effective for heart disease

And if you're a fruit fly, your partner is determined by your microbe.

This hasn't been tested in humans, but it's only a matter of time before we know (Laughter).

to digest food

work on the immune system

It fights disease and even influences how we behave.

So what does a map of the microbiome look like?

It's not quite the same thing, but it's a helpful tool for understanding biodiversity.

Organisms with unique modalities are found all over the world, and they directly characterize the place.

You can say the same thing about microbiology, but let's be honest, microbes are all essentially similar under the microscope.

Rather than discriminate by appearance, we're studying the DNA sequences of human microbes in a project called the Human Microbiome Project, funded by the NIH for $173 million.

Collecting and looking at it looks like this

I can't tell which is which

We've developed a computational technique that makes it possible to better use all terabytes of sequence data as a map, and we use human microbiome data from 250 healthy volunteers to create this.

Each dot in the figure represents a complex collection of microorganisms, the microbiome.

Like I said, they're all similar

One dot represents the microbiome from one location in a healthy human body.

It's kind of like making a map with the different colors making up the individual continents at each point.

What this tells us is that different parts of the body have very different microbiomes.

green is for the oral cavity

On the other side, the blue represents the skin, the purple in the vagina, and the brown mass underneath represents the fecal flora.

And over the last few years, we've learned that there's an incredible amount of diversity in the microbiome, depending on the part of the body.

Even just looking at the microbes in a single person's mouth or gut, the difference between the two sets of microbiota is staggering.

It's more than this difference between the coral reef and grassland microbiota.

It's amazing when you think about it

Just 60 centimeters away can change the microbial ecosystem of the human body so much that the difference is so vast that it would be impossible even if you traveled thousands of kilometers on Earth.

And just because we're the same person doesn't mean that our microbial ecosystems are all the same.

As you probably know, genetically speaking, we're all alike.

According to human DNA, we are 99.9% identical to the person next to us.

Microbiologically, it's not, you and the person sitting next to you either share 10% of the same microbes or you don't.

That's the difference between these grassland and forest bacteria and humans.

These differences are responsible for the various functions I just talked about, from digesting food to metabolizing all manner of diseases and drugs.

How could microbes do this?

Part of the reason is that the 1.4 kilograms of microbes in our stomachs outnumber people.

When you say how much you surpass people

Earth's population is not enough to compare

how does it compare to cells

The human body is made up of about 10 trillion human cells, but the number of microbial cells that it harbors is 100 trillion.

10 times the number of human cells

You might think, "But it's all about our DNA," but we know that there are about 20,000 genes in a person -- depending on what you count exactly -- but between 2 and 20 million microbial genes.

No matter which way you look, you can't beat the number of symbiotic microorganisms.

And we know that we leave behind not only human DNA, but also microbial DNA, on everything we touch.

A few years ago, our study matched a computer mouse to microbes on the palms of people who use it with up to 95 percent accuracy.

This was published in a scientific journal a few years ago, but it was adopted in the much more important CSI: Miami, so you can believe it.

(Laughter) Where do our microbes come from in the first place?

If you have a dog and a child -- and I have both -- you're probably thinking, "Maybe."

Not only do computers match the microbes of the people who use them, but they also match the microbes of dogs and their owners.

But we know that the microbes of adults are relatively static, so even if you live with someone, adults will retain their unique microbes for weeks, sometimes years.

We also know that the early human microbiota varies greatly at birth.

Babies born vaginally have essentially their mother's vaginal flora, while babies born by caesarean section all have skin flora.

People born by caesarean section are more susceptible to sighs, allergies, and even obesity than those who had vaginal births, and there's been a connection between childbirth and health. If you think about it, until very recently, all mammals gave birth spontaneously.

A few years ago, when my daughter was born, it was an emergency caesarean section, and my wife and I did it ourselves, just like a vaginal birth, to cover her with her mother's vaginal flora.

Now, I have no idea what effect this had on my daughter's health.

No matter how much love we have, a sample size from just one child is not enough to get general data. In the last two years, my daughter has not had an ear infection, and I hope we never have another.

And we've started clinical studies with children to see if the microbes have a uniform protective effect.

The method of birth has a lot to do with determining the initial microbial ecosystem. So what happens next?

Look again at the data map from the Human Microbiology Project, where the dots represent the microbiome from one body part, from 250 people in all.

a child's physical growth,

Even if you can see spiritual growth

This might be the first time you've seen this: the microbiological growth of a colleague's child.

What you're about to see is from one baby's stool, which is representative of the gut flora, sampled weekly for nearly two and a half years.

started from day 1

A baby starts with a yellow grain, a vaginal microbiome, which is what you would expect from a natural birth.

Over the course of two-and-a-half years, the child's microbiome resembles that of a healthy adult's fecal microbiota.

let's get started and see what happens

What we're looking at is one step per week. From week to week, we're seeing changes in the fecal microbiota of children, and the changes from week to week are much greater than those of healthy adults in the Human Microbiology Project cohort.

As you can see, it's getting closer to that of adult stool.

This lasted for about 2 years

something very surprising happens here

This child will develop antibodies against ear infections.

This is where big changes in the microbiome come into play, and recovery from ear infections is relatively quick.

let's rewind

In just the last few weeks, we've seen dramatic changes. After months of not making much progress, and after about 838 days -- toward the end of this video -- you'll see a relatively rapid recovery.

It's really interesting, because it raises a fundamental question: what happens when we get older?

Do our behaviors have an effect during the first few years of life when the microbiome is highly variable, or is the effect so subtle that it has no effect?

Interestingly, there is data that shows that babies who are given antibiotics during the first six months of life are more likely to become obese later in life than those who are not given antibiotics, and we now know that the early gut microbiome can have a significant impact on a person's health later in life if not taken care of during the first six months.

This makes it interesting to think about the problem of drug-resistant bacteria that can become resistant to antibiotics, of course -- and this is important -- that changes in the gut microbiome could weaken that protective power, and that we might be dealing with antibiotics out of fear, much like the metal tools that the Egyptians used to crush and extract the brains during mummification.

This is the critical function of the microbes I mentioned earlier, and in the last few years, we've also learned that microbes are linked to all sorts of diseases, whether it's inflammatory bowel disease, heart disease, colon cancer or obesity.

We've had a huge impact on obesity, and now we can look at our gut microbes and tell with 90 percent accuracy if we're obese.

You might be impressed by this, but in some ways it's a bit of a problem as a medical test. You probably don't know anything about microbes, but you can tell which of these two people is obese just by looking at them.

I'm surprised

So maybe our 1.5 kilos of microbes are more important to our health than the genes in our genome.

So you can do a lot of research with the mouse.

Many diseases such as multiple sclerosis, depression, autism, and obesity have been found to be related to microorganisms.

But how do we know which microbes are responsible for disease and which are protective?

We can do this by raising mice in a germ-free, germ-free environment.

Add a microbe that you think is a useful microbe to that environment and see what happens.

If you take a microbe from an obese mouse and transplant it into a genetically normal mouse raised in a sterile environment, it's going to be fatter than a natural mouse transplanted with the same microbe.

It's truly amazing

Microorganisms help digest food and get energy from it more efficiently, but they actually influence the behavior of the host.

Because of the microbes, the host eats more than a normal mouse, and feeding such a mouse as much as it wants will only make it fatter.

that's unbelievable

Now we know that microbes influence the behavior of mammals.

So I think that begs the question, does this also happen across species? If you transplanted microbes from obese people into mice that were raised in a sterile environment, they gained more weight than if you transplanted microbes from lean people.

We did a similar study on malnutrition.

In a Gates Foundation-funded project, we're looking at Malawian children with kwashiorkor, a serious malnutrition-related disease. Mice transplanted with kwashiorkor microbiota lose 30 percent of their body weight in just three weeks.

This is really cool, because it suggests that the human gut microbiome could be tested in mice, and then manipulated at will to create personalized therapies.

So I think it's really important that people participate in this discovery.

A few years ago, I started doing this, a project called "American Digestive System," where I was able to see where I was on the microbial map.

It's the largest crowdfunded science project, with over 8,000 people signed up to date.

The way it works is that a sample is sent in, the DNA of the person's microbe is sequenced, and it's sent to the person.

It will be published anonymously to scientists, educators and interested members of the public, making the data accessible to everyone.

And at the same time, I'm also explaining to people who tour the Biofrontiers Institute labs that they use robots and lasers to look at fecal matter, something that not everyone seems to want to know.

(Laughter) But I figured you wouldn't, so I brought you some kits, so if you're interested, go ahead and give them a try.

Why do you do this

Because it turns out that microbes aren't just important in looking at health, they actually cure disease.

This is one of the possibilities that we've been thinking about very recently at the University of Minnesota.

Once again, the distribution map of human microorganisms

And if you look at it... add the microbiome of a person with Clostridium difficile.

These are the organisms from people who had diarrhea up to 20 times a day at its worst, and who had been antibiotic-resistant for two years before they were able to join our clinical trial.

So what would happen if we transplanted the fecal microbes from healthy people scattered at the bottom of the diagram into these patients? What would happen if we transplanted them into these patients?

Will the good bacteria fight the bad bacteria and restore my health?

let's see how it goes

Four of our patients are now on the verge of receiving a transplant from a healthy individual, and the moment they do so, they experience dramatic changes in their gut microbiota.

The day after this transplant, the patient was fully recovered, the diarrhea was gone, and the four were fundamentally healthy, with a microbiome similar to that of a healthy donor, now located below.

(Applause) This journey is just beginning.

We're studying the microbial relationship to everything from inflammatory bowel disease to obesity, and even to autism and depression.

But we need to develop something like a microbial GPS to know not only where the microbiome is now, but also what to do to get us where we want to go, and we need to make it as simple as a child can use it. (Laughter) Thank you very much.

(applause)

I've been involved in consumer technology development for many years as a software developer and engineer.

Civil technology development sometimes serves to solve humanitarian problems.

In 2010, in Uganda, technology was developed to stop the government from spying on people's cellphones for fear of public discontent.

Later, in North Africa, the same technology was used to keep activists connected even when governments intentionally shut down communications lines as a means of control.

But as I've been thinking about and working with these technologies over the years, a question has arisen: If we use them in the wrong way, are we actually hurting the people we're trying to help?

It's a common belief in the global tech industry that if we develop great technology, it will be useful to people all over the world.

These innovations will go out into the world and help people.

but that's not always the case

Let's call it the trickle-down theory of technology development. Thank you, President Reagan.

Technology and innovation spread like wealth and capital.

They are confirmed by a small percentage of people and rarely reach the rest.

You don't spend your weekends debating these things, so I'd like to give you some examples.

Wearables and smartphones have become a hot topic for apps that allow individuals to manage their health, such as the amount of calories they have consumed during exercise and whether they are exercising enough.

These technologies are expected to provide better services to patients in health care facilities, and, similarly, to more efficient care in health care facilities.

If these digital devices penetrated into the medical world and started to be used, what kind of inconveniences would occur?

What will health care look like for people who don't have the $400 cell phones and watches that help them manage their health?

Will they be left behind by the healthcare system?

Will I be able to receive the services I need?

In the economic world, cryptocurrencies are revolutionizing the circulation of money.

You need a mobile phone or mobile device that supports it, and you need a certain amount of capital to use the apps that support it.

As the world transitions to electronic currency, what will happen to regions that continue to use banknotes?

Let me tell you about what happened in my hometown of Philadelphia, where I recently went to a public library, and the library is facing an existential crisis.

Public funding is dwindling, so we're forced to shorten our opening hours, and one solution is that many books are being digitized.

This is a great system for many children, isn't it?

You can borrow books at home, and you can do research on your way to and from school.

What will education look like for these children when books are digitized, even in libraries, which have traditionally been an integral part of learning?

How can I compete with other students?

And finally, on the other side of the world, in East Africa, land ownership is being digitized for a variety of reasons, from areas of immigration to the death of seniors.

Also, inadequate registration practices have made it difficult to know who owns what land.

So there was a reform to put landowner information online and let people and communities know who owns what land.

But the result was unintended: millionaires, investors, real estate agents rushed in to buy up land in areas like this, because they could use the technology to make that possible.

So the technology we're developing has these unintended consequences.

Sometimes we tech developers value efficiency over effectiveness.

we don't look at the consequences

This is a fact that should be improved

Because technology controls the world, we should look at the consequences of technology.

In the late '90s, there was a major rethinking of the morality of investing and banking.

And now, in 2014, I think science and technology are in need of a similar rethink.

As entrepreneurs, presidents, engineers, and developers, I want you to think about the consequences of the technology you're developing, because true innovation is finding ways to reach everyone.

thank you

(applause)

(Rainforest sounds) In the summer of 2011, I visited the Borneo rainforest for the first time as a tourist.

The sound keeps ringing like this

There is a noticeable sound inside

For example, this is a large bird called a hornbill.

this is the sound of a cicada

This is a group of gibbons

It's the voices of gibbons singing to each other from a distance.

I recorded this in a gibbon sanctuary, so you can hear a lot of gibbons, but I didn't realize that the most important sound was actually coming out of the forest at this point.

As you know, this is a sanctuary for gibbons.

Staff spend most of their day protecting gibbons, but they also spend much of their time protecting forests from illegal logging in the surrounding area.

Let's try to take out the sounds of the gibbons, the insects, etc., from the sounds of the forest.

The reserve is staffed by three full-time forest rangers, whose job it is to crack down on illegal logging. One day, as a tourist, I went back into the woods, and within five minutes of walking, I came upon a logging site, five minutes' walk, a few hundred yards from the guard station.

But the sound of the chainsaw didn't reach you, because, as I said earlier, it was drowned out by the sound of a large forest.

It was shocking and hard to accept, and I thought that in this day and age, no one could hear the ferocious sound of a chainsaw just a few hundred yards from the reserve station.

I don't think that's possible, but it's true

How can we stop illegal logging?

As an engineer, I've always wanted to come up with super cool, high-tech solutions, but I'm in the middle of a rainforest.

We need a simple, universally applicable solution, and we've found that the forest has everything we need.

We could use what we already had to stop illegal logging.

What about existing ones?

Human resources

We had three full-time forest guards on staff who were ready to be on the scene at any time, but first we had to be aware of the deforestation.

And it turns out, surprisingly, it's important: I was able to connect to the Internet, even though I was in the woods.

In the middle of the forest, in the middle of nowhere, I got cell phone reception.

It was hundreds of kilometers from the nearest road, but the phone worked. There was no electricity, but the cell phone signal was good. People in town are always looking at social media and surfing the internet on their phones.

But to do that, we have to attach the device to the tree.

If we could have some device that could pick up the sounds of the forest, connect it to the existing cellular network, and send a warning to people on the ground, we might be able to stop illegal deforestation.

But before I do that, I want to talk about protecting rainforests, because we've been talking about protecting rainforests for a long time.

Since my childhood, my generation has heard similar messages about protecting rainforests.

"Well, let's face it, there's still half of the rainforest left."

But what I didn't realize at the time was that deforestation had a bigger impact on global warming than all the planes, trains, cars, trucks, and ships in the world.

deforestation is the second driver of climate change

And according to INTERPOL, 90 percent of the deforestation in the rainforest is the same illegal logging that we've seen.

So if we can enforce the forest law, we can eliminate 17 percent of the causes of global warming, and that's going to be a big achievement in a short period of time.

This could be the quickest and cheapest solution to the problem of climate change.

Let us introduce our envisioned system

looks super high tech

The moment you hear a chainsaw in the woods, the device picks up the sound and sends an alarm over the existing standard GSM network to alert the forest rangers, who will rush to the scene and stop the logging.

It's no longer the case that you're in the field, but it's after logging.

You can't just put your finger on a logging site from a distant satellite, but you can intervene in real time.

I said it's the cheapest and quickest, but I don't know if it works or if it can be done cheaply and quickly.

But if the device that was attached to the tree was a mobile phone, it would have been possible to bring the cost down.

Hundreds of millions of cell phones get disposed of every year, in the United States alone. And even more if you count the numbers outside of the United States.

First, it's full of sensors.

I can pick up the sound of the chainsaw well

I have to increase my endurance

You need to put it in a box like this and secure a power source.

Securing power requires a high level of technology, and it's a challenge for engineers. How to secure power for mobile phones in a dense forest? How to generate solar power in the shade of trees? That's why we developed this unique photovoltaic panel.

Cut a long string to make

It's an assembly site, my parents' garage.

I am grateful to my parents for providing the space.

Look here, I just mounted the device on a tree.

From here, it's well hidden in the shade of the forest.

This is very important, because even if you can hear a chainsaw, even if you can hear a mile away, even if you can cover an area of ​​about three square kilometers, if someone removes it, you won't be able to protect this area.

Will it work?

To make sure it works, we went to Indonesia again, not in the same place, but in a different gibbon sanctuary, an area plagued by illegal logging.

On the second day after starting, I heard the sound of an illegal logging chainsaw.

Receive alerts in real time

i received a text message

We finish climbing the tree and come down to the ground

We were all smoking a cigarette, and then I got the email, and everyone else was listening, and then I heard a chainsaw, very faint, and no one had noticed it until this moment.

and went to the scene to stop the loggers

i was pretty nervous

This is close to the loggers

At this point, I'm regretting my efforts.

I'm worried about what's going on over the mountain

But my partner is braver than me

If he goes, I have to go, so he was able to reach the other side of the mountain and stop the loggers.

It's a surprise to the loggers, because they've never had an interruption like this before, and it was a shock.

thanks to the loggers

I saw this whole system in action, and my encounters with loggers in the field convinced me that if I could get in and stop them in real time, they'd be scared and never come back.

So thank you very much.

I've been getting emails and phone calls from people all over the world.

People from all over Asia, all over Africa, all over South America told me that they could use this system, and the important thing, which I thought might be special, is that they have good communication in the forest.

And, of course, forests were most threatened by illegal logging in their peripheries.

Even more amazing, people donated their old cell phones.

So what we have now is a system that uses people on the ground, people who already have it, and they're using and improving existing internet services, and they're using second-hand cell phones that have been sent to them by people all over the world.

If we can use all recycled materials for the rest of our devices, we're really "upcycling" above recycling.

So this system is not a high-tech system at all.

It's just using existing technology, and I'm pretty sure that, not just in mobile phones, but all the time, we already have the materials, and we all have the same ability to invent new and effective ways to use them.

thank you

(applause)

25 years ago, scientists at the European Organization for Nuclear Research created the World Wide Web.

Since then, the Internet has transformed itself into a way we communicate, work and live.

The ideas that gave birth to Google, Facebook, Twitter, etc., have changed our lives in many ways, and have brought many benefits, such as increased social connectivity.

But there are also downsides

Today, the average person posts a ton of personal information online, and they add to it with every Facebook post, every Google search, every email they send.

Now, many of you might be thinking, "One email isn't that big of a deal."

But what if it's an email of the year, or an email of a lifetime, and the whole thing tells us a lot.

I know where you've been, who you've met, and even what you're thinking.

And the scariest part of all is that your data will live forever, even after you die.

Mainly losing control over data and privacy

This year marks the 25th anniversary of the web, and it's very important for us to think about what the web is.

I really have to think

We lost our privacy, but what we really lost was the very concept of privacy.

If you think about it, I think most of the people in this room remember what life was like before the internet, but today, there's a new generation that has been taught since childhood to share everything online.

If things continue on this path, in 20 years time the word "privacy" will have a completely different meaning than we think it does.

So it's time to think about what we can do about this.

and think there's something to do

Let's take a look at e-mail, the most popular form of communication in the world today.

Before the advent of email, we communicated primarily by letter, and the process was fairly simple.

I wrote my message on a piece of paper, put it in an envelope, sealed it, stamped it, addressed it, and then mailed it.

Unfortunately, sending an email today is like sending a postcard instead of a letter.

Sending an email is like sending a postcard instead of a letter. It's like a postcard in the sense that between the time it's sent from your computer and the time it's received, anyone who sees it can read it.

It's been known for some time how to deal with this, and various efforts have been made.

The most basic countermeasure is encryption, a very simple idea.

First, we encrypt the communication between your computer and your email server.

Then the server itself also encrypts the data

But there's a problem with this, because you put your encryption keys on the mail server as well, so even if you put a good lock on it, you'll have a key next to it.

Not only that, but governments also legally obtain your data keys, and this is happening without your knowledge.

In principle, the solution to this problem is relatively simple: let everyone have a key, and the server doesn't.

Don't you think it's common sense?

Wondering why it hasn't happened?

If you think about it deeply, today's Internet business model is completely incompatible with privacy.

If you look at popular sites on the web, you can see that advertising plays a big role.

In fact, this year alone, advertising has earned $137 billion, and to get the most out of advertising, companies must know who they are.

We need to know where you live, how old you are, what you like and don't like.

When you think about it, the best way to get this information is a violation of privacy.

Companies don't respect your privacy

If you want privacy online, don't go online.

For many years, PGP was the only solution for email, but it was so difficult that only tech-savvy people could use it.

Here's a diagram of the basic process of encrypting and decrypting a message.

It goes without saying that this is not a common practice. In fact, it is also a problem, because when you think about communication, you are talking to someone in the first place.

PGP is great for those who can use it, but for those who can't, they don't know how to operate it, and private communication doesn't exist.

I need to solve this problem

If you want privacy online, the only way it works is for the whole world to participate, which has to lower the barriers to participation.

I think this is the main challenge for the tech community

What we need to do is make privacy more accessible.

Last summer, the Edward Snowden case happened, and a colleague and I had a discussion about what we would do.

At the time, we were colliding protons in one of the world's largest particle accelerators at the European Organization for Nuclear Research (Seln).

They're all scientists, and they've used their scientific creativity to give the project a fancy name, ProtonMail (Laughter).

our case is slightly different

It was the CERN cafeteria, and it's actually a great place with all kinds of food and water.

What's even more amazing is that every day from 12:00 to 2:00 noon, you get to meet thousands of scientists and engineers for free, and they can answer basically anything.

I started working in this environment.

What we actually want to do is take your email and turn it into something like this, and more importantly, we don't want you to know it's happening.

To do this, it takes a combination of technology and design.

How do we do this?

Not putting keys on the server is a good idea in the first place.

So you create encryption keys on your computer. Instead of creating one, you create two keys, an RSA private key and an RSA public key, which are mathematically related.

Let's see how it works when multiple people communicate

Bob and Alice would like to communicate privately

The challenge here is to get Bob's message to Alice in an unreadable way on the server.

That's why Bob encrypts it before sending it from his computer, and the trick is to encrypt it with Alice's public key.

This encrypted data is sent to Alice through a server. Now, since the message was encrypted using Alice's public key, there is only one key that can decrypt it, which is Alice's private key, and only Alice has this key.

We were able to pass the message from Bob to Alice without it being read by the server.

Here is a simplified diagram

It's actually a lot more complicated, it uses a lot of software, and it goes something like this.

And this is the main design challenge: how do you make such complex software work without the user even knowing it?

You can do something similar with ProtonMail.

Let's see how it works

Want to communicate securely Bob and Alice reappear

They created a ProtonMail account that could be created in minutes. The encryption and generation of the key happens automatically in the background when Bob creates the account.

Once you've created an account, you just click "compose," and you can compose an email just like you normally do.

He writes his text, etc., and then clicks "Send." And here's what it looks like. You don't have to learn cryptography, and it's just like the email you use today. Bob just sends encrypted messages.

What I've shown you is early days, but it shows that as technology improves, privacy isn't difficult, it's not destructive.

If you shift your goal from maximizing ad revenue to protecting data, this becomes a reality.

You might think privacy protection is the ultimate goal.

I think it's achievable, because when the world's people truly understand the importance of privacy, everything is possible.

Earlier this year, when ProtonMail's user base grew and it ran out of resources, the user community stepped up and donated $5 million.

It's a great example of what happens when communities come together around a common goal.

we can use the world

Right now, 250,000 people from all over the world have signed up for ProtonMail. Privacy isn't just an issue in the United States or Europe. It's a global issue that affects everyone.

It's something we should be paying attention to and pushing forward with.

What should I do to resolve this issue?

First, we need to support a different business model for the Internet -- a model that is completely advertising-independent for revenue and growth.

We need to build a new internet that prioritizes privacy and data management

And more importantly, to create an Internet where privacy is the default, not an option.

We've taken our first steps with ProtonMail, but it's only the first step of a very long road.

The good news that I have to share with you today is that we are not alone.

The movement to protect people's privacy, Freedom Online, is in full swing. Today, there are 12 projects in the world working together to improve privacy.

These projects protect chats, voice communications, file storage, web searches, browsing, etc.

These projects are supported not by billions of dollars in advertising revenue, but by natural people -- individuals like you and me around the world.

This is really important, because ultimately, privacy will be up to the individual, and we have to protect it now, because online data is more than just a set of 0s and 1s.

it's more than that

Our lives, our personal stories, our friends and family, in many ways, they are hopes and aspirations.

We're taking the time now to protect the right to share only those who want to share this, because without it we simply cannot have a free society.

Now is the time to collectively stand up and say, YES, we want to live in a world with online privacy. YES, we can work together to turn this vision into a reality.

thank you

(applause)

Let's start with this maxim: "90% of everything is junk."

(Laughter) It's called Sturgeon's Law, and it means that the majority of anything is always bad.

This stuffed giraffe

I'm going to throw this backwards into the hall.If you receive it, please help me a little.

you received a giraffe

Here is a trump card

tell me which card you like

ten of hearts

10 of hearts

You chose 10 of hearts from many options

90% of everything is junk As you can see, Sturgeon was— right.

(Laughter) (Applause) (Laughter) It's not your turn.

(Laughter) Make sure you keep the giraffe.

Oh my God

(Laughter) Troubled people.

But in the first place, why is the majority of things considered bad?

it's because we stop thinking too early

Let me give you a simple example of what people were doing at the end of the century, not this century.

Take a piece of paper and fold it inside out with your non-dominant hand, in my case with my left hand.

Something like this

I can understand your lack of interest

(Laughter) But that's okay. I know why.

It's too early to stop thinking

Think about it a little bit, like a paper clip.

One paper clip for a little more fun

Not only that, but stop using your fingers and make your hands fist, this alone makes it even more interesting.

And let's set a time limit of one second, something like this.

Now wait a minute-

Sturgeon may be right

But it's not always right

things always change

what was your card

10 of hearts?

This proves that things can always change, ten of hearts.

(Applause) Now, secrets are important.

secrets are worth

I'm going to let you in on the biggest secret I've ever experienced.

It all started with a deck of cards on the table and an old man saying, "I won't touch any cards until the end."

Regardless of who the old man is, what matters is the words that stuck in my head: "I will never touch Trump until the end."

Now, the other day, the old man had a small notepad in his hand, and he would occasionally open it and flip through the pages to look at something.

But I didn't care much about the notepad, because I was preoccupied with Trump and the old man saying, "I'm not going to touch Trump until the end."

Well, if you have a giraffe

Throw the giraffe in any direction.

I want you to play my part in this story.

The old man turned to me and said, "Which card do you choose, red or black?"

my answer is-

black card

exactly like that

I chose the black card

The old man said, "Either clubs or spades," and I—

spade

That's right, I chose spades.

The old man goes on to say, "Big numbers or small numbers."

my answer is-

big numbers

That's right, I chose a big number.

It's a big number spade, so it's either 9, 10 Jack, King, Queen or Ace.

my answer is-

king

King of Spades Exactly

Now let's get fair

You pick a black card, you pick a spade, then you pick a big number, and the last one you pick?

King - yes, it was the King of Spades

did i induce

no i just felt your energy

Did you choose freely? -definitely

If not, start over

was it really fair? -definitely

Now, the old man asked me another question, "Choose a number from 1 to 52."

The first number that came to my mind was-

17

that's exactly how it was 17

The old man finally said, "This is the end."

I clicked

The old man finally touches that playing card.

What you see here is the situation as it was at the time.

The old man took a playing card out of the box

nothing left in the box

He counts "1, 2, 3, 4, 5, 6, 7, 8, 9, 10"

growing tension-

(laughs) "11, 12, 13, 14, 15, 16, 17"

Instead of the 17th card being the King of Spades, something was stuck in there, and as you'll find out later, this was actually the secret.

The old man gets up and leaves

I never saw you again

The old man left the notepad behind. It was there from the beginning.

When I picked it up, it contained the greatest secret I've ever experienced.

What secrets you keep and how you share them determines who you are.

This was the old man's way of sharing secrets.

(Applause) Oh my God! Now -- (Laughter) I believe that great things are always around the corner.

I really believe that

We don't really notice it because we're not looking for these wonderful things.

But what if we looked for the wonderful things that happen every day -- the really wonderful little coincidences?

If you have a giraffe, throw it in any direction.The next person will be the last helper.

Now let me ask you, do you have a one-dollar bill in your hand right now?

i think there is

What a coincidence!

(laughs) Can you confirm?

do you have

yes - perfect

Please do the same as I do now

I've prepared a one-dollar bill here.

Take this one-dollar bill and fold it so that the side with Washington's picture is on the inside.

It will be a big square like this

Please fold it again like this. It will be a rectangle vertically. Please fold it again and make a crease.

Did you do it? it's perfect

Well, we're getting closer, so to get started, we're going to make preparations to proceed under very strict conditions.

First, get your markers and paper clips.

Please sign the bill with a marker

Because from now on, I'm going to be doing a lot of things on stage, and I don't want people to think, "While I was distracted, someone changed the bills on stage."

Therefore, I will make it possible to confirm that it is the same bill.

Not only that, but hold your bills with a paper clip.

Even if someone changes the bill on stage, I don't have the time to open and close the bill, and I don't have time to look inside.

Fair?

return the marker

I'd like to do this in a simple way, in front of everyone. I'll show you everything from the beginning.

Now it's perfect, everyone can see

Is this your signature? All right

It uses a deck of cards and a glass.

Let's go on a journey to find wonderful coincidences Let's go on a journey to find wonderful coincidences

I'm sorry, but please lend me a hand

Take some cards and shuffle them

Take a few cards and shuffle them too.

Take some cards and shuffle them

You can cut it as you like

Even if you shuffle like this

Even if I mess up more, it feels like this

American style shuffle

I'm Portuguese, so I don't need to tell you

The important thing is after shuffling the cards.Be sure to cut and line up the playing cards.

can you please

can be cut and arranged

Trump up if you can

After cutting and aligning, place the cards on top

raise it up

The playing cards were cut into 1, 2, 3, 4, 5 and shuffled.

Look, collect the cards and put them together

just like this

From now on, I will look for coincidences in front of you

let's go

This card may not mean anything

But maybe that's because I'm not looking very closely.

It can actually mean a lot

Before we begin, you gave me a one-dollar bill.

is this your signature?

-Yes, it is

Take a closer look. Now, when we unfold our bills, our little secrets will be revealed.

The secret to this one-dollar bill is the serial number.

Please take this one dollar bill

The serial number starts with the letter

What is the first number after the letter?

it's 7

７

７

It may be just one coincidence

What's the second number? -is 9

After 7 is 9

What's after 9?

is 2

It's 2. After 2?

３

3 then

It's 3 - It's 3

it's 7 - it's 7

it's 4 - it's 4

It's two - it's two And?

It's Q

It's Q from Queen

(Applause) Queen of the club.

The cards were arranged in the order you chose

this is the end

thank you have a nice night

(applause)

We have to change prison culture, especially for juvenile inmates.

Only two states in the United States, including New York,

16- and 17-year-old boys are automatically considered adults and arrested and brought to justice.

This culture of violence puts these boys in a hostile environment, where prison guards acquiesce to everything that happens.

Not much is being done to develop and rehabilitate these boys.

Until the age of criminal responsibility is raised to 18, we need to focus on changing the lives of these boys.

i know directly

Before I turned 18, I spent almost 400 days on Rikers Island, and almost 300 days in solitary confinement.

They don't have much to do, so they start walking around the cell.

Jail is really supposed to be a place to support rehabilitation. It's not a place to build anger, frustration and helplessness.

There's no exit plan for these boys, so they return to society with nothing spectacular.

There's almost nothing that can stop you from going back to prison.

But it all started with a prison officer.

Some people very simply assume that the guards are the good guys and the prisoners are the bad guys.

Prison officers are ordinary, ordinary people.

You work "for the people," but you live in the people's neighborhood.

We are completely normal people

I'm not a robot, I'm not a special person

do whatever people do in society

A male officer is trying to impress a female officer.

playing games like high school students

I am also active in internal politics.

A female prison officer is gossiping

I've spent a ton of time with a ton of prison officers.Let me tell you about a prison officer named Monroe.

One day, he pulled me between the A door and the B door, which was the north-south division of the containment unit.

He pulled me here because I had a fistfight with a guy in the same unit, and there was a female prison officer on that floor, and he felt that I had interrupted his shift.

so he punched me in the chest

I couldn't breathe for a moment

I didn't react impulsively, because I knew who had the power.

no chance

Just call him and his friends will come right away

So I just looked at him, I think I saw him burning with anger and frustration, and he said to me, "Those eyes are troublesome eyes, they want to fight."

And he started taking off his gear belt, he took off his shirt, he took off his badge, and he said, "Let's do it."

I asked, "Hold down?"

It's a term that's widely used on Rikers Island, meaning don't talk and don't report.

he said yes

i didn't even reply

Just a straight punch to his face and an instant brawl broke out on the spot.

Towards the end, he threw me against the wall and we grappled and said, "Are you done?"

As if he had won, but in my mind, I won.

he said "oh ok ok ok"

After we parted ways, he shook my hand, said he respected me, gave me a cigarette, and sent me off.

Believe it or not, Rikers Island has prison guards who fight one-on-one.

I think they understand the situation, they're trying to match our level.

If you say it's normal to solve problems that way, then go with it.

We walk away manly with each other, that's all

Some prison officers feel like they're incarcerated, too.

That's why they have that kind of spirit, that kind of attitude, they overlook that way of thinking.

There are times when it looks like it's not much different from us.

But institutions need to give these officers the proper training so that they can work with adolescents properly, and they can work with people with mental illness.

Prison officers play a big role in the lives of these boys, because they influence each boy's fate until it's decided.

So what about giving a boy in prison a mentor?

Why not give them some wisdom to change their lives? so that they can do something positive when they return to society.

The second big factor in helping teenage inmates is improving treatment programs.

Solitary confinement was a big problem when I was on Rikers Island.

Solitary confinement was originally designed to destroy prisoners mentally, physically and emotionally.

That's what the cell was built for.

The United States Attorney General recently released a report saying that solitary confinement will be banned for teenagers in New York State.

One thing that kept me sane during my solitary confinement was reading.

I was trying to be as educated as possible

I read everything I could get my hands on

I also composed music and wrote short stories.

A program that I find useful for boys is art therapy for talented people who love to draw. Art therapy for talented people who love to draw. What about boys who are interested in music?

What about teaching them to actually compose music in a music program?

It's just a thought

When the boy comes to Rikers Island, he's housed in a building called C74, RNDC.

It's nicknamed the "Gladiator School." A boy from the city who thinks he's tough comes and gets thrown into a group of boys from all five districts, all boys who think they're tough.

Young "gentlemen" think they have to point at their chests and show that they're tougher than the guys around them.

But let me be honest, this culture is very dangerous and damaging for boys.

We need institutions and we need to help these boys realize that they don't have to bring the city lifestyle with them, and that it can be changed.

This is a sad report, but during my time in prison, I used to hear other people talk about what they would do after they got out. What crimes would they commit if they returned to the city?

The conversation went something like, "My brother's got connections all over the place when I go to Shabbat."

Let's exchange information." And "We'll do big things when we go to Shaba."

I used to listen to conversations like this and think, "These guys are going to commit crimes again when they get back to town."

I named it "Instant Back to Jail Program" because how long will this last?

Do you have plans after retirement?

Can I get a small pension? 401(k)?

403(b)? What about health insurance? Are you a dentist?

(Laughter) But listen, in jail and prison, I met some of the brightest, brightest, most talented people, some of the best people I've ever met.

Some people turn a bag of potato chips into the most beautiful picture frame.

Some turn free state soap into the most beautiful sculptures, making Michelangelo's work look like something a kindergartener would have.

At 21, I was in the highest security prison, Elmira Correctional Facility.

I had just finished exercising and had just walked out of the building, and an old man I knew was standing in the middle of the garden, just looking up at the sky.

By the way, he was a prisoner with a minimum sentence of 33 years and 4 months, and he had already served 20 years of it.

I approached him and said, "What's wrong? Are you okay?"

He looked at me and said, "Oh, it's okay, you're young."

I said, "What are you doing looking up at the sky?

Are there any good ones? ”

He said, "Look up and tell me what you see."

"Clouds." (Laughter) He said, "What else?"

Then the plane passed by

I said, "Yes, it's an airplane."

He said, "Correct, who's on the plane?"

"Humans." "Correct. Where do planes and humans go?"

"I don't know, do you understand?

If you know, please let me know, and also the winning lottery number."

He said, "You don't get it, young man.

That plane and its passengers are on their way, but we're stuck here.

That's what it means, while the plane and the passengers are on their way, so is our life, we're stuck in the wall."

Something hit me that day, and I knew it had to change.

When I was a kid, I was always a good kid and a smart kid.

Some people might say that being too clever was my enemy

I dreamed of becoming an architect or an archaeologist.

Now, I work for the Fortune Society, which is a social re-entry program, and I'm a case manager working with people who are at high risk of reoffending.

We connect them to the support services they need as soon as they are released, so that they can return to society in a positive way.

If I were to see myself now when I was 15, I would crouch down and talk to him and try to educate him.

this is us we are one

I can see through everything you're trying to do 'cause I've been through it And I'd advise you not to hang out with this guy

I would say don't go to such a place

School will tell you to stick with it, that's your job, because school is what guides you through life.

That's the kind of message that should be passed on to boys and girls.

Treat them like adults, don't put them in a culture of violence, and there's almost no way out.

thank you

(applause)

Hello

i am a toy developer

Nine years ago, I joined a toy company with the dream of creating new toys that had never been seen before.

When I first joined the company, I thought about many new ideas every day and proposed them to my boss.

But I was always told, Do you have any data to show that this will sell? Analyze the market data and come up with a product.

data, data, data

So I analyzed the market data and came up with a product.

At that point, I couldn't come up with anything new.

(Laughter) I keep coming up with similarities, and then I run out of ideas.

It's painful to even think about it

I've finally lost so much weight

(Laughter) Yes.

My boss is painful Data is painful I've grown tired of thinking about it

now i threw the data away

My dream is to make a new toy.

And now, instead, I'm using a game called Shiritori to come up with ideas.

Today, I would like to introduce you to this idea.

What is shiritori

Apple gorilla trumpet and so on

It's a game where you say the words starting with the last letter in order.

Japanese and English are usually the same

I'm going to do this Shiritori freely Cat Cola Live Brush etc. A lot of random words will come out

I forcibly connect those words to what I want to think about and come up with ideas.

For example, in my case, I like to think about toys, so what is a "cat toy"?

A cat toy that spins from a high place and lands

What is a "Coke toy"?

A toy that shoots cola with a gun and makes the opponent sticky

(Laughter) It's okay if it's a stupid idea.

That way, the more ideas you come up with, the more good ideas you'll come up with.

For example, can we make a brush or a toothbrush into a toy?

For example, a toy that combines a toothbrush and a guitar and lets you play while polishing.

(Laughter) (Applause) I wonder if kids who don't like brushing their teeth will love it.

I wonder if I can turn a hat into a toy

Just like Russian roulette, one by one, they wear hats like this, and the moment someone puts it on, a ferocious alien bursts out through the head and roars out.

I wonder if there's demand for this at a house party or something.

Ideas that never come out of staring at data will come out more and more.

In fact, the bubble wrap of this packaging material — wrapping fragile things — tied it to a toy called infinite bubble wrap, this toy that you can bubble with your fingers as much as you like.

I was born and this was a big hit

this has nothing to do with the data

It's just a little bubble wrap, but it's a great way to pass the time, so please play around with everyone at the venue today.

(Applause) I just keep coming up with stupid ideas.

You guys give a lot of silly ideas

Once you know what you're aiming for based on analysis, you're going to aim too much and you won't come up with anything new.

Instead, even if you know what you're aiming for, you close your eyes and think freely like you're throwing a dart.

That way, you'll always hit somewhere near the middle.

about one

i choose it

Then the idea becomes both a new and in-demand idea.

that's the way

This can be done in various ways, even if it's not Shiritori.

Just collect random words

Flipping through the dictionary, randomly collecting words

For example, you can search for two random letters and pick the results that come up.

The point is not to collect information about the genre you want to think about, but to collect random words.

By doing so, all sorts of associative materials gather in my head, and when they are connected, ideas come out more and more.

The biggest advantage of this method is the continuity of the image.

Since you think of words in order, you still have the image of the words you were thinking about before.

It will automatically connect with you later.

Unconsciously, the live and the brush are connected, the roulette and the hat are connected

I don't even realize this myself, so I come up with unexpected ideas.

This method is not only for toys, of course.

Books and apps Events Useful for ideas for all kinds of projects

I would like everyone to try it

There is also a future born from data

However, I hope that you will create an exciting future that you could not have imagined from the simple game of shiritori.

Thank you very much. (Applause)

My name is Harry Baker Harry Baker is my name

If your name is Harry Baker, we have the same name

(Laughter) Just a little introduction.

hi i'm harry

study mathematics and write poetry

So let's start with a love poem about prime numbers.

(laughs) The title is '59'.

I thought I'd call it a "nice prime", but

That's how you beat everyone

(Laughter) Then 59

59 woke up on the wrong side of the bed

For some reason my hair is stuck to one side

Think about it for a moment and realize it's because of your sleeping position

Find and wear suitable clothes

I look into the mirror and get a little happy.

When you look out the window, what catches your eye is the number 60 across the street.

60 beautiful things

Perfect down to the tip of your nails, a perfect outfit

There is no dust such as rudeness

It couldn't be better, it always shows up at the perfect time and it's done super cool too

59 wanted to tell you that you know her favorite flower

Every minute, every second, every hour, I keep thinking of her

I knew that my thoughts wouldn't reach you, a fate that will never be bound

Right across the street, she lives in a different world.

59 loves 60, which has a sharp, curly shape, but 60 thinks 59 is only an "odd" number (laughs) 59's favorite movie is "101"

60 likes the sequel "102 (One O Two)"

The romantic 59 doesn't suspect the two of them as ill-fated lovers

I believed that we could create a trajectory with "oddity" and "evenness" by combining the power of two people

On the other hand, 60 adhered to his mother's strict instructions that the gap between the two could not be bridged.

At the time, 59 felt helpless to love a daughter who was dominated by her mother, but a little math would have healed her.

If you subtract 59 from 60, the rest is 1 and it's a unique existence

After two months of fidgeting, 61 days later, 59 met 61. He lost his keys and his parents were out.

One day after school he glanced at the house and noticed the number on the door was a bit of a sloppy style Why hadn't he spoken to her before 59 opened his mouth when she invited him in

61 was like 60, just a little bit bigger (laughs) She had prettier eyes and a more friendly smile And like him, rough and casual And like him, everything was chaotic And like him, his mother didn't mind if a friend came over.

she looked like him and he liked her

He said he'd fall in love with her if he knew we looked alike This time was different This girl was lovely

"I'm 61," she said, and he smiled, "I'm 59."

"Today I had a lot of fun. Tomorrow, if you don't mind, why don't you come to my house?"

"Of course," she said.

Loves to talk to quirky people, she accepted the invitation for an informal first date.

He was ready a minute before the appointment, but she arrived a minute late, so there was no problem.

From that moment on, the chatter went on non-stop They both liked "X Factor" Having two factors Far from being a drawback, it made them more meaningful By the time dawn broke, they felt they were destined for each other

One day she was talking about a vain 60 and noticed a 59 that looked a little unhappy.

He blushed and confessed his old love "I'm so glad we found each other" 61 was smart Don't get caught up in jealousy Looked him in the eye and told him so sweetly "You're 59 and I'm 61 Together we're double 60"

(Laughter) At this point, 59 had tears in his eyes and was overjoyed to meet such a one-of-a-kind girl.

He told me what it means to be a "prime number" The only thing that divides his mind is "one" and himself And she's the only "one" he wants to give his heart to She says she feels the same

That's not true love, it's just a sample In true love, you two are the perfect example.

thank you

(Applause) This is the first poem I ever wrote for a poetry soiree about prime numbers -- (Laughter) no, I wrote it for a poetry contest about prime numbers.

I won a poetry contest about prime numbers, so it's pretty cool. (Laughter) And that's how I learned about the "poetry slam," just to remind you, it was created in the United States 30 years ago as a way to trick people into attending a poetry event, just by adding "slam" or something cool at the end.

(Laughter) Participants are given three minutes to perform a poem, and then a randomly selected audience member holds up the scorecard, and at the end it's tallied and given a score.

and you can win too

If you win a poetry slam, you can call yourself a slam champion and pretend to be a wrestler If you lose, you can say, "What?

(Laughter) But I loved it, I went to Slam many times, and I became British Slam champion, and I was invited to the Poetry World Cup in Paris, which was unbelievable.

People come from all over the world, they speak their own language, and they're evaluated by five French people who don't speak English.

(Laughter) Anyway, I won. It was awesome.

(Laughter) So-

(Applause) According to five French people who can't speak English.

"Paper People"

i like people

i like paper people

Purple paper people, popping purple paper people

Proper pop-up purple paper person

"You can't stand a popping purple paper person, can you?"

I can hear you screaming, it's...

I'll use the pop-up purple paper man's paper clip to make the pop-up purple man stand up.

I can make a city that pops out, but

I don't want to get involved in paper people's political problems.

The policies of paper politicians are as flimsy as paper Even if they break their promises, they don't even apologize properly

There is a small paper me and a small paper you

We watch paper paper TV on pay-per-view

(Laughter) The poppy paper wrapper wraps the paper carton and watches the paper man vehicle jam at the A4 point.

(laughs) Paper

Paper Princess Kate But everyone's eyes are on Paper Pippa Everyone lives in fear of Jack the Paper Ripper Paper propaganda spreads prejudice Prints pictures of photogenic terrorists on paper

Little paper me Little paper you

Among the people who jump out, problems also pop up

The ostentatious paper parliament becomes a sanctuary, ignoring the protests against paper cuts The peaceful paper protests are ripped apart with confetti bombs by preemptive police

Of course, there is paper money, and there is also paper (me) greed.

A "right" poor economy, many are "right" poor, but their wishes are ignored and the money goes to war.

The origami army unfolds their plans for paper planes, while we remain trapped in our own paper chains. What's more shameful is that the situation has not changed at all.

i like people

Even in times of urgency, only people cheer us up On paper, it's hard to see what we're doing

But there's still hope at the bottom of Pandora's box So I have hope 'cause I believe in people

My grandparents who are liked by people

From the day I was born, not a day later, you prayed for me every morning.

Thank you so much for worrying about me for 7892 days in a row.

Some people, like my aunt, play with prisoners.

those who can truly forgive

People like the persecuted Palestinians

Those who stray from the path for self-interest gain nothing

people can become stronger

People who hold power don't give in to such a system just because they pretend to be victims.

The world of paper people is the same

There is a small paper me and a small paper you

Among those who jump out, people's problems pop up, but we'll be fine even if the world comes crashing down

'Cause we're people

thank you

(laughs) Thank you.

For me, poetry is the ultimate means of expressing ideas freely.

When I started writing poetry, I was inspired by people with great stories.At a smooth sailing 18 year old, I thought I was too ordinary.

That's why I'm honored to stand in front of you like this today.

thank you to everyone here

If you weren't here, it would be the same as yesterday's rehearsal.

(Laughter) This is even more interesting.

"Sai Shine Kid"

So enjoy-

The old sunshine boasted a son's sun The little boy ran made the day brighter He didn't do anything or the problem was solved Just he was in a sunny place all the time

It doesn't always go like this

Sometimes they try to hide their brightness Every star goes through a cycle of trouble They needed a brighter light to wake them up in the darkness

When he was born in the nebula No one thought he was normal He shot out flares So when King Midas touched he turned gold But when he got close everything turned a little bronze Yes this kid was loved more than others Like Joseph and his Dreamcoat brothers Standing out was good or bad If he shined too much Envy made enemies Like the shadow people

The Shadow People hated the Sunshine Kid Because they shone a light on the Shadow People's dark deeds When the Shadow People lit up where they hid The Shadow People plotted to get rid of the Kid First they made fun of his black spots Shattered his dreams from the sky Like a bullet To make him feel like he's not cool That's why he didn't fit in with the school crowd

Said I'd put his dangling head on the ground He was nothing but that's what he was for He never went to college The only "first" he got was a "first" degree burn Those who got too close said he was too bright So no one dared look in his eyes His judgment was clouded When the sun began to cry Evaporated tears clouded the skies

The Sunshine Kid had a bright and warm personality His heart burned brightly He was hurt by the foul language of the shadowy people He had holes in his heart and left gaping scars As he grew more stubborn His fire lost its vigor He thought if he dimmed the light a little more they would like him But they were too busy talking about the light being terrible He couldn't keep up He swallowed the words Shadow Like the state of Texas, hidden in the sky, became a star state It felt like I was hit in the pit of my stomach

And there appeared Little Miss Sunshine Singing her favorite song - We can be strong Don't have to fit in, just let it be 'Cause our hearts are the stars -

Little Miss Sunshine was so damn cool One look and you forget everything He just couldn't forget her From the first look she was burned into his retinas Amazing she took him in 'Cause I knew she'd always be by his side Things weren't as dark as he thought He had a dream There's no shadows anywhere He shined when she was there His eyes were spinning He couldn't hide her smile anymore The two of them gave each other nicknames, "Cool Star" and "Cheerful Sun".

She said, "All the darkness in the world can't put out the light of a single candle, so why is your light put out?

You put it out yourself The sky keeps on shining an endless light Silence the critics." She opened again the curtains over her eyes, the windows of her heart She let the sun shine on the lowliest.

Stars huddle together in a universe of adversity Day turns to night Memories never fade No matter what the weather forecast With a bright face Even if hidden in the clouds this child will always shine

Yes, the Sunshine Kid had a bright and warm personality, and his heart was burning brilliantly. With the help of fire, he taught him to believe beyond the galaxy, supported by her.

thank you

(applause)

i am a historian

Steve talked about the future of microscopic technology, so I'm going to show you the giant technology of the past.

This is a plan to build a 4,000-ton nuclear pulse-powered spacecraft to go to Saturn and Jupiter.

This plan is from my childhood, 1957-1965.

was classified

Let me show you what's not only unclassified, but now reclassified.

(Laughter) If all goes well, I'll be able to show you more here next year, or you'll end up in prison like Wen Ho Lee.

(Laughter) This spaceship is basically a little bit bigger than the Marriott Hotel.

One of the original planners was my father, Mr. Freeman, in the middle.

This is me and my sister, Esther, who is a frequent TED-goer.

I didn't like nuclear pulse propulsion spacecraft.

I thought it was a great idea, but I chose to build a kayak.

so i had some kayaks

The point is, I'm not a mad scientist.

But even as I was out and about kayaking around the most unusual and beautiful parts of the world, I was always thinking in my mind about Project Orion and how my father and the people were going to build such a huge ship.

Everyone was serious about this plan, and Ted Taylor, who ran it, was going to take the kids.

My dad didn't seem to care, and it created a bit of a rift between us for a few years.

(Laughter) This project was started in 1957 by General Atomic on the coast of La Jolla.

Look at the building in the middle of the photo

This is a library about 40m in diameter

Exactly the same size as the bottom of a spaceship

If you think of this library as the bottom, this is the size of this spacecraft.

It was supposed to carry two or three thousand bombs.

Many of the people involved were the people who worked on the hydrogen bomb at the Los Alamos lab.

This was the first project sponsored by the US Department of Defense.

And here's the contract where APRA will invest millions of dollars to get the project off the ground.

"Spaceship project start job available Dyson"

It was July 1958.

Two days later, the space flight statement explained why we're going to space, as we heard it yesterday.

This is a statistic that describes the best places to go and stay.

Some of the spacecraft were up to 8 million tons.

this is the biggest

This is Unit 2 with 2000 bombs.

It's a 5 kt (kiloton) bomb the size of a small Volkswagen car, and it took 800 of these to get it into orbit.

This is a 10,000-ton spacecraft that can carry 1,300 tons and travel to Saturn and back for a total flight time of five years.

Departure was supposed to be between October 1960 and February 1967.

This is the ballistic curve to Mars

I used a slide rule, but it was handwritten.

To create the chemistry of this tiny Orion ship, you'd need a spacecraft the size of the Empire State Building.

NASA was completely unconcerned, and it was the Air Force that tried to wreck the project and backed it up.

So everything was classified, when something was declassified.

That's why it feels like

The military-grade rocket carries a hydrogen bomb capable of destroying half the planet, and there's another version that sends retaliatory bombings to the Soviets.

This is the secret of secrets, the know-how of energy-directed detonation.

Instead of being just a stick of dynamite, it directs the energy of a nuclear explosion into a spacecraft.

still attracting attention

It's extremely dangerous, but I think it's better to make dangerous things public than to keep them private.

This is what happens in 600 microseconds

The Air Force developed a smaller model and put it into action.

“Now is the time to get started,” said a La Jolla official.

I made a high performance bomb drive model

This is an excerpt of footage that was destined for destruction but was stored underground by someone for 40 years.

Here's a C4 (plastic explosive) weighing less than 1kg detonating, ten times more powerful than the shoe-mounted bomb in that incident.

(Laughter) Each coffee can contains one kilogram of C4.

They were building a system that would shoot this out every quarter of a second.

It's my father who has the briefcase

Adults seemed to enjoy it, but children were not allowed

My father could have talked about building spacecraft and flying to Saturn, but he wouldn't go into detail.

I've been chasing them for the past four years, always trying to find out the truth.

this is an excerpt from the video

Thankfully, Jeff Bezos said yesterday, "I'm going to put a clip of this video up on Amazon."

Thanks to him. (Applause)

production was taken seriously

This chunk of technology is too big for us to ever build again.

You can see the comfort of the ride by looking at this graph of acceleration.

(Laughter) This is the power table for the pulse system, which is equivalent to 10 million newtons at 20 kt of nuclear power.

Now here's a little problem: the radiation dose in the cabin is 700 radians per shot.

(Laughter) This is an in-progress fission-yield safe bomb, but it failed.

Eye burns: what happens when you look up at the sky in Miami

(Laughter) The noise in the crew compartment isn't that bad, it's more like a low-frequency subwoofer.

Now there's something called ground hazard assessment at launch.

It wasn't until 1964 that NASA said, "Let's support feasibility studies with a smaller version that can be launched in pieces with the Saturn V and later put together."

This is NASA's version of the eight-seater Mars-bound version.

NASA likes this one because you can live like you're in a submarine, and this crew compartment flips around, so it looks upside down.

In artificial gravity mode, the right side is up, because the scientist will follow after all.

It accommodates astronauts and seven people each, and this is the 20-passenger one going to Jupiter.

It also has a bed, a shelter and an exercise room.

This would have made long trips more comfortable.

Here's the one for the military, the Air Force.

This has not been declassified. It was smuggled out. Well, it came to me on the verge of death.

It's what we would call a PowerPoint presentation today. It was created 40 years ago as a presentation for the Air Force.

Can you see there's a little person overboard?

Some people within NASA expressed interest, but headquarters turned them down and they were buried in the dark.

Subsequent attempts continued until 1965, but in the end all avenues were closed.

Result is? There is nothing here

the plan ends here

it's over

The last thing I can say is, as I said yesterday, one of the 10 disasters that could happen to us is the fall of an asteroid that could wipe out humanity.

And one of the disasters that could happen to NASA is when those asteroids rain down for nine months in a row and everyone goes, "Oh, what are we going to do?"

Orion will become one of the few off-the-shelf technologies, or the only one, that can be used against it.

i have good news and bad news

The good news is that NASA has a secret Emergency Operations Division that looks at Orion and preserves relevant information in case something like this happens.

Maybe they're hiding a few small plutonium bombs.

This is the good news and the bad news

When I reached out to ask for the information, they made a fuss because I had a lot of information that NASA didn't have, because they bought 1,759 pages of information.

This is the situation, I don't like it

(Laughter) (Applause)

actually-

I'm a business professor who is passionate about helping students learn to be leaders.

But recently, I've realized that what many people think of as good leadership doesn't work in the innovation arena.

i am an ethnographer

Anthropological methods are used to analyze questions of interest.

Three co-conspirators and I have been working closely with leaders for almost a decade on good leadership in innovation.

16 men and women working in 12 industries in 7 countries around the world 16 men and women working in 12 industries

In total, I spent hundreds of hours in the field observing these leaders as they worked day in and day out.

I ended up with a thick field notebook of records that I analyzed to find common behavioral patterns.

In a nutshell—

To build an organization that innovates over and over again, we need to let go of the traditional notion of leadership.

Leading innovation is not about creating a vision or motivating others to execute it.

First, what is innovation?

Innovation is anything new and useful at the same time.

product or service

It doesn't matter if it's the process or the way the organization is organized.

Gradual increase or sudden breakthrough

the definition is pretty comprehensive

Do you know who this man is?

please raise your hand

So if you know who this person is, keep your hands up.

What about this familiar face?

(Laughter) Apparently, many of you have seen the Pixar films, but very few of you have heard of Ed Catmull, who was the founder and CEO of Pixar, and I had the privilege of studying the company.

When I first visited Pixar in 2005, they were making Ratatouille, a boldly themed movie about a mouse trying to be a chef.

Today, CG movies are mainstream, but Ed and his colleagues spent almost 20 years making their first full-length CG movie.

Over the next 20 years, they made 14 films.

I visited Pixar recently, and I'm pretty sure that the 15th movie is going to be a big hit.

When we think of innovation, we tend to imagine Einstein's moment of inspiration.

I know it's just a myth

Innovation is not just about individual geniuses, it's about collective geniuses.

When Pixar makes a movie, let's think about it for a moment.

No, it takes 250 people four or five years to make a movie.

To illustrate this process, one of the studios drew this diagram.

I can't help it, but if I draw it like this, it makes it look like this process is proceeding in an orderly manner with clearly separated units.

He didn't seem to think that these arrows were enough to describe how repetitive, intertwined and messy this process was.

At Pixar, the story develops through the making of these films.

please think about it

some shots will be ready soon

Not necessarily made in order

How much effort the scene requires will vary from scene to scene.

In one scene from "Uncle Carl's Flying House," where a boy hands a piece of chocolate to a bird, that 10-second scene took one animator almost six months to complete.

Another thing about Pixar movies is that no part is considered complete until the whole movie is done.

During the production of a piece, an animator drew a character's eyebrows into a bow to show their mischievous side.

The director saw it and thought it was very good.

But he said, "Let's redraw it because it doesn't fit the character."

Two weeks later, the director came back and said, "Let's put in those few seconds."

The animator was allowed to freely share what we call "a glimpse of his genius," so the director could make subtle but significant changes to the characters to help make the story even better.

At the heart of innovation lies a paradox

Unleash the talents and passions of many people and bring them to work in a useful way.

Innovation is like a journey

It's a kind of collaborative problem solving, where people with different expertise and perspectives work together.

Innovations are seldom created from the beginning to perfection.

As you all know, it's usually the result of trial and error.

Numerous Start-Up Problems Stumbles and Fails

Working in innovation is exhilarating, but it's also incredibly scary.

So when we think about what made Pixar's current success possible, we have to think about what's going on there.

Of course, in history -- and of course in Hollywood -- there have been many great teams that have failed.

A lot of it was because the team had too many stars.

So why does Pixar have so many people and so many successes?

Having studied Islamic banks in Dubai, luxury brands in South Korea, or social enterprises in Africa, I've found that innovative organizations are communities with three capabilities: creative friction, creative mobility, and creative determination.

Creative friction is about creating a free market of ideas out of debate and dialogue.

Innovative organizations amplify individual differences, not obscure them.

Creative friction is not brainstorming, which suspends judgment on the spot.

They know how to have very heated but constructive arguments to weigh all the options.

Individuals in innovative organizations learn to ask questions and to listen actively, but that's not all.

They also learn to present and argue their point of view.

They know that innovation seldom happens where there is both diversity and friction.

Creative impetus is the testing and narrowing down of a series of lists of ideas through agile execution, reflection and adjustment.

This discovery-driven learning unlocks the future by taking action, not just planning.

This is design thinking, a combination of a scientific method and an artistic process.

This is a series of experiments, not a preliminary experiment.

Experimentation is often learning

Even with the disappointing results, you're learning something you should know.

Preliminary experiments are often just to get the right answer.

If things go wrong, someone or something is to blame

The final ability is creative decisiveness.

It's about making decisions that actually combine even conflicting ideas, remake them into new combinations, and create new and useful solutions.

When I look at innovative organizations, they get along, but they don't go along for the sake of it.

I will not compromise

They don't let any particular group or individual dominate, whether it's a boss or an expert.

Instead, they use a more tolerant and more open decision-making process to come up with solutions that allow for both rather than simply either.

We believe that these three factors are the reason Pixar continues to innovate.

Let me give you another example, which is Google's technical infrastructure group.

We maintain our website 24 hours a day

When Google was about to launch Gmail and YouTube, they knew they had inadequate data storage systems for it.

The head of the engineering and technical infrastructure group at that point was Bill Coughlan.

Bill and his leadership team, which he called Braintrust, were forced to find a way out of this situation.

after thinking about it for a while

Instead of creating just one group to work on this task, we allowed the groups to be self-directed around the various options, just as multiple groups naturally formed around the various options.

And then two groups came together.

One was called "The Big Table" and the other was called "The Team From Scratch".

He said the "Big Table" should be based on the current system.

He said the team "from scratch" should implement a completely new system.

These two teams were allowed to test their own approaches full-time and separately.

In Engineering Review, Bill described his role as one that "infuses candor into the process by fostering discussion."

First, each team was encouraged to create a prototype, and they said, "Take that to reality and discover the strengths and weaknesses of your approach."

The "From Scratch" team came up with a prototype that could set off an alarm in the middle of the night if something happened to a website, but the really loud ringing showed the limits of design.

As the need for a solution became more pressing and the supporting data became available, it became clear that the "Big Table" solution was appropriate for the time being.

So their plan was chosen

At the same time, to ensure that what the team learned "from scratch" never goes to waste, Bill added two people from that team to the team that was forming for the next-generation system.

It took about two years to get to this point, but they said they were all working at breakneck speed.

Early on, one of our engineers said to Bill, "We don't have time for the inefficiency of running two experiments at the same time."

But as the process progressed, he discovered the wisdom of letting talented people do whatever they wanted.

And he admitted, "If we were all forced into one team, we might have been more obsessed with trying to show who's right and who's winning, instead of learning and finding the best answers for Google."

Why do Pixar and Google keep innovating over and over again?

because both have mastered the necessary abilities

They know how to do collaborative problem solving, they know how to do discovery-driven learning, they know how to make integrated decisions.

Right now, some of you may be thinking, "No one in my organization knows this.

Why would the Pixar people know? Why do googlers know? ”

People who worked for Bill told me that Bill was the number one leader in Silicon Valley.

Leadership is the secret sauce

But that style isn't what we tend to think of when we think of good leadership.

One of the leaders I met once said, "Linda, I don't read leadership books.

(Laughter) "In the first chapter, I was told to set out a vision.

But what I'm trying to do is completely new and there's no answer

I don't know what direction I'm going in, and I'm not confident I'll find a way to reach my goal."

There are certainly times when visionary leadership is called for.

But if we want to build an organization that can continue to innovate, we need to redefine our understanding of what leadership is.

Leading innovation is about creating spaces where people are willing to tackle the challenges of innovative problem-solving.

At this point, some of you may be asking, "What exactly is that leadership?"

At Pixar, we understand that innovation takes a lot of people.

Leaders focus on fostering a sense of community and the three competencies I mentioned earlier.

What do they think of leadership?

They say leadership is about creating a world that people want to belong to.

So what kind of world do Pixar people want to belong to?

It's a world where we live on the frontier

And what will you spend your time on?

It's not about crafting a vision

Instead, think, "How can we design a studio that's like a public square where people can interact?

Yes, let's put in place a policy where anyone, regardless of position, can tell the director how they feel about a movie.

How can we get all the voices of the outlaws and the minorities in the organization and listen to them all?

Then, I will generously accept your contributions."

Have you ever seen the credits screen of a Pixar movie, and even babies born during production are named there?

(Laughter) What did Bill think about his role?

"I am putting together a voluntary organization

Talented people don't want to follow me

want to create a future with me

My job is to nurture a bottom-up system and make sure it doesn't collapse into chaos."

his view was

“My role is to be a role model, a human glue, a role that connects people and brings together all perspectives.

Never a dictator

Any advice for playing that role?

"Hire people who can argue with you

after that-

Being intentionally vague and vague is sometimes effective."

Are you wondering, what the hell are these people thinking?

They think, "I'm not a visionary, I'm a social architect.

We're creating a place where people are willing to bring their talents and passions together and combine them."

If you're here right now wondering that you don't work for Pixar or Google, there's still hope.

We've analyzed a lot of organizations that you wouldn't think had a lot of innovation going on.

We studied the general counsel of a pharmaceutical company, who had to figure out how to collaborate and innovate with outside lawyers and 19 competitors.

When I studied marketing managers at German car manufacturers, they thought that innovation was basically the job of the design engineer, not the marketer.

I also studied Vineet Nair of HCL Technologies, an outsourcing company in India.

When I met him, the company was, in his own words, on the verge of becoming "meaningless."

In no time at all, he transformed the company into a global engine of IT innovation.

At HCL Technologies, we've learned that, like many companies, it's our role as leaders to set the direction and make sure no one strays.

He told leaders it was time to think about rethinking his role.

The reason is that everyone was looking to the top for support, and there wasn't the bottom-up innovation that we saw at Pixar and Google.

so they started working

they stop just giving answers and solutions

Instead, they began to see the brilliance of the young employees at the bottom of the pyramid, closest to their customers, as a source of innovation.

They began to shift the center of their organizational growth to the lowest levels.

In Vineet's words, this meant "flipping the pyramid, loosening the grip of the few, unlocking the talent of the many, and improving the quality and speed of innovation that happens every day."

Certainly Vineet and all the other leaders we studied were visionaries.

And they certainly understood that it wasn't their role.

So I don't think it's a coincidence that you didn't know Ed.

Like Vineet, Ed believed that our role as leaders was to create the space, not to stand out there.

If we want to create a better future -- which is why so many of us are here -- we need to rethink our agenda.

It is to create such a place where everyone's "flakes of genius" can be released and brought to life and become works of collective genius.

Thank you

(applause)

can't forget them

Their names are Aslan, Arik, Andrei Fernanda, Fred Galina, Gunnhild Hans, Ingeborg Matti, Natalia Nancy, Cheryl Usman, Zarema.

Too many human beings and their humanity became part of the statistics and were coldly dismissed as "security incidents."

To me, they were colleagues in the humanitarian community, and it was the victims of the Chechen conflict in the '90s that they tried to bring a little comfort.

They were nurses, administrators, shelter specialists, paralegals, interpreters.

Murdered for their actions left a deep scar on the families they left behind, and their stories were largely forgotten.

No one has ever been punished for these crimes.

i can't forget them

They live on in my heart, and it is their memories that give meaning to my everyday life.

But at the same time, the memory casts a dark shadow over my head.

As humanitarians, they chose to stand by the side of their victims, to reach out to them, to offer them comfort and protection, but when they needed their protection, no one was there to protect them.

Remember the recent headlines about aid workers being captured and executed as hostages in civil wars in Iraq and Syria, who are they?

why were you there?

What drove them?

Why have we become indifferent to such crimes?

This is the theme I want to think about with you today.

We should find a better way to remember them.

And we also need to know the significant value that they sacrificed their lives for.

We also need to demand social justice.

In 1996, I was sent from the United Nations High Commissioner for Refugees to the North Caucasus, and of course I knew there was some danger.

So far, five colleagues had been killed, three were seriously injured, and seven had been taken hostage.

so we were careful

We used armored vehicles, we used decoy cars, we changed our transportation frequently, we changed our homes, we took every precaution possible.

But on a cold winter's day in January 1998, my turn came.

When I was escorted back to my apartment in Vladikavkaz, I was surrounded by armed men.

The men grabbed the bodyguard, knocked him to the floor, beat him in front of me, tied him up with a rope, and took him away.

I was handcuffed and blindfolded, forced to kneel, and a suppressor on the gun was pressed against my neck.

In situations like this, thinking stops and there is no time to pray.

In my mind, automatically, the life I had walked up to that point ran around like a revolving lantern.

It took me some time to realize that the masked men weren't there to kill me, but someone somewhere ordered my kidnapping.

From that day on, the process of dehumanizing began.

i was treated like a thing

I don't usually talk about this, but I want to share with you about 317 days of being a hostage.

I was put in an underground cell in total darkness for 23 hours and 45 minutes each day, and usually two guards came.

They have a big piece of bread, soup and candles.

This candle burns for 15 minutes, the precious light lasts for 15 minutes, but when they pick it up, darkness surrounds the area.

I was chained to my bed with a metal cable.

can only walk four steps

I always dreamed of the fifth step

There was no TV, no radio, no newspapers, no people to talk to.

No towels, no soap, no toilet paper. Two open metal buckets, one for drinking water and one for excretion.

Incredibly, mock executions can be a distraction for guards when they're feeling sadistic or drunk.

Slowly my nerves wore down

Above all, the loneliness and darkness were indescribable.

You can't describe "nothing", can you?

Words cannot describe the profound loneliness I felt between sanity and madness.

I used to fantasize and play checkers in the dark.

I start with black pieces, then white pieces, then back to black pieces, trying to deceive my opponent.

Now I never play checkers

My family and colleagues, my heart ached for Edik, the bodyguard.

I had no way of knowing what had happened to him.

Trying not to think badly, I devoted my time to doing all sorts of exercises that I could do on the spot.

I prayed, and I played a memory game of thinking.

There are also bizarre images and thoughts about what the darkness creates.

On the one hand, there is the part of me that resists, raises my voice, and wants to burst into tears.

It's a constant inner conflict, and there's no one to mediate.

One time, a security guard approached me aggressively and said, "Today I'm going to get down on my knees and beg for food."

I felt bad and insulted him

I cursed his mother and even his ancestors.

The result was no big deal. They threw the food in the poop bucket.

The next day, the same man showed up and made the same request.

Same answer, same result

Four days later, severe pain shot through my body.

I didn't know that hunger could cause so much pain.

And the next time the guards came, I got down on my knees.

I begged for food

For candles, obedience was the only way

After being kidnapped, I was transported from North Ossetia to Chechnya.After a three-day long journey in different trucks and different vehicles, when I arrived there, I was interrogated for 11 days by a man named Ruslan.

The method is always the same. We had 45 minutes of light that was a little longer.

When Ruslan came to my cell in the basement, he instructed the guards to tie me to a chair, and put on some loud music.

Loud interrogation begins

screaming and hitting

Avoid further details

I didn't understand most of the questions asked, and some of the questions I didn't want to understand.

The interrogation time was the same as the tape playing in the room, 15 songs, 45 minutes.

I always looked forward to the last song

One night, I was in my cell, and I didn't know what it was, but I heard a child crying overhead, a boy, maybe two or three years old.

I can hear footsteps, murmurs, and the sound of people running.

Rusoulin came in the next day, and before he could start questioning me, I said, "How is your son doing? How are you?"

Ruslan was taken by surprise

He got angry that the guards must have leaked about his private life.

I kept telling you that the medicines that NGOs are supplying to local hospitals might help your son.

And we started talking about education and family.

he also told me about his children

i talked about my daughters

And he talks about guns and cars and women, and I talk about guns and cars and women.

We talked like that until the end of the last song.

Rusoulin was the most brutal man I've ever known.

since then you haven't touched me

I didn't even ask

I am no longer a "thing"

Two days later, I was moved to another location.

So one of the guards came up to me - which is very rare - and said in a very kind voice, "I want to thank you for helping me with my family when I was evacuating near Dagestan."

What should I answer?

My heart ached. I felt like I had been stabbed in the stomach with a knife.

I spent several weeks scratching my head trying to figure out the justification for supporting that family and that future soldier.

he's a young and shy guy

i haven't seen your face

you probably really appreciate it

But those 15 seconds made me question what we were doing and what we were sacrificing.

It also made me think about how they look at us.

I assumed that I knew why aid groups were there and what they were doing.

it turned out to be different

It's not easy to explain why we reach out, even to our closest family members.

We're not perfect, we're not great, we're not the world's firefighters, we're not heroes, we won't stop wars, and we know humanitarian aid won't be a political solution.

Even so, we support because one person's life is important.

Because sometimes what you can do to change the world, save a life, save a family, save a small group of people, that's what matters.

After a tsunami, earthquake, or typhoon, rescue teams from all over the world travel for weeks to find survivors.

I wonder why? no one doubts this

Because all lives matter All lives should be cherished

It's the same reason we support refugees. When many people, internally displaced by conflict or stateless, find themselves in immense predicament, they feel helpless and stop.

It's a shame, because there are so many ways we can help them.

I don't care

What we're doing is giving as much support, protection and comfort as we can.

because it is a duty

otherwise you can't

Because that's what makes you feel like you're human.

this is a picture of the day i was released

A few months after I was released, I met the then-Prime Minister of France.

The second thing he said was, "Going to the North Caucasus is an irresponsible place.

I have to deal with all the problems you created."

It was a quick meeting

(Laughter) I think it's a responsible act to help people in crisis.

In that civil war that no one seriously stopped, and in situations like that we see today, giving the local people the support they need and the bare minimum of protection is not just a sign of humanity, it's a big change for them.

Why couldn't the Prime Minister understand this?

we have a responsibility to reach out

I'm sure you've all heard about it, "responsibility to protect."

Aid outcomes are measured in many ways.

You will fail sometimes, but the worst thing than losing is not doing it when you can.

If you start thinking this way and get a job that involves helping, life will be filled with a lot of joy and sorrow, because there are a lot of people we can't help, a lot of people we can't protect, a lot of people we can't save a life.

I call them ghosts, and by witnessing their suffering up close, I accept a part of it as part of me.

Many young humanitarian workers have a lot of bitter experiences at first.

You're thrown out on the ground and you become a witness, but you're too powerless to make a difference.

First, we have to accept the situation and find a way to gradually transform it into positive energy.

not easy

There are a lot of people who can't do it well, but if you can handle it well, there's no better job than this.

Because we can see the changes that we make every day

Humanitarians understand the dangers of conflict and post-conflict, but our lives and livelihoods are increasingly threatened, and the sanctuary of humanitarian assistance is lost.

Did you know that attacks on humanitarian aid workers have tripled since the turn of the century?

In 2013, we set a new record: 155 of our colleagues were killed, 171 were seriously injured, and 134 were kidnapped.

a lot of people hurt

Until the start of the civil war in Somalia in the late 1980s, humanitarian workers were collateral victims, but generally not the targets of attacks.

this is transforming

see this photo

In August 2003, 24 colleagues were murdered in Baghdad.

Gone are the days when the blue United Nations flag and the Red Cross mark were taken for granted to protect employees.

Criminal groups and some political groups have intertwined over the last 20 years to create a kind of hybrid group that can't even talk to our advocacy groups.

Humanitarian principles are tested, questioned, and often ignored, but more importantly, have we given up on seeking justice?

What good is there in attacking humanitarian aid workers?

When I was released, they told me not to think of any form of retaliation.

I was told there was nothing better

You're going to put other co-workers at risk too.

It took three years to bring three people involved in my kidnapping to justice, but this was an exception.

None of the other colleagues killed or kidnapped between 1995 and 1999 in Chechnya have been brought to justice, and the same is true in other parts of the world.

unacceptable

it is unacceptable

Attacks on humanitarian workers are war crimes under international law.

This crime should be punished

We must break the blameless cycle.

We should think of attacks on humanitarian workers as a threat to our very humanity.

this is why i resent

I know I'm better off than the refugees I'm helping.

I don't know how it feels to see the city you grew up in destroyed.

I don't know how it feels to have your own family shot to death in front of you.

I don't understand how it feels to not be protected from your own country.

And I know how blessed I am compared to other hostages.

Four days before I was released, four hostages were beheaded, miles away from where I was being held.

why were they sacrificed?

why did i survive

the answer is not easy

Since then, I've received a lot of support from family, colleagues, friends, people I've never met.

You've held out your hand for so long when I was in the dark

not everyone gets the same help

Many of my colleagues have taken their own lives after experiencing traumatic events.

I personally know nine people.

Many traumatized colleagues have gone through painful divorces because they can no longer explain anything to their spouses.

I can't count them

Occupations like ours come at a cost.

In Russia, all war memorials are carved with beautiful inscriptions.

It is (Russian) "no one is forgotten, nothing is forgotten"

I will never forget my colleague who lost his life

I can't forget anything

I ask you all to remember their dedication and protect humanitarian workers around the world.

Don't extinguish that light of hope that is about to be extinguished

After that ordeal, my colleagues asked me, 'Why are you still doing what you're doing?

Why do you want this kind of job?

why go back to that place? is asked

My answer is simple, because if I stop, my kidnapping will succeed.

They couldn't take my soul or my humanity.

thank you

(applause)

Today I want to talk to you about death and architecture.

A hundred years ago, many of us died from infectious diseases such as pneumonia, and we were sick very quickly.

It was common for people to die in their own beds, surrounded by family, because medical care was not widely available.

A lot has changed in the 20th century

New drugs such as penicillin were developed to treat infections.

Medical technology was also developed, such as X-ray machines.

And those machines were so big and expensive that we needed big buildings to house them, and that's what modern hospitals are like.

After World War II, many countries introduced universal health care, giving everyone access to health care when they needed it.

As a result, life expectancy has nearly doubled from 45 years at the beginning of the 20th century to today.

The 20th century was a time of great promise for the power of science.

Now, I'm an architect, and for the past year and a half, I've been thinking about what these changes mean for architecture about death.

Cancer and heart disease are the leading killers of our lives today, which means that many of us end up with long-standing chronic conditions.

During that time, they spend a lot of time in hospitals, hospices and nursing homes.

You know modern hospitals, right?

Fluorescent lights, endless corridors and uncomfortable chairs

Hospital architecture has a bad reputation.

But, you might be surprised, it wasn't always like that.

This is the Innocenti Nursing Hospital, designed by Brunelleschi in 1419, Brunelleschi was the most famous and influential architect of his time.

It's impressive how ambitious this building is compared to today's hospitals.

just a great building

There's a courtyard like this in the middle, and every room is made to be comfortable, with sunlight and fresh air, and the rooms themselves are large and have high ceilings.

even more beautiful

We seem to have forgotten that hospitals can do this as well.

If you want to make a dying building better, you have to talk about death.

But what surprised me most in my research was the variability of people's attitudes.

This is England's first crematorium, built in the 1870s in the town of Woking.

When the crematorium first opened, there was a local protest against it.

Cremation was socially unacceptable, and 99.8% of the time, burial was burial.

But in just 100 years, that will change to the point where three-quarters are cremated.

People can be very tolerant of things changing if they're even given the chance to talk.

So I've been wanting to talk to you about death and architecture since the first time I had an exhibition on this subject, in Venice in June, called "Death in Venice."

It was a playful exhibition that allowed people to literally play with death.

This is one of the exhibits, an interactive map of London that shows how much of the property in the city is associated with death.

You can take this exhibition home with you as a postcard.

The postcards are homes, hospitals, cemeteries, morgues, telling stories about the places we go through on this side of death and on the other side of death.

What I wanted to tell you is that where we die is an important factor in determining how we die.

The exhibition - especially the audio-visual work - was very strange to the visitors' reaction.

You have to dance, you have to run, you have to jump in order to enjoy the work, but at some point, everyone stops, remembering that it's an exhibition about death, and like, you shouldn't have been so excited.

But is there really only one attitude to death? And if not, I urge you to ask yourself: What is a good death? What kind of architecture can help you die a good death?

thank you

(applause)

Traditional prescriptions for growth are not working very well in Africa.

A trillion dollars of development aid to Africa has been delivered over the last 60 years, but real per capita income is lower today than it was in the 1970s.

Assistance is not working very well

In contrast, the Bretton Woods institutions, the International Monetary Fund (IMF) and the World Bank, promoted free trade rather than aid, but there is little evidence in the historical record to substantiate that free trade led to economic growth.

The new prescription silver bullet is microcredit.

We seem to be obsessed with the glorified idea that every small African farmer is an entrepreneur.

(Laughter) I've worked and traveled in more than 40 African countries, and many people were looking for employment.

My conclusion is "forget micro entrepreneurs"

Let's invest in building pan-African giants like the Sudanese entrepreneur Mo Ibrahim.

Mo was a contrarian investor in Africa, starting Certel International in 1998, and by 2004, it had built a mobile phone company with 24 million subscribers in 14 African countries.

Moe's model may have been better than the run-of-the-mill entrepreneurial model that hinders effective methods of diffusion and knowledge sharing.

I think Africa is not at a stage where many entrepreneurs and small businesses are driving growth through competition.

Consider two different scenarios

Part 1: You lend $200 each to 500 banana farmers and dry the surplus bananas so that you can get 15% more income in the local market.

Method 2: How you give $100,000 to one brilliant entrepreneur to build a factory that will give all 500 banana farmers 40% more income and 50 more jobs.

We bet on the second scenario, where Eric Mutomi, a 26-year-old Kenyan entrepreneur, helped build a crop processing plant called Stawi to produce gluten-free, banana-based flour and baby food.

Stawi leveraged economies of scale and used modern manufacturing processes to create value not only for the factory owners, but also for the workers involved in the business.

Our dream is to help someone like Eric Mutomi become the next Mo Ibrahim, and that requires technology, money, local and global partnerships and extraordinary patience.

But why Pan-African?

In the scramble for Africa at the Berlin Congress of 1884, we Africans were, frankly, not consulted at all -- (Laughter) (Applause) The result was a massive partition and a large number of sovereign states with small populations: Liberia, 4 million, Cape Verde, 500,000.

Pan-Africa is a billion people, spread across 55 countries, with trade barriers and other obstacles, but our ancestors traded across continents until Europeans drew the line.

The pan-African opportunities outweigh the challenges, which is why we're expanding Stawi's market beyond Kenya to Algeria, Nigeria, Ghana, and anywhere else that's willing to buy.

We want to solve food security, empower farmers and create jobs, help develop local economies and prosper at the same time.

It's not the coolest thing, and it may not be as satisfying as giving a woman $100 to buy a goat on kiva.org, but perhaps helping a few more influential entrepreneurs to build pan-African businesses could help change the status quo.

The political freedoms that oppressed Africans fought for are useless without economic freedom.

We want to support this fight for economic freedom by building global businesses, creating local wealth and giving people the jobs they crave.

africa rises

Thank you very much

(Applause) Tom Riley: Well, Sang, of course, that was a wonderfully persuasive speech.

So you're comparing microcredit to regular investing to regular growth investing.

Do you think microcredit has a role too?

Sang Dale: I think there is a role

Microcredit is a great and innovative way to open up access to funding for low-income people.

But I don't think the problems facing Africa needed a lot of donations of sheep, given the Marshall Plan, the recovery plan for World War II-devastated Europe.

More than microcredit in Africa—

I need more than just giving $200

I need to build a big business and I need a job.

great thank you very much

(applause)

Has anyone heard of premenstrual syndrome (PMS)?

Everyone is there, right?

As you know, women go a little crazy before their period, and the menstrual cycle is full of hormonal emotional ups and downs, like irrationality and irritability.

There's a popular belief that fluctuations in reproductive hormones cause these extreme feelings, and many women are affected by them.

I'm here to tell you today that none of these speculations have any scientific basis.

I would like to share the good news about PMS

Let's start by looking at how PMS is ingrained in American culture.

If you look through the articles in newspapers and magazines, you'll find that people believe that everyone gets PMS.

According to a Redbook article titled "Get Free from PMS," 80 to 90 percent of women suffer from PMS.

L.A. Muscle magazine warns that 40 to 50 percent of women suffer from PMS, which it says affects women's health, both mentally and physically. Even the Wall Street Journal, a few years ago, published an article treating PMS with calcium and asked its female readers, "Are you a witch every month?"

When you read articles like this, you'd think that after a mountain of research, we'd discovered the true nature of PMS.

But after half a century of research, we're still not sure about the definition of PMS, what causes it, how to treat it, or even if it exists at all.

A common definition by psychologists is that PMS is a set of negative behavioral, cognitive and physical symptoms from ovulation to menstruation.

this is where things get tricky

Of the 150 different symptoms used to diagnose PMS, this is just one example.

I would like to clarify here

I'm not saying women don't have these symptoms.

What I'm trying to say is that even though some of these symptoms may appear, they're not in the realm of mental illness, and that when psychologists define a disorder so vaguely, the diagnosis is ultimately meaningless.

With this list of "symptoms," I have PMS, you have PMS, the man in the third row has PMS, even my dog ​​has PMS.

Some say there are three

Some researchers say it's fine as long as it doesn't interfere with your daily life, while others say you can't ignore even the smallest of symptoms.

Because of this lack of a standardized definition of PMS over the years, when psychologists try to report prevalence, their estimates range from 5% to 97% of women, making PMS as common as it is rare.

It's largely because of the weaknesses in PMS research methods in general.

First, many studies ask about past symptoms, and because they go back and rely on memory, they find that PMS reports increase when compared to prospective reports, where symptoms are recorded daily for at least two consecutive months.

Also, many studies have been limited to middle-class white women, making extrapolating findings to all women problematic.

PMS is known to have a strong cultural component and is rarely heard outside of the Western world.

Third, there are many studies that are not controlled experiments.

If you want to understand the characteristics of women with PMS, you have to compare them to women who don't.

And finally, the use of different questionnaires to diagnose PMS, focusing on different symptoms, onset duration, and severity.

To conduct reliable research under any circumstance, scientists must agree on the specific characteristics that make up the conditions before they can discuss the same subject.

But in 1994, the Diagnostic and Statistical Manual of Mental Disorders -- known for short as DSM, which is also a guide for psychiatrists -- redefined PMS as premenstrual dysphoric disorder, PMDD.

Dysphoria is a feeling of restlessness and anxiety.

According to the new DSM guidelines, for most of the previous menstrual cycle, at least five of the 11 symptoms must have occurred one week before the onset of menstruation, and the symptoms should ease once menstruation begins, and disappear the week after menstruation ends.

One of the symptoms must fit on one of four lists: Mood swings Irritability Anxiety disorders Depression

Other symptoms, like the ones in the first slide and the second slide, are the inability to control emotions, changes in sleep and appetite.

The DSM further correlated these symptoms with symptoms of clinically intense distress, such as interference with work, school, and relationships, and had these symptoms and their severity recorded daily for at least two consecutive cycles.

And finally, the DSM required a diagnosis of an emotional disorder separate from the one you already had.

From a scientific point of view, it's a huge improvement.

Now the number of symptoms is defined, more severe impairments are required for diagnosis, and the recording and duration of symptoms is also specific.

Using this criterion, looking at the most recent studies, on average, 3% to 8% of women had PMDD.

Not all women, not most women, not the majority, not many women, just three to eight percent.

Variables such as stressful events, happy moments, or specific days of the week can predict mood swings in any person much better than their menstrual cycle, and that's what the scientific community has been getting since the 1990s.

In 2002, a colleague and I published a paper on PMS and PMDD studies, and similar papers began to appear in psychology journals.

The strange thing is that this information is not widely disseminated.

Why does this myth not die out?

When women receive message after message from books, TV, movies, and the web that everyone gets PMS, they begin to believe that this must be true.

Studies show that people who believe that everyone gets PMS are more likely to falsely claim that they have PMS.

Let me explain what I mean by "wrongly"

When asked, "Are you PMS?"

Some patients say yes, but when they have their psychological symptoms recorded daily for two months, there is no relationship between their symptoms and their menstrual cycle.

Another reason the PMS myth persists has to do with the confined role of women.

Feminist psychologists such as Joan Crisler have pointed out that the flag of PMS allows us to express emotions that we normally hide because we're considered unfeminine.

The universal definition of the ideal woman is happy, loving, caring, and content in her role.

PMS allows you to express your anger, frustration, and frustration without losing your ideal woman title.

It's true that environmental variables, not hormones, can make women angry, but if you use hormones as the reason for your anger, you're evading responsibility and avoiding criticism.

"This isn't who she really is. I can't help myself."

As long as this remains a convenient excuse

People's reactions to women's anger are limited to, "Oh, it was that day," and women's chances of being taken seriously in society and making changes are very limited.

So who else benefits from the PMS myth?

PMS treatment has become a profitable, booming industry.

Over 1900 PMS treatment books can now be found on Amazon.com

If you do a Google search, you'll find countless hospitals and workshops and seminars.

WebMD and the Mayo Clinic, two well-known internet sources of medical information, list PMS as a disease.

It's actually a syndrome, but it's listed as a disease.

It even lists the medicines that doctors prescribe, like antidepressants and hormones.

Interestingly, both sites say that efficacy varies from person to person.

this is a funny story

So is PMS, but if it's a specific disease with a specific cause, treatment for it should make a lot of women better.

But this treatment doesn't. According to FDA regulations, a drug to be effective must show a significant clinical improvement in the majority of the target population.

So these treatments are completely useless.

Yet the economic benefits of the myth that PMS is a common mental illness and that it can be treated are enormous.

When drugs such as antidepressants and hormones are prescribed, follow-up with a doctor is required every three months.

I have to keep going to the hospital

If you're forced to take prescription drugs while you're of childbearing age, drug companies can make huge profits.

Even over-the-counter drugs like Mydol, which claim to treat PMS symptoms like tension and agitation, contain nothing more than diuretics, pain relievers, and caffeine.

I don't want to argue against the magical powers of caffeine, but I can't imagine it's going to relieve tension.

Since 2002, Mydoll has marketed Teen Midol to adolescent girls.

Pharmaceutical companies started targeting young women early on to convince them that everyone could have PMS and become a monster: "But wait, we can handle this. Take Mydol and you'll be human again."

In 2013 MyDoll reached total sales of $48 million

While some benefit from the PMS myth, women suffer severely.

The first is the increasing medicalization of reproductive health. The first is the increasing medicalization of reproductive health.

The medical community has long had a tradition of treating the female reproductive process as a disease that requires treatment, and this has come at a great price, such as excessive caesarean sections, hysterectomies, and hormone therapy, which do more harm than good to women's health.

Secondly, the PMS myth contributes to the stereotype that women are too emotional rather than rational.

By equating the menstrual cycle with hormonal emotional ups and downs, it's easy to question women's general competence by making them irritable creatures.

Women have made tremendous strides in the workplace, yet very few women reach high positions in areas such as politics and business. Rationality, stability, and competence come to mind as qualities of a good CEO or senator.

Psychologists know that there is no difference between men and women when it comes to human emotions.

In one study that looked at male and female subjects for four to six months, there was no gender difference in the quality or quantity of emotional swings both experienced.

And finally, the PMS myth is a barrier that leaves women unable to address the real causes of their emotional turmoil.

The quality of our relationships, working conditions, social issues like racism and sexism, and the hardships of poverty all influence our day-to-day emotions.

By hiding emotions in the shadow of PMS, women are deprived of the opportunity to understand and address the causes of their negative emotions.

The good news about PMS is that while some women experience symptoms during their menstrual cycle, most of them don't suffer from mental illness.

You can go to work, go to school, take care of your family, and live a normal life.

We know that there's very little difference between men and women when it comes to emotions and moods, so let's say goodbye to the clichéd PMS myth that women are witches and embrace the reality that the vast majority of women lead emotional, professional lives.

thank you

(applause)

Our bodies are made up of very small things, and we live in a very large universe, but we don't have a very good grasp of the world at that scale, because our brains haven't evolved to understand the world at that scale.

Our perception is rather trapped in the very thin area in the middle.

What's even stranger is that we don't see much of what's happening even in that thin realm where we think we belong.

Take the colors of the world, for example.

It's a light wave, and it's perceived by electromagnetic waves that bounce off objects and hit specialized receptors in the back of the eye.

we don't see all wavelengths

In fact, we see only one ten trillionth of the world.

So even though radio waves, microwaves, X-rays, gamma rays are passing through your body right now, you're completely unaware of it, because you don't have the sensory receptors to pick it up.

Thousands of cell phone conversations are going through your body right now, and you can't see them at all.

It's not that you can't see those things in nature.

The world that snakes see includes some infrared, the world that bees see includes ultraviolet, and we have machines in our car dashboards that capture signals in the radio frequency range, and hospitals have machines that capture electromagnetic waves in the X-ray range.

But we ourselves can't sense that, because we don't have the sensors for that, at least not yet.

What that means is that the reality we experience is constrained by our biological bodies, contrary to our belief that our eyes, ears, and fingertips convey an objective reality.

Our brains are really just sampling a small part of the world.

If you look around the living world, you'll find that different living things see different parts of the world.

In the world of ticks, which are blind and deaf, the key signals are temperature and butyric acid.The sensory world of black ghost knifefish is richly colored with electric fields.For echolocating bats, reality consists of compressed air waves.

That's the fragment of the world that they capture, and there's a term for it in science.

It's called Umwelt, which is German for "the world around you."

I'm sure every living creature thinks that their umreal is all there is to objective reality.

We all just accept the reality that is given to us

Let's raise awareness

Think of yourself as a bloodhound dog

The center of the world is "smell"

It has a long nose with 200 million olfactory receptors, and wet nostrils that attract and trap odor molecules.The nostrils are even cut, allowing air to fill the nostrils.

dogs catch everything by smell

One day, you may suddenly notice and stop

And I look up at my human owner and think, "What would it be like to have a poor, pathetic nose like a human being?"

(Laughter) "I could only get a little bit of air.

You don't even know that there's a cat just 100 meters away, or that your neighbor was here six hours ago? ”

(Laughter) We humans have never experienced a world of smells like that, so we don't particularly regret it, because we're so familiar with our environment.

But are we just stuck there all the time?

As a neuroscientist, I'm fascinated by the potential for technology to extend our ubiquitous world and how that might change our experience as humans.

We know that technology can be embedded in biological bodies, and hundreds of thousands of people walk around with artificial hearing and vision.

It works by using a microphone to digitize the signal and connect the electrodes directly to the inner ear.

Or a retinal implant, which uses a camera to digitize the signal and connect a grid of electrodes directly to the optic nerve.

Until relatively recently, 15 years ago, many scientists thought that such technology would not work.

Because these technologies speak the language of Silicon Valley, which is different from the language of biosensory systems.

But it actually works, because the brain is really good at figuring out how to use those signals.

how?

The truth is, the brain doesn't see or hear any of these things.

The brain is housed in a soundless, lightless skull.

All the brain sees are the electrochemical signals coming in through the various cables, and that's all the brain deals with.

The brain is amazingly adept at taking those signals, extracting the patterns and making sense of them, and it's the story that pulls together stories out of this inner universe to create your subjective world.

The key here is that the brain doesn't know where that data is coming from, and it doesn't care.

Whatever information comes in, the brain figures out how to use it.

The brain is a very efficient machine.

It's basically a general-purpose computing device that can take any data and figure out what to do with it, giving Mother Nature the freedom to create different input channels.

I call it the PH model of evolution. I don't want to use too much jargon here, but PH stands for "potato head." I use this name to emphasize that the sensory organs we know and love, whether it's our eyes, our ears or our fingertips, are nothing more than plug-and-play peripherals.

The brain figures out how to use the incoming data.

If you look around the animal world, you'll find a variety of peripherals.

Snakes have infrared-sensitive pit organs, black ghost knifefish have electroreceptors, star-nosed moles use 22 prongs on their snouts to probe their surroundings and create three-dimensional models of the world, and many birds have magnetite that allows them to sense the Earth's magnetic field.

What this means is that nature doesn't have to keep redesigning the brain.

Once the basics of brain function are established, all that's left to worry about is designing new peripherals.

What that means is that our organs are nothing special or fundamental.

It's nothing more than something we've inherited over the long course of evolution

We don't have to cling to it. A good example of this is a phenomenon called sensory substitution.

It's about sending information to the brain through a different channel, so that the brain can figure out exactly what to do with that information.

It may sound like speculation, but the first paper to prove this was published in Nature in 1969.

A scientist named Paul Baquirita had a blind man sit in a modified dental chair, set up a video camera, place an object in front of it, and let the subject feel the image on his back through a grid of cylindrical coils.

So when you move a coffee cup in front of the camera, you can feel it on your back, and blind people have been able to tell with amazing accuracy what's in front of the camera from the stimulation of a small area on their backs.

Since then, a number of more modernized versions of this have emerged.

"Sonar glasses" replace the image of the thing in front of you with the sound landscape.

It's like noise, but after a few weeks, a blind person can get a very good sense of what's in front of them based on that sound.

You don't need to use your ears to do this, but in this system, you attach a grid of electrotactile sensations to your forehead and use your forehead to sense what's in front of you.

The reason for the forehead is because there is not much else to use.

The most recent example is called BrainPort, which attaches a grid of tiny electrodes to the tongue and converts video images into electro-tactile signals that blind people can use surprisingly well, allowing them to throw balls into baskets and navigate complex obstacle courses.

I can see with my tongue

It may sound crazy, but

Remember, vision is nothing more than electrochemical signals running through your brain.

The brain doesn't care where the signal came from.

just figure out how to use it

In my lab, we're interested in sensory substitution for the deaf, and I'd like to introduce you to a project I'm working on with a graduate student, Scott Novick, who is leading this research for his PhD thesis.

What we want to do is transform the sounds around us in some way so that deaf people can understand what's being said.

We wanted to take advantage of the power and ubiquity of mobile devices, and we wanted to make it work with mobile phones and tablets.

let's see the concept

When I speak, the tablet captures the sound and maps it to the many vibrators embedded in my waistcoat, using motors like the ones in your cell phone.

The words I speak are translated into vibration patterns in my waistcoat.

It's not just a concept. This tablet has Bluetooth and I'm wearing that vest right now.

So when I speak -- (Applause) -- that sound translates into dynamic vibrational patterns.

This allows you to feel the acoustic world around you.

We've been testing this on deaf people, and we've found that after a very short period of time, they can feel and understand the language of the waistcoat.

He's Jonathan, he's 37, he's got a master's degree.

He was born severely deaf, so he lacks a part of the normal human world.

So I had him do this vest training for four days, two hours a day, and here's what he looks like on day five.

(Novic) You

EAGLEMAN: Scott says the words, and Jonathan feels them in his waistcoat and writes them on the whiteboard.

(Novic) Where

EAGLEMAN: Jonathan is able to interpret complex vibrational patterns to understand spoken words.

(Novic) Touch

(Eagleman) Jonathan doesn't do this -- (applause) consciously, because the patterns are so complex that his brain is working to decipher the patterns and make sense of the data. We predict that after three months of wearing this vest, he'll have a direct sense of hearing, just like when a blind person slides his finger over Braille, the meaning jumps straight off the page without any conscious effort. just like

This technology has the potential to be game-changing. Currently, the only solution to hearing loss is a cochlear implant, which requires surgery.

What's more, this vest can be made for less than 1/40th the cost of a cochlear implant, and we can make this technology available to the world, even to the poorest countries.

We were so encouraged by the results of sensory substitution that we started thinking about "additional senses."

Could we use technology like this to add a whole new sense of sensation to the human Umwelt?

Could it be possible, for example, to feed real-time data from the Internet directly into the human brain to develop a direct cognitive experience?

This is an experiment we're doing in our lab.

Subjects experienced five seconds of real-time data from the Internet.

After that, two buttons appear, and you choose one of them.

Subjects don't know what data

You will be given feedback after 1 second if your choice was correct.

Now, what we want to see is whether subjects, who don't know what the patterns mean, will be able to correctly determine which button to press.

The subjects don't know that the data we're sending them is real-time stock market data, and that they're choosing to buy or sell with a button.

(Laughter) Feedback is telling us if we made the right choice.

What we want to see is, after a few weeks of training, is it possible to extend the human Umwelt to have a direct sense of how the global economy works?

I'll let you know later what the outcome is.

(Laughter) This is another thing that we're trying to do, during this session this morning, is automatically collect tweets with the TED2015 hashtag and put them through sentiment analysis to see if people are using positive language or negative language.

Throughout this talk, I've been feeling this, because I'm connecting to the collective emotions of thousands of people in real time, and this is a new kind of experience for humans, because I know what they're doing and how much they're enjoying it.

(Laughter) (Applause) This is bigger than most people can usually experience.

We're also trying to expand the pilot's Umwelt.

Here, the vest receives nine different pieces of data from the quadcopter -- pitch, yaw, roll, bearing, direction, etc. -- to improve the pilot's ability to maneuver.

It's like the pilot's skin sensations are extended to far, far away planes.

this is just a start

We want to apply this to modern cockpits filled with gauges, and instead of reading individual gauges, we want to be able to feel them.

We live in a world of information, but there's a difference between accessing big data and feeling it.

I believe that the possibilities for expanding the human horizon are truly limitless.

Imagine, for example, that an astronaut could sense the state of the entire International Space Station, or that he or she could sense invisible health conditions, such as blood sugar levels or the state of his own microbiome, or that he could have 360-degree vision, or infrared or ultraviolet vision.

The key here is that as we move into the future, we will be able to choose our peripherals.

We don't have to wait for Mother Nature to give us our sense organs on a long timescale, because she already gives us the tools we need to go out into the world and decide our path, like all good parents do.

Now the question we have to ask is how do we want to experience and explore our world?

thank you

(Standing ovation) (Anderson) Do you feel this? (Eagleman) yeah

It's the first time I've felt applause in this waistcoat, but it feels good.

It's like I'm being massaged (laughs) (Anderson) Everyone on Twitter is going wild and amazement!

As for the stock market experiment,

If we succeed, we'll never have to worry about funding for research again, right?

EAGLEMAN: Well, I don't have to write a proposal to the National Institutes of Health anymore.

CA: Let's be skeptical for a moment. I think this is pretty cool, but a lot of what we've seen so far is that sensory substitution works, and that doesn't necessarily mean sensory addition works, right?

Isn't it possible that blind people can see with their tongues because they have a visual center that can process information, and that's a necessary building block?

CA: That's a good question. The truth is, we don't know the theoretical limits of what kind of data the brain can take in.

But in general, I'd say it's very flexible.

When a person loses sight, the visual center is taken over by something else, by touch, by hearing, by words.

And then we know that the cortex is unifunctional,

it's just doing some kind of calculation

If you look at something like Braille, for example, you're getting information from the bumps you feel with your fingers.

I don't think there's any reason to believe that there are theoretical limits.

CA: If it turns out to be right, we're all going to be in a rush.

So many possible applications

Are you ready for that? What are you most looking forward to What direction do you see this going?

(Eagleman) I think there are so many applications.

In terms of going beyond sensory substitution, I talked about astronauts on the space station, but I think that instead of spending a lot of time monitoring them, they'll be able to get a sense of what's going on, and that's especially good for multidimensional data.

The key is that our visual system is great at detecting blobs and boundaries, but it's not very good at making sense of the state of the world -- lots of screens with millions of data.

We have to look carefully at each

So I think this is going to be a way to get a sense of what's going on, just like you can know what's going on in your body even when you're not doing anything.

I think sensing the state of heavy equipment, safety, factories and equipment is an area that can be applied immediately.

CA: David, that was an amazing story, thank you very much.

(Eagleman) Thank you Chris (Applause)

I'm very excited to be here today to share what we've been working on for over two years now, a new additive manufacturing technology also known as 3D printing.

see this

It's very simple, but at the same time it's very complex.

A collection of concentric geodesics, each connected to the center.

It's something that can't be produced with conventional manufacturing techniques.

In a symmetrical shape that cannot be injection molded

Can't be made even with milling

It's a 3D printer job, but with most 3D printers, it's going to take you three to 10 hours to make this.

wish me luck

3D printing isn't exactly the right name.

It's really just repeating 2D printing, and the technology used is also related to 2D printing.

Think of inkjet printing, where you put ink on a page to make it appear as text, and you repeat this process to create a three-dimensional object.

In microelectronics, there's a technique called lithography that does the same thing, where you build up structures like transistors and integrated circuits by repeatedly printing them.

This is also a 2D printing technology.

I'm a chemist, a materials scientist, and my co-inventors are also materials scientists, one a chemist, one a physicist, and we became interested in 3D printing.

New ideas tend to come from connecting people with different experiences in different fields, and that was the case with us.

We were inspired by the T-1000 scene in the movie "Terminator 2."

just like that movie

How could you come up with a way to make an idea inspired by a Hollywood movie come true?

this was a challenge

If we can do that, we can solve three problems that are preventing 3D printing from becoming a full-fledged manufacturing process.

The first problem is that 3D printing takes forever.

There are mushrooms that grow faster than they can be 3D printed. (Laughter) The layer-by-layer process introduces weak mechanical properties, but if you can grow it continuously, you can get rid of this drawback.

And if you can make them grow really fast, you can use self-healing materials and things like that, and you can give them amazing properties.

If we can bring Hollywood fiction to life, we can solve the 3D manufacturing problem.

Our approach uses something that's well known in the realm of polymer chemistry: we use light and oxygen to grow parts continuously.

Light and Oxygen Work in Opposite Directions

light changes resin from liquid to solid

oxygen inhibits this process

So light and oxygen are chemically opposites, and by spatially controlling light and oxygen, we can control this process.

We call this CLIP (Continuous Liquid Surface Generation) and it has three components.

One is the reservoir, which holds the liquid, like that scene where the T-1000 comes out.

There's a special window at the bottom of this cistern,

I will explain this later

In addition to this, there is a platform that descends into the reservoir and pulls the object out of the liquid.

The third element is a digital projection system under the reservoir that projects light in the ultraviolet range.

The key is the window under the cistern, which is complex and special.

Not only does it let light through, it also lets oxygen through.

It has the properties of a contact lens.

Let's see how this process works

The pedestal comes down, and in the traditional process, the window is impervious to oxygen, and the two-dimensional pattern is stuck to the window.

But with our special window, while you're shining a light, oxygen can come up from below and interfere with the reaction, creating a blind spot.

This blind spot is a few tens of microns thick, about the size of a few red blood cells, and the part that touches the window pulls the object up while it remains liquid. As I wrote in my Science paper, you can change the thickness of this blind spot by changing the oxygen content.

So there are a lot of variables that we can control: oxygen content, light intensity, curing dose, viscosity, geometry, and we use very sophisticated software to control the process.

the results are very impressive

25 to 100 times faster than traditional 3D printers Change the industry

In addition, we can also send liquids to the boundary, so I think we can do it a thousand times faster. And that's going to create a lot of heat. As a chemical engineer, the problem of heat transfer and the idea of ​​3D printers being so fast and with water cooling really excites me.

Plus, because it's grown continuously, it's homogenous with no layered structure.

no surface structure

You'll find it smooth

It's well known that the mechanical properties of 3D-printed parts depend on the orientation of the print, and this is due to the layer structure.

But growing it this way makes the material properties independent of the printing direction.

It looks like an injection-molded part, and it's very different from anything made with a traditional 3D printer.

In addition, we can bring our entire knowledge of polymer chemistry to the design of chemical reactions that produce the properties we want in our 3D printed objects.

(Applause) It's done. I'm relieved.

It's a common occurrence that things don't go well when it comes to the actual stage.

We can also give the material excellent mechanical properties.

Polymer elastomers with high elasticity or cushioning properties can be used

Applications such as vibration control and excellent sneakers are conceivable.

A very strong material A material with a high strength-to-weight ratio We can create very good elastic polymers.

excellent material properties

If we can give parts properties that can be used in the final product, and if they can be made at breakthrough speeds, it has the potential to revolutionize the manufacturing process.

There's something the manufacturing industry is grappling with right now called the "digital thread."

From CAD design through prototype to manufacturing

A lot of times, this digital thread breaks in the prototype, and we can't make it to manufacturing, because many of the parts don't have the properties of the final product.

Now that we can connect the digital thread all the way from design to prototype to manufacturing, the possibilities open up to all sorts of things, from fuel-efficient cars to new turbine blades to working on superior lattice properties with high strength-to-weight ratios, all the cool stuff.

When a stent is needed in an emergency situation, instead of taking a standard size off the shelf, the doctor can use a stent designed for the patient's blood vessel, a stent that prints in real time in an emergency and disappears after 18 months.

Or digital dentistry can create these structures while the patient is sitting in a chair.

Look at the structures that my students at the University of North Carolina built.

It's a spectacular microscale structure.

We already have excellent manufacturing technology for the nanosize.

For sizes below 10 microns, Moore's Law has driven

We're doing very well on that front, but it's hard to make something in the middle scale, between 10 microns and 1,000 microns.

The subtractive techniques of the semiconductor industry don't work well in this area.

Can't etch wafers well

But this manufacturing technology is very quiet, it's an additive manufacturing technology that grows things from the bottom up, and it opens up a lot of possibilities, like new sensor technology, new drug delivery technology, new lab-on-a-chip technology, you can make amazing things in seconds.

So being able to create parts in real time that have the properties of being the final product makes the dream of 3D manufacturing a reality. And this is really exciting for us, because it's the intersection of hardware, software, and molecular science.

thank you very much

(applause)

What you see here is someone who hasn't been out in public for 10 years.

As you can see, not now, but only recently.

A few months ago, I spoke to a large audience for the first time at the Forbes "30 Under 30" Summit, all 1,500 bright people under the age of 30.

So in 1998, the oldest of them was only 14, and the youngest was four.

Some people have only heard me through rap lyrics

I was joking, yeah I'm in the rap

That's close to 40 songs (laughs).

But the night I gave the talk, something surprised me.

I was 41 years old, and I was seduced by a 27-year-old man.

Surprised, right?

He was attractive and I was happy, but I declined.

What do you think his pick-up line was?

"I'll make you feel like you were 22 again"

(Laughter) (Applause) Then I realized that maybe I don't want to go back to being 22 -- I'm just one 40-something.

(Laughter) (Applause) I fell in love with my boss when I was 22.

At the age of 24, I experienced its devastating consequences.

Raise your hand if you didn't make a mistake when you were 22 and don't regret anything.

As I thought it's like that

Many of you, like me, may have made the mistake of being 22 and fell in love with someone you shouldn't have fallen in love with, and maybe even your boss.

But unlike me, your boss probably wasn't the president of the United States.

Of course, many surprising things happen in life.

Not a day goes by that I don't remember my mistakes, and I deeply regret them.

Swept up in an incredible romance in 1998, and then - swept into the heart of a torrent of politics, law and media like no one had ever seen before.

Only a few years ago, there were only three sources of news: reading newspapers and magazines, listening to the radio, and watching television.

that was it

but in my case it was different

It was through the digital revolution that this scandal became public knowledge.

It gave us access to all the information we wanted, whenever and wherever we wanted.

In January 1998, the news broke on the Internet.

It was the first time that the traditional press had taken big news online, and the clicks reverberated around the world.

For me personally, overnight, I went from being a total private person to being publicly humiliated around the world.

I was the first person to lose personal credibility on a global scale, almost instantly.

Enabled by technology, the populace has been throwing rocks at virtual spaces based on hasty decisions.

Sure, we didn't have social media yet, but we could comment online, we could email stories, we could send heartless jokes.

The media were plastering my picture everywhere, selling newspaper and online banner ads to keep viewers from switching channels.

do you remember my photo? For example, here's a picture of me wearing a beret.

In retrospect, it was definitely a mistake, especially that beret.

Never before has there been so much attention and criticism directed at me, not at the news, but at me personally.

She was branded all sorts of things: whore, whore, lewd, prostitute, whore — and was called "that woman."

Countless people were looking at me, but very few really knew me.

Now I know, what we all tend to forget is that there was a time when "that woman" was a real, real person with a heart and was never hurt.

When this happened 17 years ago, the situation had no name.

Now it's called cyberbullying or online harassment.

I'm going to share with you today what I've been through, how I've developed a cultural perspective through my experiences, and how much I hope my past can lead to change and less suffering.

1998 I lost my credibility and my dignity.

lost almost everything

I was on the verge of losing my life

Let me explain what it was like back then

The time is September 1998

I'm sitting in a windowless, independent prosecutor's office under low, roaring fluorescent lights.

I'm listening to my own voice, which is a covert recording of a phone call from someone I believed to be a friend the year before.

I'm legally required to personally review all 20 hours of recordings of conversations in that room.

For eight months the contents of a mysterious tape have hung over my head like the sword of Damocles.

Does anyone remember what you said a year ago?

Feeling horrified and humiliated, I'm listening I'm the one who talks about nothing I confess my love for the President and my well-deserved heartbreak And then I'm sometimes mean, sometimes unfriendly, sometimes playful Sometimes I'm listening to my own voice, sometimes cruel and ruthless I'm so ashamed of the worst part that I don't even know if it's me

A few days later, the Starr Report will be presented to Congress, containing the full contents of the tape of stolen words.

I was horrified just by reading the contents

In a few weeks, the audio will be broadcast on television, and most of it will be available online.

It was painful to be publicly humiliated

It's getting harder to live

Back in 1998, this kind of situation didn't happen very often. By "this kind of situation," I mean when personal words, actions, conversations, and photographs are "stolen" and published publicly without consent, without context, without compassion.

Twelve years later, in 2010, we already had social media.

Sadly, there are far more cases like mine, regardless of whether or not the person actually made the mistake, famous or unknown.

Some of them have gotten into very serious situations.

In September of 2010, I was talking to my mom on the phone about news about a freshman at Rutgers University named Tyler Clementi.

Tyler was sweet, sensitive, and creative, but his roommate secretly filmed him with a man on his webcam.

When it went viral, it sparked ridicule and cyberbullying.

A few days later - Tyler died by throwing himself off the George Washington Bridge.

was 18 years old

My mom was furious thinking about Tyler and his family.

Eventually, I realized that my mother was going through the pain of 1998 all over again, remembering all the nights when she would snuggle up to my bed — when she let me leave the door open when I took a shower — and when she and my mother had their self-esteem ripped to pieces and feared I was going to take my own life.

There are too many parents today who could not save their beloved children on their own.

Too many parents find out too late that their children are being humiliated and suffering.

Tyler's painful and pointless death was a turning point for me.

Through his death, I began to apply my experience to other contexts, to look at the bullying and humiliation that was happening around me, and to try to find something else in it.

In 1998, we had no way of knowing what this wonderful new technology, the Internet, would bring us.

Since then, incredible connections have been made, estranged siblings have been reunited, lives have been saved, revolutions have taken place.

At the same time, the dark side of things, like cyberbullying and being called rude, as I've experienced, has also proliferated.

Young people who aren't mature enough to handle it are abused and humiliated online every day, and lose the ability to live until the next day.

Some people, tragically, actually choose death.

this is not virtual

Childline, a UK-based nonprofit that helps young people with a wide range of problems, released a startling statistic late last year: between 2012 and 2013, there was an 87% increase in calls and emails about cyberbullying.

A meta-analysis conducted in the Netherlands found that cyberbullying was far more likely to lead to feelings of wanting to die than normal bullying.

And what still shocked me was that another study last year found that humiliation was stronger than happiness or even anger.

Harassing others is nothing new

But online, technology amplifies shame, making it unbounded and permanently accessible.

In the past, the effects of shame were at best confined to families and villages, schools and communities.

But now it's spread to the online community.

Millions of people can verbally hurt someone, often anonymously, and the damage is severe.

There's no limit to the number of people you can openly monitor and expose you to.

Public humiliation comes at a price that individuals pay, and as the internet grows, the price goes up.

Over the last two decades, the seeds of shame and humiliation have been slowly being sown in the cultural soil, both online and in the real world.

Gossip sites, paparazzi, reality shows, politics -- the news media and sometimes hackers are trading shame.

As a result, the internet is dominated by an air of desensitization and laissez-faire, fueling trolling, invasion of privacy, and cyberbullying.

Out of this shift, came what Professor Nicholas Mills called "a culture of humiliation."

Let's take a look at some notable examples from the last six months.

Snapchat is mostly used by young people and the messages sent

It's supposed to disappear after a few seconds, so you can imagine what's exchanged.

But a third-party app that Snapchatters use to keep their messages longer has been hacked, exposing 100,000 of their private conversations, photos and videos to the internet, permanently.

The iCloud accounts of Jennifer Lawrence and several other actors were hacked and private secret photos and nudes were posted all over the internet without their permission.

On one gossip site, this article alone got over 5 million hits.

What about the Sony Pictures hack?

The information that got the most attention was a private email that would be extremely embarrassing if it were made public.

But in this culture of humiliation, there's another price attached to public shame.

The price of shame doesn't include the pain of the victims. It doesn't include the harm to Tyler and many others, especially the women, minorities, gay, bisexual and transgender communities. It includes only the benefits of the humans who prey on them.

Infringing on others becomes raw material, which is efficiently and ruthlessly harvested, packaged and sold for profit.

Public humiliation has become a commodity, shame has become an industry, and a market has been created.

how to make money

The answer is "click"

If you expose your shame, you'll get more clicks

More clicks means more ad revenue

we are in a dangerous cycle

The more you click on gossip like this, the more desensitized you become to the lives of the people behind the gossip.

As you become more desensitized, you click more.

All the while, there's someone making money behind someone's pain.

every time we click we are choosing

As public insults infiltrate our culture, it will become more and more acceptable, and cyberbullying, trolling, and various forms of hacking and cyber-harassment will increase.

Because at the core of all of them is humiliation.

Such behavior is a byproduct of the culture we have created.

please think about it

To change your behavior, you must first change your thoughts.

We've already seen it apply to racism, homophobia, and many other prejudices, both present and past.

More people are getting equal freedom as they change their minds about same-sex marriage.

As sustainability became more important, more people started recycling.

Speaking of cultures of humiliation, what we need is cultural innovation.

Like watching cruel sports and enjoying them, we need to stop publicly insulting them, intervene in the internet and in our culture.

The beginning of change is simple, but it's not easy.

We need to return to the long-held values ​​of compassion and empathy.

Online, we lack compassion, and empathy is in crisis.

Researcher Brené Brown said, "Shame doesn't last as long as empathy."

Shame doesn't last as long as empathy

I had a very dark time in my life

Empathy and compassion from family, friends, professionals, and sometimes strangers have saved me.

Even one person's empathy can make a difference

According to social psychologist Serge Moscovici's theory of minority influence, even small numbers can make a difference if they're consistent.

In the online world, you can foster minority influence by being people of action.

Being a person of action means stopping being an indifferent bystander, posting positive comments about others, and reporting instances of harassment.

Compassionate comments should weaken the power of malice.

We can also counteract the culture of humiliation by supporting organizations that work on this issue, like the Tyler Clementi Foundation in the United States, the anti-bullying program in the United Kingdom, and Project Rockit in Australia.

We always talk about freedom of expression

We need to talk more about the responsibility that comes with freedom of expression.

We all want to be heard, but we should understand the difference between speaking with purpose and speaking for the sake of attention.

The Internet is a superhighway of instincts,

Online, by expressing empathy for others, we can all benefit and create a safer and better world.

We should be considerate when interacting online, considerately reading news, and thoughtfully clicking.

Imagine yourself in the headlines for a moment.

Lastly, let me tell you a personal story.

Over the past nine months, the number one question I've been asked is, "Why?"

Why are you sticking your head out of the trench now?

It seems that this question has a different purpose, but my answer is that it has nothing to do with politics.

The number one answer has always been the same: "Because the time has come."

Because it's time to stop sneaking away from your past, stop living a life of disgrace, and take back your story.

It's not just about saving yourself

Because I want everyone who suffers shame and public humiliation to know that you can survive.

I know it's hard

There will be pain, it won't go away easily, but it's okay to want a different ending to your story.

be kind to yourself

Because everyone deserves compassion and deserves to live in a world of compassion, online and in real life.

thank you

(applause)

watch this video first

(Girl's voice) The cat is sitting on the bed

boy stroking an elephant

people going to the plane

big plane

(Speaker) This is a three-year-old describing a picture he saw.

She may have much more to learn in this world, but she's already an expert at one important task: understanding what she sees.

Our society is technologically more advanced than ever.

We're sending people to the moon, building phones that talk to people, and customizing their radios to play only the songs they like.

But even the most advanced computers still struggle with this task.

I'm here today to tell you about the latest developments in computer vision, a technique that is at the cutting edge of computer science and has the potential to become a breakthrough.

Self-driving car prototypes have been built, but if you don't have intelligent visual processing, you can't even tell the difference between a rolled up paper bag on the road that you can safely step on and a rock of the same size that you should avoid.

We've built amazing megapixel cameras, but they haven't been able to give sight to blind people.

We can fly drones over vast areas of land, but we don't yet have the imaging technology to track changes in rainforests.

Surveillance cameras are everywhere, but they don't warn you if a child is drowning in the pool.

Photos and videos are an integral part of life in the world.

Any individual or team is churning out footage at an unbelievable pace, and here at TED, we're contributing to that.

But even the most advanced software struggles to understand and manage this vast array of images.

Our society is collectively blind, so to speak, because the most intelligent machines are still blind.

You may wonder why is it so difficult

A camera takes a picture like this and converts the light into a two-dimensional array of numbers called pixels, which are just a string of dead numbers.

Numbers by themselves have no meaning

Just as there is a difference between simply hearing a sound and hearing it, taking a picture is not the same as looking at it. Seeing involves understanding.

In fact, it took Mother Nature 540 million years to be able to accomplish this task, and much of that effort was spent developing the visual processing capabilities of the brain, not the eyes themselves.

Vision starts in the eyes, but it really happens in the brain.

For the last 15 years, from my PhD at Caltech to now leading the computer vision lab at Stanford, I've worked with my supervisors, collaborators, and students to teach computers to see.

Our research area is computer vision and machine learning

This is part of the field of artificial intelligence

Ultimately, what we want is for machines to be able to see things like humans do: guess what an object is, identify a person, infer three-dimensional placement, and understand relationships, emotions, actions, and intentions.

We humans can capture the whole story of people, places and things at a glance.

The first step towards this goal is to enable computers to see the things that are the building blocks of the visual world.

In short, you give a computer training images of a particular object, like a cat, and design a model that learns from those images.

Sounds easy, right?

An image of a cat is just a collection of colors and shapes, and that's what we used to do in the early days of object modeling.

Using the language of mathematics, I told a computer algorithm that a cat had a round face, a chubby body, two pointy ears and a long tail, and that seemed to work.

But what about this cat?

(Laughter) My body is completely arched.

We need to add new shapes and perspectives to the object model

But what if the cat is partially hidden?

What about these funny cats?

You know what I mean?

Even something as simple as our domestic pet cat requires us to define an infinite number of variations in our object model, and this is just one of many.

About eight years ago, a very simple but essential observation changed my mindset.

It means that children acquire perspectives early in life without being taught.

Children learn through real-world experiences and examples.

Imagine a child's eye taking a picture every 200 milliseconds with a living camera, which is the average time the eye moves.

So by the time a child is three years old, he or she will have seen hundreds of millions of real-world photographs.

a huge amount of training examples

So what I realized was, instead of just focusing on improving the algorithm, why not give it the amount and quality of training data that a child will receive through experience?

When I realized this, it became clear that we had to collect far more image data than we had, thousands of times more.

Fortunately, we didn't have to walk around with cameras on our heads for years.

We headed for the Internet, the largest repository of images that mankind has ever created.

We downloaded nearly a billion images and labeled them using crowdsourcing techniques like Amazon Mechanical Turk.

At its peak, ImageNet was one of the largest employers of Amazon Mechanical Turk workers, with nearly 50,000 workers in 167 countries involved in organizing and labeling nearly a billion images.

It took a lot of effort to prepare a comparable amount of images for a child to receive in the early years of his or her development.

The idea of ​​using big data to train computer algorithms might seem obvious now, but back in 2007, it wasn't.

For quite some time, no one else was doing this.

A kind colleague even advised me to do something a little more useful for my future career.

I even joked to my students that I should open up another dry cleaners to raise money for ImageNet.

That's what I used to do when I was a student for my tuition.

we keep going

In 2009, the ImageNet project completed a database of 15 million images in 22,000 categories using everyday English.

This was on an unprecedented scale, both in terms of quantity and quality.

For example, there are more than 62,000 images of cats, with different looks and poses, covering everything from domestic cats to wildcats.

We were delighted with the completion of ImageNet, and we wanted researchers around the world to benefit from it, so in the style of TED, we released the entire dataset free of charge to the global research community.

(Applause) Now that we have the data to feed the computer brain, we're ready to work on the algorithms.

And what it turns out is that there's a machine learning algorithm that's better suited to the wealth of information that ImageNet provides, called convolutional neural networks, a realm pioneered by people like Kunihiko Fukushima, Jeffrey Hinton, and Yann LeCun in the 1970s and 1980s.

Just as the brain is made up of billions of highly interconnected neurons, the building blocks of neural networks are neuron-like nodes.

Takes input from other nodes and passes outputs to other nodes

Hundreds of thousands, millions of such nodes, again organized hierarchically, much like the brain.

The neural network we typically use to train our object recognition models has 24 million nodes, 140 million parameters, and 15 billion connections.

very big model

By using ImageNet's massive data sets and the power of modern CPUs and GPUs to train such huge models, convolutional neural networks have blossomed in ways that no one could have imagined.

It's a winning architecture that delivers impressive results in object recognition.

Here the computer tells us that there are cats in the picture and where they are.

Of course, it can recognize things other than cats. Here, a computer algorithm tells us that there's a boy and a teddy bear in the picture. It shows a dog, a person, and a little kite in the background.

In some cases, the computer isn't so sure about what's in the picture. [Animal] We're teaching the computer to guess with certainty rather than guesswork.

When we applied this algorithm to millions of Google Street View images from hundreds of American cities, we made an interesting discovery: First, it confirmed our prediction that car prices correlate well with household income.

But to my surprise, car prices correlated well with crime rates in cities, which also correlated well with voting patterns by zip code area.

then the computer

Are we already catching up and surpassing human capabilities?

don't jump to conclusions

So far, we've only taught computers how to see things.

It's like a small child learning to say some nouns.

It's a tremendous achievement, but it's only the first step.

We have the following developmental goals: Children learn to communicate in writing.

That's why I heard a little girl look at a picture and not just say a cat, but a cat sitting on her bed.

This combination of big data and machine learning needs to take new steps to teach computers to look at pictures and write sentences.

Computers need to learn not only pictures, but also the natural language sentences that humans produce.

We developed a model that connects parts of visual objects, such as image fragments, with words and phrases in sentences, just as the brain connects vision and language.

About four months ago, we finally put it all together and created the first computer vision model that could generate a human-like description of a photograph that we saw for the first time.

Let me show you what the computer said when it looked at the same picture that the little girl described at the beginning.

"Man Standing Next to Elephant"

"A big plane on an airport runway"

We're still working hard to improve our algorithms, and we still have a lot to learn.

(Applause) Computers still make mistakes.

"A cat in a blanket on a bed"

Maybe everything looks like a cat because I've seen too many cats

"Little Boy with a Baseball Bat"

(Laughter) If you've never seen a toothbrush, you can confuse it with a baseball bat.

"A man riding a horse down the road by the building"

(Laughter) Art hasn't taught computers yet.

"A zebra standing in a meadow"

They haven't learned to appreciate the beauty of nature the way we do.

it's been a long road

It was hard going from 0 to 3 years old

But the real challenge is going from age 3 to age 13 and beyond.

Let's take another look at the picture of the boy and the cake.

We taught computers to identify objects, we even taught them to briefly describe pictures.

"Person at a table with cake"

But there's a lot more to this picture than just people and cakes.

What the computer didn't see is that this cake is a special Italian cake that is eaten at Easter.

The boy is wearing his favorite T-shirt that his father gave him as a souvenir from his trip to Sydney.

this is my son leo

In my quest for visual intelligence, I'm always thinking about Leo and the future world that Leo will live in.

Being able to see machines would give doctors and nurses another tireless pair of eyes to help them diagnose and care for their patients.

Cars will drive smarter and safer on the road

Robots, as well as humans, will be able to help rescue stranded and injured people in disaster areas.

With the help of machines, we will discover new species, better materials, and explore uncharted frontiers.

Little by little, we're giving machines vision.

First we teach machines to see

And it will help us to see machines better.

For the first time in history, non-human eyes will begin to think and explore the world.

We will not only harness the intelligence of machines, but we will also see machines and humans working together in unimaginable ways.

My quest is to give computers visual intelligence to create a better future for Leo and the world.

thank you

(applause)

"What country are you from?" asked the pale man with the tattoo.

"Which country are you from?"

September 21, 2001 Ten days after the worst attack on the US mainland since World War II.

everyone is worried about the next plane

people are looking for someone to blame

The night before, the president made a firm oath: "We will either bring our enemies to justice or bring them to justice."

Meanwhile, in Dallas, a Bangladeshi immigrant works the cash register at a convenience store in a small neighborhood surrounded by tire stores and strip theaters.

Raisden Booyan held the rank of Air Force Officer in his home country.

I dreamed of a new life in America

In order to earn money for my IT classes and the marriage I'll have in two months, I can't help but work part-time at a convenience store.

And on September 21st, a man with a tattoo walks into the store.

man holding a shotgun

Raisden knows how to deal with it, put the money on the counter.

But this time the man wouldn't even touch the money.

Ask "Which country are you from?"

"What?" Raisden responds.

You can tell where you are from by your accent

The tattooed man, who calls himself America's true justice, shot Raisden in retaliation for the 9/11 attacks.

Raisden's face feels like it's been stung by millions of bees.

But in reality, a lot of hot shotgun pellets punch a hole in your head.

he fell behind the counter covered in blood

I hold my hand over my forehead to keep my brain out, because I've bet everything on my head.

I recited the Quran and asked God to live

I felt myself dying

he didn't die

lost his right eye

I lost my fiancé

The landlord, the convenience store owner, also kicked him out.

Soon he was homeless, leaving $60,000 in medical bills, including the cost of calling the ambulance.

Raisden was still alive.

Years later, he asked himself, what could he do to repay God's favor and make himself worthy of a new life?

In fact, he came to believe, "This is a second chance for someone who everyone thinks doesn't deserve a chance."

Twelve years ago, I was fresh out of college trying to find my way in society.

Born in Ohio, the son of Indian immigrants, I decided to do the ultimate rebellion against my parents: I decided to move to India, where they had struggled to get out.

I thought I would spend half a year in Mumbai, but now it's been six years.

I became a writer, and I found myself in the middle of a fascinating story, where hope was springing up all over the so-called "Third World."

Six years ago, when I returned to the United States, I realized that the American Dream was alive and well, but only in India.

not so much in America

In reality, America felt disconnected in two separate societies: the dream society and the fear society.

Then I stumbled across the story of two amazing lives -- two Americans who clashed violently in a Dallas convenience store.

Soon, I wanted to learn more, and I ended up writing a book about them, and their story was the story of America's fragmentation and how to fix it.

Even after being shot, Raisden's life never got any easier.

I was discharged from the hospital the day after I was admitted.

right eye lost sight

can't speak

I had a piece of metal stuck in my face.

But I was kicked out of the hospital because I didn't have health insurance.

The Bangladeshi family said, "Come home."

He replied, "I have something to think about."

He found work in telemarketing and later became a waiter at Olive Garden. Is there a better place to overcome white phobia than in an Italian restaurant?

(Laughter) As a devout Muslim, I didn't drink or even touch alcohol.

But I also learned that if I didn't sell alcohol, it would affect my salary.

Like a budding American realist, he reasoned, "God wouldn't want me to starve."

Within months, Raisden became Olive Garden's number one selling alcoholic beverage.

he found the man who taught him data pace management

got a part time IT job

I ended up with a top tech company in Dallas with a multi-hundred-thousand-dollar-a-year job.

Even after the U.S. sided with Raisden, he tried to avoid the common misconceptions that most lucky people have, namely, "This is normal and nothing special."

And he thought, there are a lot of people who were lucky enough to be born in America who never got the second chance he had.

He saw it in Olive Garden, and many of his peers had terrifying childhood experiences of broken homes, disorder, drug addiction, and crime.

During the trial, I heard that the man who shot himself had a similar experience.

As America became more accessible, Raisden gradually came to understand the reality of another America where there are few second chances.

The man who shot Raisden grew up in a poor neighborhood in America.

From a distance, Mark Stroman always seemed to stand out at parties and was good at flattering girls.

No matter how much I drugged and fought the night before, I always went to work.

But he was always fighting demons

He, too, entered society through three barriers that shatter the hopes of young Americans: bad parents, bad schools, and bad prisons.

When he was a child, his mother said frustratedly, "I didn't have $50 to abort you."

He would sometimes go to school and suddenly point a knife at a classmate.

He used to go to his grandparents from time to time and gently feed the horses.

Before I had a beard, I was arrested and sent to juvenile detention and prison.

He was a budding white supremacist, and like many of the kids in the neighborhood, his father was drugged and absent.

Eventually, he was put on death row because he shot not one but three salespeople during his anti-jihad campaign in 2011.

Raisden was the only one who survived

Strangely enough, the first institution Stroman rehabilitated was a death row cell.

The bad old days are gone

People in his life were virtuous and compassionate, pastors, journalists, European pen pals.

They listened, they prayed together, they helped him ask himself questions.

he improved through introspection

I finally faced the hatred that had defined my life.

I read a book by Holocaust survivor Viktor Frankl and regretted my swastika tattoo.

he found god

One day in 2011, ten years after committing the crime, Stroman heard news.

The lone survivor of the shooting is fighting to save his life.

Eight years after the shooting, in late 2009, Raisden went on a pilgrimage to Mecca.

In the crowd, he felt a sense of duty, along with a surge of gratitude.

In 2001, when I was dying, I remembered that I had promised God that if I survived, I would spend the rest of my life serving humanity.

After that, it was all I could do to rebuild my life.

It's finally time to repay the favor

He made a well-thought-out decision to help break the chain of retaliation between the Muslim world and the Western world as a way of repaying kindness.

how can i help

In the name of Islam and the doctrine of mercy, I decided to publicly forgive Stroman.

And he filed a lawsuit against the state of Texas and Governor Rick Perry to stop the execution, which is exactly what people who get shot in the face do.

(Laughter) But Raisden's mercy didn't just come from faith.

As a new American citizen, he has come to believe that Stroman is the offspring of "Wounded America," and it's not just a matter of poisoning.

I was so moved by that idea that I wrote a book called "The True American."

To the nation, Raisden pleaded that, although he was, as it were, adopted by America, he wanted the American-born Stroman to be given the mercy he had received.

At that time, it wasn't two men who collided at the convenience store, but two Americas.

One still strives for the dream, believing that tomorrow will be built on today.

And Raisden was the immigrant, the assaulted, the homeless, the traumatized, the inhabitant of the dream society, while the Stroman was the privileged white-born American, but the polar opposite of the injured society.

I realized that the story of these two men was an American fable.

This country, which I proudly call my homeland, isn't all in decline, and it's not like Spain or Greece, where everyone's future is bleak.

The United States is both the most successful and the most unsuccessful of the developed nations.

We're building one of the world's greatest companies, while a record number of children are starving.

We're building the best hospitals in the world while life expectancy for the majority is declining.

America today is like having a healthy, youthful body that has had a stroke, one half of which is devoid of life, and the other half of which is worrisomely healthy.

On July 20, 2011, shortly after Raisden's tearful testimony calling for an end to Stroman's execution, Stroman was lethal to death at the hands of the country he loved.

A few hours earlier, while Raisden still thought he could save Stroman, the two men exchanged words for the second time since the incident.

this is an excerpt from the phone

Raisden: Mark, I want you to know that I am praying to the most merciful and merciful God.

i forgive you i don't hate you

I never hated you."

Stroman: You are a wonderful person.

thank you from the bottom of my heart

thank you brother

Even more amazingly, after his execution, Raisden reached out to Stroman's eldest daughter, Amber, who has a criminal record and drug addiction.

I offered to help

"You may have lost your father, but you got an uncle," I told her.

Because I wanted her to get a second chance.

If human history were a parade, America's floats would be neon altars of second chances.

But the United States, while generously giving second chances to immigrant children, has refused to even give first chances to American-born children.

America is a shining presence that accepts everyone as an American.

But not all Americans can succeed.

Over the past decade, seven million foreigners have become American citizens.

that's great

On the other hand, how many Americans have achieved middle-class status?

In fact, the number of people is declining.

If we go back in time, things become even more clear. Since the '60s, the middle class has declined by 20 percent, largely because people have fallen out of the middle class.

My research across the country shows that the problem is much more than just inequality.

America's one life was split in two from the center.

The wealthy continue to climb upwards and into a few educated elites and sources of jobs, money and connections, while the poor continue to plummet downwards into the disconnected and stuck lives that the fortunate rarely experience.

Don't worry, you're one of the 99%.

If there's a high-end grocery store near you If you don't have family members who served in the military If you're paid an annual salary instead of an hourly rate If most of the people you know are college graduates You use methamphetamine If you don't know anyone

Previous generations had to emancipate slaves, ride out the depression, overthrow fascism, and build a new society through the Freedom Ride of Mississippi.

The moral challenge of my generation is to reunite these two Americas, aiming not to divide them but to unite them again.

This is not a question of taxation or tax relief

Whether you want to tweet more, build a better app, or start a professional coffee roasting service, it's not a solvable problem.

It's a moral challenge for each of us living in a prosperous America to take our impoverished America as our own problem, just like Raisden did.

We should be able to make a pilgrimage like him.

In Baltimore, in Oregon, in Appalachia, like him, find a new purpose.

By learning about other communities and testifying to their hopes and sorrows, let's ask, like Raisden, what we can do.

What can you do?

what's for you

What can we do?

How can we make our country more compassionate?

We are the most inventors in the world, so we should be able to solve not just our own America, but another America's problem.

We writers and journalists should be able to write articles in that side of America instead of shutting down our offices.

We should be able to fund American ideas on that side instead of ideas from New York or San Francisco.

You should be able to put a stethoscope on the back of your America, teach there, go to court there, build things, pray there.

I think this is the demand of the times.

A divided America will once again learn to walk together, cultivate together, build relationships, and take on challenges.

We're starting a reassembled and renewed "Society of Opportunity."

thank you

(applause)

By the big big jellyfish tank When I first met you at a conference in Monterey I was so embarrassed I was a little delusional because I might have been ecstatic It hasn't happened in years and never will But that's another story The Jill and Julia Show Jill: Sometimes it works Julia: Sometimes it doesn't work Two people: The Jill and Julia Show Julia: By a big, big jellyfish tank I met you for the first time at a conference in Monterey, and I wasn't embarrassed I flew over to you and told you I'm a big fan of yours Ever since you wrote the pilot for Fox, Wendy and I wanted you to write the theme song.

I was very sad because the film was never used, but I've always been a fan of yours.

Then when I had a terribly painful breakup with Carl and I couldn't get up from the couch I heard you sing "You're gone" over and over and over and over again...

I can't believe I actually met you here at TED

And eating sushi in front of a fish tank is crazy because it's completely inappropriate for me personally.

(Laughter) (Applause) I never thought a year later we'd do a show like this Julia: I sing Jill: I talk Two people: The Jill and Julia show Julia: Hey come back! Jill: Are you okay?

Two: Jill and Julia Jill and Julia Jill and Julia Show Jill: Why are all our heroes imperfect? why do you always let me down Why are all heroes so flawed? The statue in the park has lost its crown William Faulkner is drunk and depressed

Dorothy Parker too drunk and depressed

The man in 'Seven Years in Tibet' became a Nazi

All the founders of the nation had slaves

Explorers slaughter American Indians Julia: Horrible.

Jill: The gods of the Old Testament must be so cute Julia: Don't talk like that Jill: Paul McCartney is jealous of John Especially since John died Dylan was so mean to Donovan in the movie Pablo Picasso is ruthless to his wives Julia: Horrible

Jill: All my favorite poets committed suicide Orson Welles was in his prime at 25 And he was getting fatter than ever And he sold bad wine Two: Why are all heroes so flawed, huh? why do you always let me down Jill: Apparently Babe Ruth was a bit of a malice

Lewis Carroll must have had an affair with Alice

Plato Julia in a cave with very young boys: Wow...

Jill: Hillary supported the Iraq war Julia: Even Thomas Friedman supported that war Jill: Colin Powell ended up being two: Sissy guys Julia: William Faulkner was drunk and depressed Tennessee Williams was drunk and depressed

Jill: It's your turn Julia Julia: Okay I wasn't necessarily a huge Oprah fan.

I mean, most of the time I watched Oprah's show was when I was visiting my mother in Spokane, and for her, Oprah has more moral dignity than the Pope, and she's a devout Catholic, so that's actually a big deal.

Anyway, I love Oprah I love her girlfriends I love her weight problem I love her changing the face of TV talk shows I love her bringing back reading habits to America But what's happened in the last two weeks

She spent two whole shows promoting 'The Secret'

Do you know the movie "The Secret"?

This movie made me think, 'What the hell do we know? ' became like a Harvard doctoral dissertation on quantum mechanics, that's how bad it was.

'The Da Vinci Code' became like 'War and Peace'

That movie is terrible, it spreads this terrible pseudo-science

The basic idea is the Law of Attraction, your thoughts have a dynamic energy that reaches out into the universe and attracts good things.

Scientifically, this law is much more than "positive thinking" -- it has a dark side, when you're sick it means you're thinking negatively.

Yeah the movie looks like this Oprah promotes this movie

What I'm saying is my wish for Murray Gell-Mann to appear on Oprah's show and explain that the "Law of Attraction" isn't really a law.

this is what i meant

(Laughter) (Applause) Jill: I sing Julia: I talk Two: Jill and Julia Show Jill: Sometimes it works Julia: Sometimes it doesn't work Two: Jill and Julia Jill and Julia Jill and Julia Show (Applause)

I am a potter.

I know very well about pottery.

I have been doing pottery for 15 years.

Through my artistic practice and my training as a potter, the most fulfilling thing was that I could learn very quickly how to make something great out of nothing, and that I spent a lot of time with clay in my hand and in front of the potter's wheel, and that the limits of my possibilities and abilities were limited to my hands and my imagination -- if I wanted to make a nice vessel and I didn't know how to make the legs to attach it to it, then I could just learn it.

I feel that potters also begin to learn how to shape the world.

On a number of occasions, I've wanted to capture as many of the most important events in American and world history as my artistic ability allowed -- the most devastating ones -- but how do you tell difficult concepts without dividing people from the context?

For example, could we use this piece of old fire hose from Alabama as art to talk about the complexity of the Civil Rights Movement in the '60s?

Can you tell me about a time when you and your father worked together?

My father was a roofer who ran a small construction shop, and when he retired at the age of 80, I inherited a tar kettle.

Tarkettle, as you might imagine, wasn't much of a fortune.

It smells awful, it takes up space in the studio, but I told my dad that we should make some art together, to rethink the possibilities of these worthless materials and think of them as something very special.

By sublimating my father's techniques and materials into art, I wanted to rethink tar as clay for pottery, envision various shapes, and encourage our imagination.

After clay, I became more interested in different materials, and realized that it wasn't the material that made it possible, it was the creativity that made it possible, so my studio grew quite a bit.

Over time, more and more ideas came to me, and more and more I became interested in what was happening outside the studio.

Let me give you a little background. I live in Chicago.

I'm a West Sider now living on the South Side.

It probably means nothing to non-Chicago people, but if I didn't tell them I was a West Sider, there would be a lot of people out there who would be outraged.

I live in a neighborhood called Grand Crossing.

This place used to prosper

In an area far from a high-class residential area

Many vacant homes were abandoned, and while I was busy building my career in art and other creative endeavors, like pottery, outside my studio, everything was happening.

We all know about the declining housing prices and the resulting environmental degradation, and my city seems to be one of the most talked about stories, but I think a lot of American cities and neighborhoods are suffering from an unmanageable amount of abandoned homes.

So I started thinking, can't these buildings be an extension of my artistic practice?

So I thought that if I could work with the people who create it -- the architects, the engineers, the real estate brokers -- maybe I could work with them in more detail to map out how to reinvent and regenerate the city.

so i bought the building

I bought this house very cheaply

and then add to this building

We made this building as beautiful as possible so that there would be some activity in this area.

After buying a building for about 2 million yen, my wallet ran out.

So I started doing building cleaning performances.

I was doing this as performance art, so people would come and see - and then I would start cleaning up.

The broom and sweeping the floor were free.

this was a success

(Laughter) From there, I started doing exhibitions and small dinners in the building, and then I realized that the building on my lot, Dorchester -- the lot is now called the Dorchester Project, and the building became a sort of gathering place for a lot of different activities.

We call this building the Archive House.

There were many wonderful events held at the Archive House.

When famous people from both inside and outside the city visit this district

It made me wonder if there was a connection between my own history of working with clay and this new thing that was emerging, and that we were slowly beginning to reshape people's perceptions of the South Side.

Then, one house grew to two or three houses, and each time we added, it's not just about making a beautiful container, it's also about what's going on in that space.

We were thinking not just about redevelopment, but about the programs that would be held, and what kind of connections would be created between buildings and neighbors.

The building became known as the "Listening House," and books were donated from junk books from Johnson Publishing Co., and junk books from Johnson Publishing Co., and books from the bookstore that closed down.

I wanted to set up things and people to help these buildings to be used as meaningfully as possible.

Chicago is rich in unused buildings.

This building used to be a neighborhood drug depot, but when it became vacant, it created a wonderful opportunity to find new uses for it and repurpose it.

So it turned into a building called the Black Cinema House.

The Black Cinema House is a place to show movies that are important and relevant to people like me who live in this neighborhood, like a Melvin Van Peebles movie.

You can also screen "Car Wash"

I hope it will

It quickly became cramped and needed more space.

Black Cinema House started out as a small block of clay and grew into a larger block of clay, which is now my studio.

People who love urban planning and land use regulations have warned me that what I was doing in an abandoned, vacant house was not what the building was originally built for, and that the city's regulations say, "Use the house as a living space."

But what if it's a neighborhood that no one wants to live in?

Those who had the financial means to move have already left

What do you think should be done with the number of abandoned houses?

So I thought, let's awaken these buildings with culture.

People liked the idea so much that they responded so well to the project that they needed a bigger building.

This concept became possible when we found a larger building,

This building, which we call the "Art Bank," was in terrible shape at first.

A little less than 2 meters of water has accumulated

Banks weren't interested in revitalizing the area, and it wasn't easy to raise money, because no one was interested, because it was empty.

It was a garbage dump, nothing, nowhere, that kind of place

So we started imagining - what could we do with this building?

(Applause) So word spread about my building, and people started coming to it, and what was a bank is now a center of exhibitions, museums, music halls, and people were attracted to this kind of fire that we kind of started, they were interested, they were flocking to these buildings, they were curious, they were flocking to these buildings.

One of them is going to be a museum by Johnson Publishers.

We started collecting memorabilia about American history from people who lived nearby or who used to live there.

Some of these depict oppressed black people, and they reflect a history that speaks strongly to our conscious minds, and that's why we're fortunate in our neighborhoods that young people don't have to constantly question their identities to talk about the complexities of race and class.

In a way, this "bank" symbolizes the hub, because we're trying to create a very full-fledged center of cultural activity. If we were to create multiple hubs like this, and connect them to the greenery around them, and refurbish the buildings that we bought -- there are 60 or 70 right now -- and build a little version of the Palace of Versailles there, and connect those buildings with a beautiful green belt -- (Applause) The place that people shunned is an important purpose that people all over the country and all over the world want to visit. will be the earth

In a way, we feel like potters on a potter's wheel, each with their own unique talents, thinking about what they want to make next.

It went from a vessel to a house, then a neighborhood, then a district, then a cultural area, then an entire city, and all along the way I learned things I never thought I would.

I've never learned so much about zoning laws.

I never thought the day would come when I would learn

As a result, I realized that there are many other artistic opportunities beyond just my own artistic endeavors.

I started getting questions like, "Thiastar, how are you going to expand?"

Like, "What's going on with the sustainability plan?"

(Laughter) (Applause) Just as places like Akron, Ohio, Detroit, Michigan, and Gary, Indiana, needed to -- even though they couldn't put their talents in a box, they had people who believed in the potential and the charm of the place, people who really wanted to make it beautiful, and people who were passionate about those places often had the opportunity to meet the resources and people who could help make those cool things happen. I found myself disconnected from

So now we're starting to advise the nation on how to get started with the resources we have, how to use the resources at hand to create something of value out of nothing, how to reshape the world, whether it's on a potter's wheel, in your community, or on the scale of a city.

Thank you

(Applause) June Cohen: Thank you very much. I know a lot of people are asking themselves the last question. How can we do this in our city? and

I can't let you rush anywhere

What advice would you give to people who are inspired to change their city with a project like yours?

THEASTER GATES: What I've found to be important is that instead of being fixated on one project, like an old house, you look at the relationships and synergies between that old house and your local school, your little grocery store.

Can people meet and start talking?

Even regions that haven't developed healthily still have potential.

How can we find people who have that pulse and that passion, and how can we make people who have lived and struggled in that place for 20 years feel hopeful and inspired about their neighborhoods?

someone has to do it

If I were a traditional land developer, I'd just think about the building, put a "for rent" sign on the window, and be done with it.

In fact, we have to create more than that. There are questions that need to be considered more carefully, such as what kind of business should be nurtured here?

And would the people who live here want to grow that business with me? about it

This is because, rather than simply having cultural facilities and houses, there should be a revival centered on economic activity.

That's why it's best to think about these things at the same time.

COHEN: I think it's going to be very difficult to reinvigorate people who have been in an environment that has been stagnant for 20 years.

Were there any methods that were particularly effective in the past?

Gates: Well, there are examples of how many people are doing great things now, and they sometimes take the approach of, for example, using your skills and context to organize something that will dispel the image of a place where the media is always only reporting on violent events in that place.

So if you're in the theatre, you can do a theater festival outdoors.

Sometimes poor neighborhoods don't have the resources to host a high-profile event, but I think that if we can bring together the local people and the people who support and support what's going on, really great things can happen.

Cohen: It's really interesting.

So how can you make sure that the projects you're creating really serve the underprivileged - and don't just move in and take away the good stuff from vegetarians, indie moviegoers, and all the cool hipsters out there?

Gates: Exactly, and that's actually what leads us to the thick part of this story, which is really complicated.

COHEN: Let's go. GATES: The Grand Crossing is now 99 percent black, or at least the people who live there, and who own the land there, are not the type of people who live there every day.

So I would say that the Grand Crossing is already becoming a different place than it is today.

But would it be possible for a housing and land trust fund (for the public interest) or a public interest development project to begin to protect the land on which activity could take place -- after all, if there were 7,500 vacant lots in a city, we would want some kind of cultural activity to take place there -- but that would require developers not just for profit, but for people to take root and keep the land healthy and developing, and then on top of that. Often times, the aspect of land redevelopment is gaining momentum, but I feel that efforts and initiatives for the benefit of local residents have been forgotten.

Therefore, it is important to develop a system that will ensure that the newly created values ​​and resources are distributed to the residents who have lived there for many years after the redevelopment, as well as to the newly arrived residents.

COHEN: Okay, very good. Tell me one more thing. You make a compelling case for the importance of beauty and art.

Some people would rather spend their money on services to the less fortunate.

How would you argue against such an idea?

Gates: We believe beauty is an essential service to us.

(Applause) What I've often found is that sometimes culture can be a catalyst for poor cities and communities that don't have access to resources in the first place. And of course I can't help everything. changes into demanding demands

Cohen: It really hit me.

Theastar, thank you very much for joining us today.

It was Theastar Gates

(applause)

In my country, I'm called a jerk, a troublemaker, an annoyance, a rebel, an activist, a voice for the people.

But it wasn't always that way

When I was a child, I had a nickname

They used to be called "softies." They were soft and harmless.

Like everyone else, I stayed out of trouble.

When I was a child, I was taught to keep quiet

Do as you're told without arguing

In Sunday school, we were taught not to confront people, not to argue, and to tolerate insults even when you think you are right.

The political climate of the time further encouraged this.

(Laughter) Kenya is a country where everyone is sinful until they get rich.

(Laughter) In Kenya, five times as many poor people are killed by guns as by the police, who are supposed to protect people, than by criminals.

The political environment of the time led to this situation.

There was a president named Moi, he was a dictator.

He ruled the country with an iron fist, and anyone who challenged his power was arrested, tortured, imprisoned, and sometimes killed.

That's why I was told to be a wise coward to stay out of trouble.

The word cowardice is not an insult

cowardice was a compliment

I've been told that cowards can go home to their mothers.

It means you can live as long as you don't get into trouble.

I've always questioned that statement, and eight years ago there was an election in Kenya, and the result was a violent contest.

The elections were followed by terrible violence, rapes, and more than a thousand murders.

My job was to document violent acts.

As a photographer, I took thousands of pictures, and two months later, the two sides met, drank tea, and signed a peace treaty, and thus the country moved on.

Witnessing the violence, I was very depressed emotionally.

I've seen murders, I've seen deportations.

Witnessing a woman being raped shook me, but no one in the country talked about it.

We all turned a blind eye and became wise cowards.

I was determined to avoid trouble and not speak out.

After 10 months, I quit my job because I thought I couldn't take it anymore.

After I quit my job, I decided to get some friends involved and talk about violence in this country, talk about the state of the country, and it was June 1, 2009, and I planned to go to the stadium and get the president's attention.

It's a national holiday, and it's broadcast all over the country, and I went to the stadium.

friend did not show up

I don't know what to do when I'm alone

I was terrified, but I knew very well that I had to make a decision that day.

Will you live as a coward like everyone else or will you stand up?

When the president took the stage to speak, I stood up and shouted at him, "Remember the post-election victims? We need to stop corruption."

Suddenly out of nowhere a policeman pounced on me like a hungry lion.

They grabbed my mouth, dragged me out of the stadium, beat me to the brim and put me in jail.

As I spent the night on the cold cement floor, I lost myself in thought.

What made me want to do this?

I wonder if my friends and family think I've gone mad and acted like this, or how the pictures I've taken have changed my life.

For many Kenyans, it was just a bunch of scraps of paper.

Most Kenyans have never seen violence

it's just a story

So I decided to do a street exhibition, show pictures of violence across the country and get people to talk about it.

I traveled around the country, showing pictures, and this was the beginning of my activist journey, and I decided that I was going to keep my mouth shut and keep talking.

As I traveled, the ordinary places used for street exhibitions turned into places of political graffiti that reflected national conditions such as corruption and misguided leadership.

I also did an abstract burial

They delivered live pigs to the Kenyan parliament as a symbol of politicians' greed.

This was also done in other countries, such as Uganda, and its impact was so dramatic that the footage was picked up by the media and spread across the country and across the African continent.

I started on my own seven years ago, but now I belong to a community of many people working together.

I'm no longer alone in speaking

I'm with a group of young people who have a passion and want to change the country.

this is my story

I stood up as a shrewd coward in the stadium that day.

One single move said goodbye to my coward for 24 years.

There are two important days in life: the day you were born and the day you realize why you were born.

It was the day I stood up in the stadium and shouted at the president, the day I discovered that I was born to stand up for injustice and not be silent.

Do you know why you were born?

Thank you

(Applause) Tom Riley: That was a great story.

let me ask you some questions

About PAWA254, you opened a studio for young people to come and harness the power of digital media to take action like this.

What's going on with PAWA now?

MWANGI: This community is a group of filmmakers, cartoonists, musicians who come together when something happens in the country to brainstorm and address the issue.

Art is the most effective, because in this busy world, people don't have time to read.

That's why we turn our action guidelines and messages into art.

music, graffiti, art

Can I say one more thing?

Of course. (Applause) I was arrested, I was beaten, I was threatened, but then I heard my inner voice, and I was no longer afraid to stand up for what I truly believed.

I used to be called a softie, but not anymore, because I've found my role and I'm doing it, and there's beauty in that.

There is nothing more important than knowing what to do, because you can live your life without fear.

Thank you

(applause)

Today, I want to prove to you that recording a meaningful interview with someone you care about, a friend, or someone you just met for the first time can be the most important moment in your life for them, and for you.

When I was 22, I was lucky enough to find my calling: making radio shows.

Around the same time, I found out that my father, who I was very good friends with, was gay.

It was completely unheard of

We were a close-knit family, so it was a big shock.

One time, in a conversation that ended up being awkward, my father started talking about the Stonewall rebellion.

One night in 1969, young black and Latino drag queens confronted the police at the Stonewall Inn, a gay bar in Manhattan, and sparked the current gay liberation movement.

It's a really great story, and it really piqued my interest.

So I picked up a tape recorder and decided to investigate further.

With the help of a young archivist named Michael Sharker, I tracked down as many people as I could at the Stonewall Inn that night.

What I realized while recording interviews was that the mic gave me permission to go places I never would have otherwise gone and talk to people I would never have spoken to.

I had the honor of meeting some of the most amazing, powerful, courageous people I've ever met.

This was the first time that the story of Stonewall reached listeners across the United States.

I dedicate this show to my father and it changed my relationship and my life.

Over the next 15 years, he made many more radio documentaries, shedding light on people the media rarely mentions.

I've seen time and time again how the simple act of being interviewed can mean a lot to people, especially those who have had the experience of not being taken seriously.

As soon as we started speaking into the microphone, people really straightened up.

In 1998, I made a documentary about the last remaining hostels on Manhattan's Bowery.

Men lived in these cheap inns for decades.

The room they lived in was the size of a prison cell, surrounded by wire mesh so they couldn't jump from one door to another.

Later, I teamed up with photographer Harvey Wang to write a book about these guys.

One thing that left an impression on me was when I went to the guest house with the manuscript of the book and showed him the page where I wrote about myself.

He stood there, watching in silence, until suddenly he snatched the book out of my hand, held the pages above his head, and ran down the narrow hallway and started yelling, "I'm here! I'm sure I'm here!"

(Applause) In many ways, "I'm here" is the quote that inspired StoryCorps.

The idea was to turn documentary making on its head.

So far, documentaries have been about recording interviews for the purpose of producing programs for art, entertainment and education that many people see and hear. But what I wanted to do was a project that was about the interviews themselves.

So 11 years ago, we created a booth in Grand Central Station that anyone could use, a place where people could be honored by interviewing them about their lives.

When you come to the booth, there is a facilitator who will guide you inside.

And then, for example, I sit in front of my grandfather and listen and talk to him for nearly an hour.

A lot of people think, "If this was our last conversation, what would I ask and say to this precious person?"

After the interview, you will receive a copy of the recording, and another copy will be sent to the Center for American Folklore at the Library of Congress, so that one day your great-grandchildren will have a chance to learn about your grandfather.

We've set up this booth in one of the world's busiest downtown areas, where people can have super intimate conversations with other humans.

I had no idea how it would turn out, but it worked right from the start.

Everyone really took this experience very seriously, and we had some really great conversations in the booth.

I'm here to show you an animated excerpt from an interview that was recorded in the Grand Central Terminal booth.

12-year-old Joshua Littman interviewed his mother Sarah.

Josh has Asperger Syndrome

As you may know, children with Asperger's are incredibly smart, but they struggle socially.

often have strong feelings

For Josh, it's an animal. Listen to this conversation between Josh and his mother, Sarah, at Grand Central Terminal nine years ago.

Josh Littman: What do you think life would be like out of 10 if there were no animals?

Sarah Littman: Life without animals is an 8, because animals give me so much joy.

Josh: How do you think life would have been different without animals?

Sarah: You don't have to have cockroaches and snakes.

Josh: I'm fine with snakes, as long as they're non-venomous and don't constrict.

Sarah: Well, I don't like snakes. Josh: Cockroaches are hated too.

Sarah: Sure

Josh: Have you ever thought that having kids was hard?

Sarah: I remember when you were a baby you had terrible colic and you cried all the time.

Josh: What is colic? Sarah: I'm so hungry that I cry for hours.

Josh: Louder than Amy?

Sarah: You were loud, but Amy's was high-pitched.

Josh: Everyone seems to like Amy better, like a little angel.

Sarah: I know you think Amy is liked more, but it's not because of Asperger's Syndrome.I think it's because Amy is easy to get along with and it's hard for you.But people who take the time to get to know you love you.

Josh: Like Ben or Eric or Carlos? Sarah: Yes. Josh: Are you saying that you don't have many friends, but you have high quality friends? (Laughter) Sarah: I'm not going to say anything about quality, but... Josh: Because Amy likes Claudia, then hates her, then loves her again, and then hates her.

Sarah: That's what girls often do.

What's important to you is that you have a few best friends, that's what you really need in life.

Josh: Did I become the son my mother wanted me to be when I was born?

Did your mother live up to your expectations?

Sara: You've exceeded my expectations. I know I have a lot of imagination for my children's future, but because of you, I've grown as a parent.

Sarah: You've made me a parent, yes.

Josh: Were you helpful with Amy?

Sarah: More than useful, you're so special, I'm so lucky to be your parent.

(Applause) Dave Isay: When this story aired, Josh got hundreds of letters, praising him for his greatness.

His mother, Sarah, compiled the letters into one volume and read them with Josh when he was bullied at school.

These two heroes are here, let me introduce them.

Sarah Littman and her son Josh, who is now a college scholarship student.

(Applause) Many of you have said that StoryCorps made you cry, but not because it was sad.

most are not

I think it's because I've heard stories of pure truth, because nowadays it's often hard to tell what's real and what's advertising.

This is anti-reality TV, so to speak.

no one comes for the money

no one comes to be famous

It's just an act of love and compassion.

They're mostly ordinary people, and they tell stories about lives lived with kindness, courage, decency, and dignity.

The experiment at Grand Central Station was successful, and now we're rolling it out nationwide.

To date, more than 100,000 people have recorded StoryCorps interviews in thousands of cities across all 50 states.

It's the largest collection of real voices ever.

(Applause) We've recruited and trained hundreds of facilitators to guide interviews.

Many people travel the country for a year or two, working for StoryCorps and collecting the wisdom of humanity.

They say their role is that of a witness. If you ask the facilitator, they'll all say, "The most important thing I learned from being an interviewer is that people are inherently good."

Yes, the first year of StoryCorps may have been a biased selection, but after tens of thousands of interviews with people from all walks of life, in every corner of the country, rich and poor, from ages 5 to 105, with diverse political views and speaking 80 languages, it's hard not to believe their testimony is true.

I also learned a lot from the interviews.

I've learned that you can find poetry, wisdom and grace in the words of the people closest to you. All you have to do is make time to listen. For example, in this interview, Danny Peraza, a gambling clerk in Brooklyn, brought his wife, Annie, to StoryCorps to share his love for her.

Danny Peraza: Listen, listen to me, I always feel guilty when I say "I love you"

I'm so ugly that I always say "I love you"

It's like listening to a beautiful song on an old broken radio But it's nice to have a radio at home

Annie Peraza: When there's no note in the kitchen, I wonder what happened.

Because it's a love letter every morning Danny: No matter what happens

I can't even find my pen Annie: "Dear Princess—

Today's weather is heavy rain

I'll call you at 11:20 am."

Danny: It's a romantic weather forecast

Annie: "I love you, I love you, I love you."

Danny: For a man, a happy marriage means no matter what happens at work, no matter what happens that day, when you come home and have a place to feel safe, someone to hold you, and you don't get pushed down the stairs by someone telling you to let go.

Marriage is like color TV

I can't go back to black and white

(Laughter) Dave: Danny is less than six feet tall, cross-eyed, and has one buck tooth.

I learned something else

The heart that forgives others has an unimaginable capacity

resilience and human strength

For example, an interview with O'Shea Isriel and Mary Johnson.

As a teenager, O'Shea murdered Mary's only son, Laramian Byrd, during a gang war.

A decade or so later, Mary visited the prison to meet O'Shea to find out who it was who had taken her son's life.

Amazingly, the two eventually developed a friendship, and when O'Shea was released from prison, he moved next door to Mary's house.

This is just a snippet of a conversation between the two, recorded by StoryCorp shortly after he was released.

Mary Johnson: My real son is no more

I didn't see her graduate, but now you're going to college.

so i can see your graduation

I didn't see her marry

But I hope someday I can be at your wedding

O'Shea Isriel: That's what keeps me alive

Help me stay on the right track

I think it's really amazing that you believe in me, even though I made you suffer so much.

Mary: It's not an easy topic to talk about, even if we're sitting face to face like we are now.

I know it's not easy, so I think it's amazing what you tell me.

O'Shea: I love you Aunt Mary Mary: Me too, O'Shea

(Applause) Dave: I'm reminded over and over again of human courage and goodness and how history is moving in the right direction.

Take Alexis Martinez, for example, when she was born in Chicago's Harold Ikes Public Estate, she was Arthur.

In this interview, she tells her daughter, Leslie, about being in a gang when she was young, and later becoming a woman, and how it was destiny.

Hear the story of Alexis and her daughter Leslie.

Alexis Martinez: The hardest part for me was that I was always worried that I wouldn't be able to get close to my granddaughter.

And what really paid off was my relationship with my granddaughters.

Leslie Martinez: Leave it there

Alexis: To be able to speak freely seems like a miracle to me.

Leslie: No apologies, no sneaking around.

I won't cut ties with you, so I want you to understand that because my mother loves me

Alexis: I feel it every day.

Walking down the street as a woman gives me peace of mind

I wish my voice was a little softer But now my heart is filled with love And that's how I try to live every day

Dave: "Now my heart is filled with love"

Let me tell you the secrets of StoryCorps

It takes a little courage to have this kind of conversation, doesn't it?

So let me remind you that life is finite.

The user knows someone will listen to the recording long after they die.

Hospice doctor Ira Byak is working with us to record interviews with dying people.

In his book, The Four Most Important Things, he describes the four words that should be said to him or the person he cares about the most before he dies: "Thank you," "I love you," "Please forgive me," and "I'll forgive you."

It's one of the most powerful words we can communicate, and it's often heard at the StoryCorps booth.

This is a chance to organize your heart with someone important to you, so that you don't have any regrets or miss something.

It's hard and it takes courage, but isn't that what we live for?

Now about the TED Prize.

When I heard from TED and Chris a few months ago that I was a potential winner, I was incredibly surprised.

And he asked me to think briefly about my hopes for humanity in 50 words or less.

So I thought about it, and I put it into 50 words, and a few weeks later, Chris called me up and said, "Let's go with this."

My hope is, "I want to help you spread everything we've learned through the work of StoryCorps around the world so that anyone, anywhere can easily record a meaningful interview with someone and write it on the page of history."

So how do we make it happen? use this

A future in which anyone in the world can use a smartphone is rapidly becoming a reality.

I have a microphone, can you tell me how to do it, I can send you an audio file.

this is the key factor

So half of my wishes are already underway.

Over the past two months, the development team has been working furiously to create an app that takes StoryCoprs outside the booth so that anyone can experience an interview anytime, anywhere.

In StoryCorps, there's always a facilitator in addition to the two people you're interacting with, who will help you record the conversation, and the recorded conversation will be saved forever.

It's a kind of digital facilitator that walks you through the StoryCorps interview process step by step, helps you choose questions, gives you the tips you need to record meaningful interviews, and uploads the recordings to the Library of Congress archives with a single tap.

Now that's the technical side, the easy part.

The real challenge is for you to take this tool and figure out how to use it across America and around the world, so that you have the potential to go from thousands of interviews a year to tens of thousands, hundreds of thousands, or even more.

Imagine, for example, giving high school students all over the country the same homework on American history, asking them to interview and record their seniors over the Thanksgiving holiday, so that in just one weekend, you could document the lives and experiences of an entire generation of Americans.

(Applause) And what if, in some part of the world in conflict, mothers on both sides talk not to talk about conflict, but to find each other's true selves as people and thereby begin to build a bond of trust. and ask them about who they really are, what they've learned in life, and how they want to be remembered.

(Applause) Ten years ago, I recorded an interview for StoryCorps with my father, a psychiatrist who later became known as a gay activist.

Here is a picture of us doing an interview

I forgot I recorded it, but about two years ago, my father, who seemed perfectly healthy and had been seeing doctors for 40 hours a week, was diagnosed with cancer.

My father died suddenly a few days later.

June 28, 2012 was the anniversary of the Stonewall mutiny.

I heard that interview for the first time at three o'clock in the morning of my father's death.

I have two children at home, and that interview was the only way for them to get to know the man who was so great to me, my father.

I thought I believed in StoryCorps as much as I could, but that's when my whole body and my heart understood the importance of recording.

Every day, many people come to me and say, "I wanted to interview my father, my grandmother, my brother, but now it's too late."

But don't wait any longer

In an era where most of our communication is fleeting and irrelevant, I want you to join us in digitally archiving important conversations that will last forever.

Please help us leave a testimony of who we were as a gift to our children.

Please help us to make this wish come true

Interview family, friends and even strangers.

Then we can all archive human wisdom, and perhaps by doing so, people will learn to listen better and be less vocal.

Through such conversations, you may be able to remember what really matters.

And maybe one day we'll discover the simple truth from those conversations: that everyone's life is equally and supremely important.

thank you

(Applause) Thank you, thank you.

(Applause) Thank you.

(applause)

When I wrote my autobiography, the publishers were confused.

Is that book about when I was a refugee? Is it the story of a woman who founded a high-tech software company in the 1960s, went public, and eventually grew it into a company with over 8,500 employees?

Are you talking about the mother of a child with autism?

Or are we talking about philanthropists who donate big bucks?

actually it's all about me

let me tell you my story

It all started when I boarded a train in Vienna, one of the Kinder Transports that saved nearly 10,000 Jewish children from Nazi-controlled Europe.

When I was five years old, I held my nine-year-old sister's hand and didn't know what was going on.

"What is England? Why are you going there?"

I am alive today because of generous strangers.

I was lucky, but even luckier was later reunited with my birth parents.

But sadly, we weren't able to form a deep bond.

But in the 70 years since that hard day when my mother put me on the train, I've accomplished things I never could have imagined at the time.

I love my adoptive England so ardently, perhaps a feeling peculiar to those who have experienced the loss of their human rights.

I vowed to live my life in such a way that it was worth saving me.

and just pushed through

(Laughter) It was the early 1960s.

To avoid the sexism of the time, I started my own software company, one of the first start-ups in the UK.

It was also a company built by women, for women, and an early social business.

Everyone laughed at the idea, because back then software was free with the hardware.

There can be no one who "buys" software, especially from a woman.

By that time, the woman had already graduated from college with a decent degree, but there were invisible obstacles to her progress.

I was just hitting that glass ceiling, and I wanted equal opportunities for women.

I hired professionally qualified women who left the industry because of marriage or pregnancy, and built a work-from-home organization.

It spawned the idea of ​​women returning to work after taking a career break.

One after another, we developed new flexible working arrangements: job-sharing, profit-sharing, and "co-ownership." We gave every employee, except me, a quarter of the company for free.

For a long time I was called the first woman, the only woman.

At that time, as a woman, I couldn't trade stocks, I couldn't drive a bus, I couldn't fly an airplane.

The truth is, I couldn't even open a bank account without my husband's permission.

Women of my generation fought for the right to work and for equal pay.

Neither workers nor society could hope for much help, because at that time women were only expected to have home and family responsibilities.

But I couldn't take it, so I decided to defy the norms of the time, so much so that I changed my name from Stephanie to "Steve" when I wrote my business development letter, so I could get through the door before they knew I was a woman.

(Laughter) My company, Freelance Programmers, lived up to its name. It started very small, it was a dining table, and it was funded, in today's terms, about $100.

I was really interested in science, and I thought that dealing with the marketplace was nothing more than a payroll, commercial and boring.

So I compromised by doing operations research, which was an intellectual challenge that fascinated me, had commercial value, and was appreciated by my clients, like scheduling freight trains, creating bus schedules, and managing vast amounts of inventory.

I started getting a job

To hide the fact that employees were working from home and part-time, they had a fixed price, which was pretty much the first company to do it.

Who would have thought that women would program the flight recorder in the black box of the Concorde supersonic airliner in the first place?

(Applause) All we had to rely on was a "Trust Your Employees" policy and a phone call.

I would always ask job applicants, "Can you answer the phone?"

An early project was to develop standards for software quality control procedures.

Software is, and has always been, frustratingly difficult to quality control, so this was extremely valuable.

We used this standard ourselves, and we paid to update it over the years, and eventually it was adopted by NATO.

Our programmers were all women, including gays and transgender. They drew out flowcharts with paper and pencil that defined each task.

The program was then written, usually in machine language, sometimes in binary code, and mailed to a data center where it was punched onto paper tapes or cards and then punched back for verification.

There was so much work to do before we got to the computer.

This was programming in the early 1960s.

In 1975, 13 years after we started our business, the Equal Employment Opportunity Act was enacted in England, making our women-first policy illegal.

One of the unintended consequences was the need to hire more men into an all-women's company.

(Laughter) When I started an all-female company, men used to say, "It's fun, but we can do it because we're small."

And then, as the company got bigger, they admitted, "Yes, we've grown -- but it's just not interesting from a business strategy point of view."

And then later, when the company was valued at over $3 billion, and 70 of its employees were millionaires, they said, "Good job Steve!"

(Laughter) (Applause) You can tell an aspiring woman by looking at the shape of her head, because she's got a flat top from a man who keeps hitting her from above.

(Laughter) (Applause) My legs are oversized, and I can stand on my feet away from the kitchen.

(Laughter) Let me give you two tips for success: Surround yourself with the best people and people you love, and choose your spouse very carefully.

Because I said to a woman the other day, "My husband is an angel," and she complained, "You're lucky - my husband is still alive."

(Laughter) If success were easy, we would all be millionaires.

But when my success came, my family was in the midst of pain and crisis.

His late only son, Giles, was adorable and content when he was a baby.

Then, at the age of two-and-a-half, he lost even the slightest word, and became a wild and unruly child, like a change child in a fairy tale.

Not a rebellious two-year-old. He had severe autism and never spoke again.

Giles was the first resident of the first charity-built facility I founded to develop services for people with autism.

Since then, he founded Pryor's Court, a pioneering school for children with autism, and has been a philanthropic charity for the medical research of autism.

Whenever there was an untouched part of the service, I reached out.

I like to start new things and new things

We're just starting a three-year think tank on autism.

And then I started the Oxford Internet Institute and the IT ventures, so that I could give some of it back to the industries that made me wealthy.

The Institute's focus is not on the technology itself, but on the social, economic, legal and ethical issues of the Internet.

Giles died unexpectedly 17 years ago.

Since then, little by little, I've learned to live without my son, without him depending on me.

Charity is everything to me now

Don't worry about getting lost, some charity will find me soon.

(Laughter) It's easy to come up with a business idea.

I'm really glad that I'm a workaholic

I think that work is great if you do it properly and discreetly.

For me, work is not something I do when I want to do something else.

we live forward

So what have I learned from this?

"Tomorrow will never be the same as today, and it will certainly be different from yesterday."

So I learned to adapt to change, and eventually to embrace change, even though people say I'm still very stubborn.

Thank you very much

(applause)

(clicks tongue) I was born with binocular retinoblastoma, retinal cancer.

His right eye was removed when he was seven months old.

At 13 months, he had his left eye removed.

As soon as I awoke from this operation, I got out of my crib and started walking around the pediatric intensive care unit.

(Laughter) Apparently, without both eyes, he had no problem getting around the intensive care unit.

The problem was that someone found

The impression of "blindness" is far more terrifying to blind people than the blindness itself.

Think about your impression of "blindness."

Think about your reaction when I came on stage - about going blind for yourself or someone you love.

That fear is something most of us can't comprehend, because being blind is the epitome of ignorance and ignorance, and being pitifully exposed to the devastation of the unknown darkness.

how poetic

fortunately my parents are not poetic

was practical

My parents understood that ignorance and fear were just a matter of mindset, and that mindset could be changed.

My parents believed that I should grow up with the same freedoms and responsibilities as everyone else.

My parents told me that one day I would move out -- in fact, when I was 18, I did. And I would pay taxes. Yeah, sure -- (Laughter) They knew the difference between love and fear.

We are immobilized in the face of difficulties by fear.

I knew my parents would face great difficulties because they were blind.

I was raised fearless

My parents made my freedom my number one priority because that's what love is supposed to do.

Now let's move on, how am I living now?

The world is much bigger than a pediatric intensive care unit.

Luckily, I have a trusty long cane, longer than most blind people use.

I call it the "freedom wand"

And that's why, for example, you don't have to leave the stage rudely. (Laughter) You can see the edge of the stage here.

You've told me all the failures that have happened to the speakers on stage.

It would be nice to set a new precedent

But more than that, you could hear the sound of my tongue clicking as I came up to the stage.

These flashes of sound, when emitted, bounce off the surface around them and return information in patterns like bat echolocation (sonar), which is like light to you.

My brain is activated by my parents to form images in the visual cortex, which is called the imaging system, and just like your brain, it forms images from information.

I call this process flash sonar.

This is how I learned to see through being blind, to navigate the unknown darkness of difficulty, which has earned me the nickname "Great Batman."

"Batman" would be nice

bats and batman are cool

But I wasn't raised to think of myself as "great."

I've always considered myself, like everyone else, walking through the unknown darkness of difficulty.

Is this really that "great"?

Until I don't use my eyes, I use my brain

Somebody somewhere is thinking, "That's amazing," or, "I can't go up there." So let's think about that.

Raise your hand if you have ever faced any difficulty

oh good

A lot of hands are raised, let's count

(clicks tongue) It's going to take a while (clicks tongue) (Laughter) So many.

I have a good idea

Hands up if you've used your brain to get through the tough times.

Now, if you're still raising your hand, you have a very unique challenge. (Laughter) We all face challenges, we face the darkness of the unknown.

But we have a brain that activates and guides us through these challenges.

Here's a good example: I came up here -- (clicking tongues) -- and nobody told me where the podium was.

You can't trust the people at TED.

I was told, "Find it yourself."

So -- (Laughter) the feedback about the sound system was "absolutely useless."

Challenge everyone

Could you close your eyes for a moment?

Let's learn a little about sonar

i make a sound

I'll hold this panel up, but I won't move it.

listen to some sounds

Shhh

ok it's not very interesting

So what happens if you play the same sound and move the panel?

Shhh (sound goes up and down) You don't know the power of the dark side

(laughs) I just can't stand it.

Now, with your eyes closed, can you tell the difference?

so let's check

So here's a challenge for you: when you think you've started moving the panel, say "now."

Sounds good? Please relax

Shhh

Audience: Now Daniel Kish: Great

please open your eyes

Okay, it's just a few centimeters, but you can tell the difference.

you have experienced the sonar

(Laughter) So let's see what happens when we invest time and attention into this activation process.

(Video) Juan Luis: People see with their eyes – we see with our ears

Brian Bushway: It's not a question of having more fun, it's having a different way of having fun

Sean Marsole: Across here- Kish: Yes.

Marsole: Then it's going downhill.

Kish: Yes! Marsole: That's great.

I can actually see the car Surprise!

J. Luchard: I like being blind

I wouldn't want to have sight even if I had the chance

Luis: The higher your goal, the more obstacles you face.When you overcome that goal, you win.

[Italian] (Applause) Kish: Well were they scared?

That's not true

We've given activation training to tens of thousands of blind and sighted people from a variety of backgrounds in about 40 countries.

When the blind can see, the sighted people are unafraid to want to know more clearly about how they see, because this represents the incredible potential that we all have, if we activate our ability to find the unimaginable in all the darkness and through all the obstacles.

May you live a vibrant life

thank you

(Applause) Chris Anderson: Thank you, Daniel.

As you can see, the TED crowd is buzzing.

thanks for the great talk

I have one question about your world that you're building inside.

People think there are things in the world that blind people don't have. What does your world look like?

What do you have that we don't have?

Kish: It's a 360-degree panoramic view. My sonar sees both front and back.

You can even see the corners

You can also grasp the surface

It's kind of like a slightly blurred three-dimensional structure.

One of my students, who is now an instructor, said that a few months after she lost her sight, she realized that when she was sitting in her three-story home, she could hear all the sounds in the house: conversations, kitchen noises, bathroom noises -- all the way downstairs, and all the way across.

It was like seeing through X-rays.

Anderson: How do you describe where you are now?

How do you envision this stage?

Kish: You have a lot of loud speakers.

The funny thing is, if someone makes a noise -- laughing, moving, drinking, blowing their nose -- whatever, I can hear it.

Even the slightest movement that each person makes can be heard.

My attention is bound to capture, in terms of sonar, the size of the room, the curve of the audience surrounding the stage, the height of the ceiling.

As I said, a three-dimensional structure surrounds me.

Anderson: Daniel You gave us all a different way of looking at the world.

Thank you very much Kish: Thank you

(applause)

When we were kids, the disaster we feared the most was nuclear war.

In the basement, there was a barrel like this, in which canned goods and water were stored.

When a nuclear missile flies by, we go underground, crouch down, and eat the food in the barrel.

The greatest global crisis today doesn't look like this

Instead it would be something like this

If there is a disaster that will kill more than 10 million people in the next few decades, it will most likely be caused by a highly contagious virus rather than by war.

It's not a missile, it's a microbe.

One of the reasons is that we've spent so much money on nuclear deterrence.

About creating a control system for the epidemic, very little has come of it.

So we are ill-prepared for the next epidemic.

Let's take the example of Ebola

I'm sure all of you have read about Ebola in the newspapers, it's a very serious crisis.

We tracked Ebola using the case analysis tool we used to track polio eradication.

What we observed was not that the system was inadequate and unable to handle the situation, but that the system didn't even exist in the first place.

In fact, some very obvious missing pieces are

There was no group of epidemiologists who could -- and should have been -- available at short notice to monitor and analyze the spread of the epidemic.

The case report was sent to me on paper.

It took a long time to digitize the report, and it was full of errors.

There's no team of medical workers to respond to the call.

There was no way to get people ready or organized.

Doctors Without Borders did a very good job of directing the volunteers.

And yet we were wasting our time sending thousands of supporters to these countries.

A large-scale epidemic requires hundreds of thousands of support staff.

There is not even a single person on site to check if treatment is being carried out properly.

People looking at diagnostic methods

No one was there to judge what tools should be used.

If we had staff, we could, for example, take the blood of survivors and then make serum and inject it into people to try and build immunity.

but it didn't come true

So there were a lot of things that were overlooked.

These are failures on a truly global scale.

The WHO has research funding to monitor epidemics, but it doesn't have the funding to do this.

movies are very different from reality

These good-looking epidemiologists are always ready to go, they rush to the scene, and they succeed in helping, but that's the fantasy world of Hollywood.

The next epidemic could be dramatically more devastating than Ebola, just because we're not prepared ahead of time.

About 10,000 people died, almost all of them from three West African countries.

There are three reasons why the infection did not spread any further.

The first is the heroic efforts of health workers.

We found an Ebola patient and prevented it from spreading.

The second is the nature of this virus.

Ebola is not airborne

By the time a patient becomes a source of infection, they are usually too sick to move from bed.

Third, the epidemic did not reach urban areas much.

this is just luck

If Ebola had spread to urban areas, the number of cases would have been much higher.

I may not be so lucky next time

Some viruses are infected but have no symptoms, so they just get on a plane or go to a market.

Viruses can come from natural epidemics like Ebola, or from bioterrorism.

So there are many reasons why the scenario could be dramatically worse.

Let's take a look at this model of airborne virus spread, the example of the 1918 Spanish Flu.

This is what happened, and it spread like wildfire around the world in the blink of an eye.

More than 30 million infected people died

this is a critical issue

must be taken seriously

But the truth is, we can create a better system of countermeasures.

We already have science and technology that we can take advantage of.

We can obtain information that has been published on mobile phones, and vice versa, we can transmit information from here.

Satellite imagery allows us to know where people are and how they move.

Thanks to advances in biology, the time to make drugs and vaccines for pathogens can be dramatically reduced.

We have the tools, but these must be integrated into the global health system.

And we need to create a system to prepare for crises.

The lesson for that is, again, I think we can learn from preparing for war.

Soldiers always ready for call-up

We have plenty of personnel and resources to scale up the countermeasure unit.

NATO has a task force that can get there very quickly.

NATO conducts frequent wargames to ensure personnel are adequately trained?

Do you understand the fuel and logistics situation? What is the radio frequency setting?

That's how the personnel are always perfectly ready to go.

This is what we need to fight the epidemic.

So what are the main key pieces?

First, poor countries have strong hospital and health care systems.

It's a system that ensures that mothers can give birth safely and that their children receive all the vaccines they need.

You can catch the early signs of an outbreak there.

Next, we need a standby force of health workers, trained and experienced in health care, who are ready to call and have expertise.

and link them up with the military

We can use the military's mobility to secure logistics and quickly isolate infected areas.

It's not about war, but about simulating the spread of bacteria to uncover the missing elements for countermeasures.

The last time bacteria were simulated in the United States was in 2001, and the results weren't great.

Humanity has lost the battle against germs so far.

Finally, we need more research and development in the areas of vaccines and diagnostics.

And there are some spectacular breakthroughs, like adenoviral vaccines, that act very quickly.

I don't know the exact budget that this will require, but I'm pretty sure it's nothing compared to the potential damage.

The World Bank estimates that a global influenza pandemic could cost global assets more than $3.6 trillion, plus millions of deaths.

These investments will yield big returns beyond just being prepared for the epidemic.

primary care research and development these will improve equity in health globally and make the world a fairer and safer place.

So I think this is an urgent issue.

No need to panic

No need to stock up on canned spaghetti or run into the basement.

But time is not on your side, so you have to start working now.

In fact, if there's one good lesson to be learned from the Ebola epidemic, it's that it's a wake-up call for us to start preparing.

If we start now, we'll be ready in time to fight the next epidemic.

thank you

(applause)

hello i'm kevin

I'm from Australia and I'm here today to help.

(Laughter) Tonight, I'm going to tell you a story about two cities.

One is the city of Washington and the other is the city of Beijing.

Because how these two capitals shape the future of our cities, the future of the United States and China, affects not just the two countries, but all of us, in ways we never thought possible. It affects the air we breathe, the water we drink, the fish we eat, the quality of our oceans, the language we speak in the future, our jobs, our political systems, and even the big questions of war and peace.

Do you know this person? he is french

My name is Napoleon

Hundreds of years ago he made a great prophecy, "China is a sleeping lion, and when it wakes up the world will shake."

Napoleon made a few mistakes, but this prophecy is completely correct.

Because today's China is not only waking up, it's marching, and we have to think about where China is going and how it's going to engage with this giant of the 21st century.

The numbers you see tell a lot of facts.

China is projected to be the world's largest economy in the next decade, by any measure of purchasing power parity or market value.

China is already the world's largest trading nation, exporter, industrial powerhouse and carbon emitter.

America is the world's second

So what does it mean for China to become the world's largest economy? Think of it this way: for the first time since this man's accession to the British throne -- George III, who wasn't a good friend of Napoleon -- our world will have as the largest economy a non-English-speaking, non-Western, non-liberal democracy.

If you don't think this fact will affect how the world will look in the future, just between you and me, I suspect you're smoking something.

In short, our theme tonight is how to make sense of this big shift, which I believe is the biggest shift of the first half of the 21st century.

This change will affect many things.

It will affect the core of the world

Change is quietly and surely happening

In some areas, it goes unnoticed, while we are all preoccupied with events in Ukraine, the Middle East, Islamic State, and the future of our economy.

This is a slow, quiet revolution

And with this big change comes a big challenge, and the big challenge is whether these two superpowers can coexist: China and the United States -- China, or "the Middle Kingdom," and the United States, Měiguó -- which means "beautiful country" in Chinese.

Think about it, China has called America "America" ​​for over 100 years.

Can these two great civilizations, these two great nations, create a common future for both of them and for the world?

So, can we create a peaceful and mutually prosperous future, or are we facing the big question of war or peace?

I've been given 15 minutes to discuss War and Peace, which is a little less than Tolstoy was given to write his book "War and Peace."

People often ask me, "Why did a boy from the Australian countryside want to learn Chinese?"

There are two reasons for this

this is the first reason

A cow named Betsy

Betsy was one of a herd of cows who grew up with me on a farm in the Australian countryside.

can you see this hand? not a good hand for farming

I knew from a very young age that I wasn't cut out for working on a farm, and China was a very safe distance from all the jobs of my Australian farm life.

The second reason is

mother

Have any of you gone down the path your mother told you to?

Does everyone do what their mother tells them to do?

I rarely did, but one day my mother handed me a newspaper and said to me, the front page said that a big change had happened.

China joined the United Nations

In 1971, I had just turned 14, and my mother handed me one side of it.

And I said, "Get this and study it, because it's about your future."

I was really good at history, so I decided that going abroad and learning Chinese was the best thing for my life.

The great thing about learning Chinese is that your Chinese teacher gives you a new name.

They gave me a name, Ke, which means to achieve and win, and Wen, which means literature and art.

"KeWen" Winning Tradition is my name

Is there someone named Kevin?

It's quite a career for Kevin to be called the "traditional victor."

(Laughter) I've been called Kevin all along.

Have you been called Kevin all along?

Would you like to be called a "traditional winner"?

So I studied Chinese and went to work for the Australian Ministry of Foreign Affairs, but that's where Pride -- everything that came before it -- was wrecked.

At the Ministry of Foreign Affairs, I was assigned to the Beijing Embassy and went to the Great Hall of the People with the Ambassador, who asked me to translate for his first meeting at the Great Hall of the People.

That's why I attended

If you've ever been to a Chinese conference, it's a big horseshoe.

At the head of that horseshoe are the really great bureaucrats, and at the end of the horseshoe are the not-so-great bureaucrats -- young rednecks like me.

And the ambassador started with this kind of crude phrasing.

“China and Australia are now closer than ever.”

So I thought, "It's a little awkward, it's kind of weird.

I'll fix it."

Please make a note of it and save it "Absolutely not"

It needed to be a little more elegant and a little more old-fashioned, and I translated it like this.

""Currently due to storm surge"" There was a long silence on the other side of the room."

The face of the bureaucrat boss in the middle of the horseshoe suddenly turned pale, and the young redneck at the other end of the horseshoe burst into a merciless laughter.

Because in his original sentence, "Australia and China are closer than ever," I translated it as "Australia and China are having a dreamlike orgasm."

(Laughter) That was the last time I was asked to translate.

But there's a lesson in this little tale, too: even if you think you know a little bit about this extraordinary 5,000-year-old civilization, you'll quickly discover that there's more to learn.

But when the United States and China try to build a common future together, history becomes an obstacle.

who is this guy?

he is neither chinese nor american

A Greek named Thucydides.

He wrote a history of the Peloponnesian War

And he did a great analysis of Athens and Sparta.

"It was the rise of Athens and the terror it caused that inspired Sparta and made war inevitable."

Since then, there has been no end to the mention of something called the Thucydides Trap.

who is this guy? he is neither american nor greek

I'm Chinese. My name is Sun Tzu. I wrote "Sun Tzu's Art of War." If you read the words below, it says, "Attack by surprise, appear where you never imagined."

Right now, it doesn't look like good timing for China and America.

This man is American. His name is Graham Allison.

He's a lecturer at the Kennedy School at Harvard, just down the road from Boston.

Now he's working on a project: Will the Thucydides trap, which makes war inevitable between emerging powers and established powers, apply to the future of China-US relations?

it's a very important issue

Graham looked at 15 historical cases from the year 1500 onwards to document the past.

I'll let you all know that 11 out of 15 cases ended in catastrophic wars.

You may say, "But Kevin - or the victor of tradition, that must have been a long time ago.

We live in a world of interdependence and globalization.

It will never happen again'

What so?

Historical economists actually say that the peak of economic integration and globalization was in 1914, just before the start of World War I. It's a remarkable historical fact.

So are we really asking the important questions of how China thinks and feels about America, where does it stand, and what about America on the other hand, and how can we get to the baseline where these two countries and civilizations can work together?

So first let me explain how the Chinese view the United States and the rest of the West.

Part 1: China thinks it has been humiliated by the West for 100 years starting with the Opium War

After the Opium Wars, the European powers divided China, and by the 1920s and '30s there were signs like this in the streets of Shanghai [no dogs and no chinese].

I saw a sign like this in the streets of Shanghai [No dogs and no Chinese] How would you feel if you were Chinese? If you saw a similar sign in your own country

China felt similarly humiliated at the 1919 Paris Peace Conference, where the German colonies were returned to the rest of the world, but what happened to the German territories in China?

given to Japan

When Japan invaded China in the 1930s, the world was blind and indifferent to what would happen in China.

In addition, China believes to this day that the United States and the West do not recognize the legitimacy of their political system, because to us, coming from liberal democracies, the Chinese political system is fundamentally different.

China has further warned that its own country and its surroundings are threatened by America's allies and strategic partners.

i believe i am under siege

And the bottom line is that the Chinese, from the bottom of their hearts to the bottom of their hearts, think that all of us in the West are the most arrogant bastards.

So we think we're ignorant of the problems in our own political and economic systems, and that we're blaming each other blindly and blindly, and that the entire West is a great hypocrite.

International relations, of course, are not just about the philosophical powers of the East.

There is another great country called America

So how will America answer these questions?

America has the answers to all these

When asked if the United States was encircling China, I said, "No, look at the history of the Soviet Union. That's the encirclement."

On the other hand, the United States and the West have welcomed China into the global economy and into the World Trade Organization.

America and the West say China is lying about intellectual property violations and cyberattacks against US and global corporations.

And the United States says that China's political system is fundamentally wrong, because it's fundamentally different from that of the United States and the rest of the West -- human rights, democracy, the rule of law.

What will America say in the end?

The United States says that if China gains enough national power, it will build its sphere of influence in Southeast Asia and East Asia and threaten to exclude the United States.It is said that someday, when China becomes powerful enough, it will unilaterally try to change the rules of the international order.

Apart from these things, the relationship between the United States and China is fine and wonderful.

no big problem there

The real question is, given deep-rooted feelings and emotions and a way of thinking, a way of thinking that the Chinese call 'Sīwéi', how can we create the basis for a common future between these two great powers?

I simply think that we should build upon a constructive realist framework to achieve our common goals.

What do you mean?

It's about being realistic about what you don't agree on, and using management techniques that ensure that any disagreement doesn't lead to war or conflict before you have the diplomatic skills to resolve it.

Two countries that make a difference across humanity must be constructive in their bilateral, regional and global engagement.

Let's create a regional organization that can cooperate in Asia as a Pacific Rim Asian community

At the global level, let's go hand in hand, not fist-clenched, just like you started to fight climate change at the end of last year.

Of course, these things can only happen when we have a common mechanism and the political will to achieve change.

These are feasible

The question is, can one person do it alone?

Our brains say we need it, but what about our hearts?

I have a bit of an experience in Australia that is relevant to this question, and I'll be honest, it's an experience of mediating between two peoples who have had very little contact in the past.

That's when I apologized to the indigenous peoples of Australia.

It was a day when the Australian government, the Australian parliament, and the Australian people would settle the past.

After inflicting 200 years of endless persecution on the Indigenous peoples of Australia, it was time for white people to apologize.

The important thing, (Applause), is the important thing that I remember being face-to-face with each and every one of the Aborigines who came to hear the apology.

For example, I heard a rare story about an elderly grandmother who was literally separated from her parents when they were five years old.

It was special to me to hug and kiss the Aboriginal elders as they walked into the Houses of Parliament, and a woman told me that she had been kissed by a white man for the first time in her life, and she was over 70.

this is a terrible story

I also remember this family saying to me, "We drove all the way up north to Canberra for this, driving our own way through big white country.

After apologizing, I stopped by a café to have a milkshake on my way home."

They walk into the café quietly, hesitantly, cautiously and a little uneasy.

you know what i'm talking about

But what happened a day after the apology?

Everyone in the cafe, all white, stood up and applauded.

Something happened in the hearts of Australians.

White people, Aboriginal brothers and sisters, and we haven't solved all of these problems, but I want to tell you that there's been a new beginning, not just in my head, but in my heart.

We are tonight's big question, which is the future of US-China relations? How should we conclude about

In my head I think there is a way

In my head, I'm telling you that there are ways to improve things, such as the political system, the shared understanding, the structure of regular summit meetings.

But we also need to rethink the possibilities of China-U.S. relations in our hearts and find ways, and we need to consider China's possible future role in the world.

Sometimes you have to trust the other without knowing where you're going.

China is talking about the Chinese Dream

In America, we're all familiar with the term "American Dream."

I think it's time to think of a "dream for all mankind" that we can all speak the same way around the world.

Because by doing so, we can change the way we think about each other.

"Mankind Dream" (Chinese) This is my challenge to America and my challenge to China.

It's also my challenge for all of us, but I believe that as long as we have the will and the imagination, we can change our future, a future guided by peace and prosperity, where the tragedy of war never repeats itself.

thank you all

(Applause) (Chris Anderson) Thank you very much, thank you very much.

I felt that you yourself had a vital role to play in this bridge.

In a way, Kevin has a special place on both sides and can be a bridge.

CA: Australians are great at organizing drinking parties. If you have Australians in the same room, you can make suggestions and go out and drink.

But think about it, we are all great friends of two superpowers, America and China, and we can do something.

You can contribute, too. All the good guys here, next time you see someone from China, it's time to sit down and have a conversation.

Find out where they're coming from and what they're thinking. And all of you Chinese comrades, those of you who watch TED talks, try to do the same.

Just two people who want to change the world can make a big difference.

Everyone in between can make a small contribution.

(Chris) Kevin May all the strength be with you, thank you.

(Kevin) Thank you, thank you everyone.

(applause)

We are at a crossroads in human history, torn between gaining a new planet and losing our home planet.

In just the last few years, our knowledge of the Earth's place in the universe has expanded greatly.

NASA's Kepler program has found thousands of candidate planets in other star systems, suggesting that Earth is just one of billions of planets in our galaxy.

Kepler is a space telescope that observes subtle changes in a star's brightness caused by light being blocked as a planet passes in front of its star.

Kepler data reveal the size of planets and their distances to their parent stars.

That tells us whether the planet is a small, rocky, terrestrial planet, and how much light it receives from its parent star, the Sun.

This gives us a hint as to whether the planet is suitable for habitation.

Unfortunately, while treasure troves of potentially habitable worlds are being discovered, our own planet is sagging under the weight of humanity.

2014 was the hottest year on record.

The glaciers and sea ice that have been with us for eons are disappearing in just a few decades.

This planetary-scale environmental change we're causing is happening so rapidly that we can't turn it around.

But I'm an astronomer, not a meteorologist.

I'm researching planetary habitability, trying to find extra-terrestrial planets that can support life.

I just said that I'm looking for a good property on another planet.

As someone deeply involved in the search for life in the universe, I can tell you that the more we search for planets like Earth, the more we appreciate our planet.

Every time we discover a new planet, we're prompted to compare it to the planets we know best in our solar system.

Let's think about our next-door neighbor, Mars.

Mars is a small rocky planet, a little farther from the Sun, but the type of planet that would be considered habitable if found by Kepler.

In fact, Mars may have been habitable in the past, which is why so many studies have been done on Mars.

Exploration rovers like Curiosity scour the surface of Mars in search of traces of the origin of life

Rovers like MAVEN are taking samples of the Martian atmosphere to try to understand why Mars has become uninhabitable.

Private space tourism companies offer not only short trips around Earth, but also the fascinating possibilities of life on Mars.

Even though the landscape of Mars reminds us of the deserts on Earth, and evokes images of pioneers and new worlds, compared to Earth, Mars is a terrible place to live.

Think about it: Earth has vast stretches of uninhabited desert, but even that is rich compared to Mars.

Even the driest and highest places on earth have thick, delicious, oxygen-rich air from rainforests thousands of miles away.

I worry about the long, dark shadow cast by the rosy idea of ​​colonizing Mars and other planets. What might be the consequences of assuming that Mars will save mankind from self-inflicted doom on the only truly habitable planet we know of?

I love interplanetary exploration, but I'm totally against that idea.

Even though there are so many great reasons to go to Mars, to say there's Mars as a refuge for humanity is like the captain of the Titanic saying the real party will be later in the lifeboat.

(Laughter) (Applause) Hi

Interplanetary exploration and planetary protection are not polar opposites.

Rather, they are two sides of the same coin: to understand, protect, and improve life for the future.

The harshest environments on earth seem like alien sights

it's just that it's nearby

If we can figure out how to create and maintain habitable spaces in that uninhabitable desolate land, we can help protect the global environment and expand to other planets.

Finally, let's talk about a thought experiment called Fermi's Paradox.

Long ago, the physicist Enrico Fermi asked, "Since the universe is supposed to have been around for a long time and has many planets, it would be nice to have evidence of extraterrestrial life."

where is it?

One possible answer to the Fermi paradox is that a civilization that becomes technologically advanced enough to venture into other star systems loses sight of the importance of protecting the homeland that fostered its development in the first place.

It's arrogant to think that just colonizing other planets can save humanity from self-inflicted doom, but planetary conservation and interplanetary exploration can go hand in hand.

If humans really think they can transform the hostile environment of Mars into a habitable one, they should first overcome the much easier task of maintaining the habitability of Earth.

thank you

(applause)

For me, my encounter with virtual reality was a little different.

it was the 1970s

I fell in love with this field when I was only seven years old.

The tool we used to access virtual reality was Evil Knievel's stunt bike.

Here's the commercial (Video) What a jump!

Evil controls an amazing stunt bike

Gyro power enables high-speed travel of over 30m

(Chris Milk) It was my favorite at the time.

I felt like I was riding this bike everywhere

I was with Evil on the big jump in Snake River Canyon.

I wanted a rocket too

I couldn't buy you a bike

I really fell in love with this world

When I grew up, I wanted to be a stuntman, not a writer.

I was in that world and Evil was my friend

I was completely empathetic.

But it didn't work (laughs).

I started shooting music videos

(Music) Kanye West, "Touch the Sky." (Chris) It's kind of similar.

(Laughter) And I got a rocket.

(Laughter) Now, I became a filmmaker, or rather a fringe, and used the tools of a filmmaker to try to tell the audience as compelling a story as possible.

Film is an amazing medium that allows you to empathize with people who are completely different from you and with worlds you don't know.

Unfortunately, Evil Knibl didn't seem to empathize with us, and sued us for taking the video. (Laughter) Shortly after that.

But there were good things, too, and I finally got an autograph from the person I admired as a kid—a goal of my future.

(Applause) Now let's talk about video.

Video is a great medium, but the essence hasn't changed since ancient times.

The image is a continuous rectangle.

We've done some amazing things with this rectangle.

But I started to think, "Can we use modern technology to tell stories in a different way -- to tell other stories that the traditional filmmaking tools we've been using for the last 100 years can't tell?"

So I started experimenting, trying to build the ultimate empathy machine.

This is part of an early experiment (music) titled "The Wilderness Downtown" -

Co-production with Arcade Fire

Enter the address where you first grew up

from this website

Small boxes pop up one after another in separate windows.

A teenager is running down the street, and the images on Google Street View and Google Maps show me where I grew up.

We stop at one house, which is in front of your house.

It's really good, and it's given me a much deeper emotional response than anything I've ever done on a rectangular screen.

It's kind of like picking up a piece of your background and applying it to your story.

But then I thought to myself, "This time it was only part of the story, how can we integrate the whole story?"

So I started making installations.

This is a work called "The Treachery of Sanctuary"

It's a triptych, but look at the third panel.

(Music) This time, the audience itself was framed, and the response was even deeper and more heartfelt than the previous one.

But on the other hand, it got me thinking about what a frame is.

A frame is just a window

So all media, be it television or film, is a window into another world.

So I thought, let's take the opponent into the frame.

But instead of framing them and putting them in a window, we want them to slip through the window and go to the other side and enter the world on the other side.

Now back to virtual reality

let's talk about it

Unfortunately, talking about virtual reality is like putting architecture into dance.

And actually, in virtual reality, this is what dance represents architecture.

(Laughter) It's hard to explain. So why is it so difficult?

because it is an experiential medium

Because it's a medium you feel inside.

It's a machine, but inside it feels like the real world.

You feel like you're inside the world, you feel like you're with the people in that world.

So let's take a look at a virtual reality video demo here, where we project all the information we captured when we shot the virtual reality onto the screen.

shooting in all directions

This is a camera system that we developed that has a 3D camera that looks in all directions and a binaural microphone that is pointed in that direction.

We're going to use this to create a spherical world that surrounds you.

So what I'm showing you is not a view of the world from the inside, but a rectangular stretch of the whole world.

It's titled Clouds Over Sidra, and it's produced in collaboration with our virtual reality production company VRSE, the United Nations, and Gabo Aurora.

In December, I traveled to a Syrian refugee camp in Jordan to film the story of a 12-year-old girl named Seadra.

She fled Syria with her family across the desert to Jordan, where she's been living in a camp for a year and a half now.

(Seadra) I'm Seadra

I'm 12 years old

I'm in 5th grade

I am from Inkhir city, Dala governorate, Syria.

I've been living in the Za'atari refugee camp in Jordan for a year and a half.

I have a big family and I have three siblings, one of whom is still a baby.

my brother cries a lot

I asked my dad if he cried a lot when I was a baby, but he said he didn't.

Maybe I was stronger than my brother

(Chris) With the headset on

it doesn't look like this

You can look around the world

You should be able to see 360 ​​degrees in all directions

When I'm sitting in front of her in her room, instead of looking through a TV screen or a window, I'm sitting there with her.

I look at my feet and I'm sitting on the same ground as her.

That's why I feel her humanity more deeply

I can empathize more deeply

I believe that this machine can move the heart.

We are already trying to move some hearts

In January, we took this footage to the World Economic Forum in Davos.

I let people who make decisions that affect the lives of millions see it.

Without this opportunity, they would never have sat in a tent in a refugee camp in Jordan.

One afternoon in January, they were in Switzerland and found themselves in a refugee camp.

(Applause) We were all moved.

So we decided to make more

We're currently working with the United Nations to shoot a series of videos like this.

Just finished filming in Liberia

About to start filming in India

We're filming footage and showing it to people at the United Nations who are on a mission there or are planning to go there.

We show it to people who have the power to change the lives of the people they see on film.

And yet, I think we're still only using a fraction of the true power of virtual reality.

THIS IS NOT A GAME PERIPHERAL

Virtual reality connects people to a level far greater than that of traditional media.

and you can change the perspective of both sides

So virtual reality has the power to truly change the world.

It's just a machine, but through it we can be more compassionate, more empathetic, more connected.

And in the end, we become more human.

Thank you very much

(applause)

Life is good in many ways if you can be objective

Unfortunately, we see everything through our own colored glasses.

even something as simple as beer

Let's say you've tasted a few different beers and you've rated them on strength and bitterness.

What if we were to look at this objectively?

In the case of beer, it's very easy.

It's a blind tasting

You can do the same thing, taste the same beer, but if you're blindfolded, it's going to look a little different.

most of the beers get the same rating

You lose the ability to distinguish between flavors, except, of course, Guinness.

(Laughter) And you can think about physiology in the same way.

What is the effect of human expectations on biological function?

For example, to sell painkillers

If you say "expensive medicine" and

If you say "cheap medicine"

"Expensive drugs" worked better

The reason it's less painful is because the expectation makes a difference in the physiological effect.

Of course, in sports, subjectivity plays a role, and if you're a fan of a particular team, you're only going to see the game from that team's point of view.

What they all have in common is that the world we see is colored by our preconceived notions and expectations.

This is a bigger problem-

What if it's a matter of social justice?

My team took a look at how we view inequality, and tested it in a blind tasting format.

Specifically, they conducted large-scale surveys that focused on inequality in various countries, including the United States.

I asked them two questions: "How much inequality do you think there is today?"

“How much inequality do you want?”

Let's consider the first question first.

everyone in america

So if we were to line up right to left, from the poorest to the richest, we'd divide them into five groups: the poorest 20%, then the next 20%, then the next, then the richest 20%, and so on.

Then ask each group how much wealth they think they have amassed.

Let's just ask the simple question: How much wealth do the bottom two groups, the poorest 40 percent, have?

Take a moment and work out the numbers

you don't usually think about it

Think about it for a second, and prepare a specific number.

Is it OK?

The answer for many Americans is

2.9% of total wealth for the bottom 20%, 6.4% for the next group, and more than 9% for all.

They thought the next group had 12%, the next 20%, and the richest 20% had 58%.

Please compare your answers

Now what about reality?

reality is a little different

The wealth of the bottom 20% is 0.1% of the total

0.2% for the next 20%

0.3% in total

Then comes 3.9%, 11.3%, and the richest with 84-85% wealth.

There is a huge gap between reality and our perception.

So what do we want?

How do we know in the first place?

In researching this -- in researching our ideals -- I was reminded of the philosopher John Rawls.

John Rawls thought of a just society

A just society is a society that you know everything about and want to be a member of in any position.

That's a beautiful definition. Ordinarily, wealthy people think, "The rich have more, the poor have less."

The poorer you are, the more you want equality.

But in this hypothetical society, you don't know where you're going to be, so you have to think about every situation.

It's a bit like blind tasting, because when you're making a decision, you don't know what the outcome will be. Rawls called it the "veil of ignorance."

Now, we gathered a new group of Americans and asked them questions in a veil of ignorance.

"If I were to become a member of a certain country, I don't know what position I would be in. What kind of country do you think would be good?"

here is the result

How much wealth would you want for the first group, the bottom 20%?

We asked for a wealth distribution of about 10%.

14% of the following groups were 21, 22, 32

None of the subjects this time wanted perfect equality.

I don't think anyone thought socialism was great.

What do you mean?

There's a gap between reality and perception of what we have, but there's an equally big gap between what we think we want and what we think.

By the way, these questions aren't just about wealth.

It also applies to other things

We asked people around the world the question above, and the answers, whether liberal or conservative, were basically the same.

Rich and poor alike answered the same, men and women alike, public radio NPR enthusiasts, and Forbes readers alike.

We got very similar responses in the United Kingdom, Australia, and the United States.

I also asked various departments of the university

I've visited nearly every department at Harvard University, even Harvard Business School, and the fact is that few people say the rich get richer and the poor get poorer, and the similarities are striking.

Some of you are from Harvard Business School.

I asked the same question about other things.

How much is the unskilled worker's salary relative to the president's salary?

Here are the percentages that people think are, so what percentage do you think is appropriate?

let's see if it's actually

As for reality, it's not so bad, is it?

The red and yellow areas are not that different.

But the truth is, this isn't drawn to the same scale.

Actually, the yellow and blue parts are so small that you can't see them.

But what about other effects of wealth?

Wealth is not just about property

I also heard: What about your health?

Can I go to the doctor and get some medicine?

life expectancy

What is the life expectancy of a newborn?

What is your preferred allocation for these?

What about youth education?

What about lifelong learning for the elderly?

What I've found is that the common result of all of this is that no one likes wealth inequality, which is the product of wealth, but there are other inequalities that people are even more reluctant to do, like inequality in health and education.

We also found that people were particularly willing to buy into redressing inequalities in low agency people, small children and babies, because they don't think they're responsible for their situation.

So what can we learn from this?

There are two gaps between reality and reality: the perception gap and the expectations gap. About the perception gap, what we're looking for is how we educate people.

It's about changing perceptions of inequality and what inequality brings -- health, education, envy, crime rates.

And about the expectations gap

It's about how to change the way people think about what they really want.

Rawls' definition Rawls' view of the world The blind tasting method erases selfish motives from thinking.

How can we do that on a larger scale, in a higher dimension?

Finally, there is also the “behavior gap”

how to actually act on these

One of the answers is to think about small children who are not independent, because it's easier to do that.

So the next time you go out for a beer or a glass of wine, first of all, I want you to think about, in your own experience, which is the reality and which is the expected placebo effect.

And think about what that means for decisions in life -- the policy issues that hopefully affect all of us.

thank you

(applause)

Dan Holtzman (DH): Bean bag chairs are beanbags

Barry Friedman (BF): Well, there are all kinds of high-tech chairs, but I think this one really peaks in ergonomics, comfort, design, flexibility...

DH: It's something completely different from what we usually use in our shows, and it's a trick we learned for this event, so it's a challenge.

BF: Great trick Daniel you're a man!

great it's great

DH: Thank you.

BF: When I do that, I bend my elbow all the way through.

You did it right now, didn't you? (Laughter) We made a new effort for today.

DH: Now let's show you something special

BF: without General MacArthur's approval

Now, take a look. It's completely different from before.

TED is about inventions, so be honest. DH: Yeah.

BF: Last night, Michael Moshen showed me a juggling device he's invented and is working on.

Now here, Dan shows us what he invented himself.

DH: It's a new one that I developed right after seeing other jugglers.

BF: Shut up (laughs) DH: And a short quote from a long piece...

(Laughter) (Applause) Ladies and gentlemen, this is Shaker Cup juggling.

BF: Oh sure (drumroll) BF: Oh Daniel

(Applause) DH: One more time? (Drumroll) Perfect (Drumroll) Perfect (Drumroll) BF: OK DH: Oh I did it

(Applause) Now I'm going to try my luck and try six cups at once.

Requires perfect control to handle 6 cups 3 cups in right hand (drum roll) BF: And 3 in left hand

DH: Perfect

(Laughter) Now, six cups. Or is it better to fail once on purpose? (laughs) BF: One time? Remove once? copper?

(Audience: Miss once!) DH: Do it once and then decide?

BF: I think so (laughter) Let's do it.

(Laughter) (Applause) DH: He's watching.

BF: It's okay, it's okay

DH: Oh! I need Richard's help. (Laughter) All right, all right.

BF: You know, for many years, every year at the conference, Richard and I would do something dangerous.

And we thought, "What an idiot."

DH: Hold on, can we change the design of the mic?

BF: it's the next session

DH: Next session?

BF: Yes, and we finally found a way to work with Richard.

he must think this is more dangerous

DH: Come on, Richard (whip) Oh, excuse me (laughs) DH: Come on, Richard, please (whip) BF: Oh, sorry

DH: hoe hoe Richard stand in front of me

Richard Wurman (RW): Can I say one thing?

BF: Of course

RW: I've been rehearsing every year and honestly every time I had no idea what was going to happen this is true

DH: Now, can you stand in front of me?

Ah, I hate this, extend your hand like this

(laughs) BF: No, we have to be together.

Dan always has it, but this time it looks like he's using you as a shield.

it feels good ok

(laughs) DH: Wow, you did it.

BF: Not yet. Shut up.

(Laughter) I'm glad I borrowed Richard's time.

OK, let's do it, let him hold my wrist, and I'll...

OK, let's do it, let him hold my wrist, and I'll...

DH: Hold your wrist BF: Hold it just a little bit

let's go

(laughs) OK

ok wait a minute

RW: Hmmm

(laughs) DH: First time.

BF: Just got a call back for summer greetings, Richard.

(laughs) DH: So Richard, what number are we on the list? For example, number 1020?

(laughs) What's going on?

BF: I'm out now.

DH: I'm not sure. (Applause) (Laughter) DH: I'm sorry. BF: I have a bad memory.

RW: I want you to grab me DH: Don't grab me too hard

BF: Let's go, done (balloon pops) (Applause) DH: One more time, one more time

BF: I have another one

RW: Should I have one?

BF: I don't think I want to have it, trust me

DH: Can you open your legs a little?

(laughs) BF: Gloria, do you want to try it? it's cool

(Laughter) (Applause) (Laughter) Again, I don't want to get too close.

(laughs) Can you give me a push?

(Applause) DH: Oh! Friend!

BF: Great I've always wanted to try it

(laughs) DH: Jump over here.

We risked Richard's life, and we deserved to do so as well.

So let's juggle three razor-bladed scythes.

If that's not enough, judging by the state of the venue, it's still...

(laughs) DH: Wow! BF: I wish I had a little more muscle.

DH: Absolutely, Barry.

BF: Run up behind him

DH: jump over my shoulder

BF: jump over shoulder

DH: Grab the blade in the air and land in a pool of blood...

(Laughter) Still juggling. (Laughter) Did I say impossible?

BF: Did you say unbelievable?

DH: Why did you say that?

BF: Let's do it

DH: Did you say just do it, juggler brothers?

BF: this guy this guy invented air

DH: Yeah, that's right, even a pencil.

DH: Yeah, that's right, even a pencil.

BF: He invented the pencil

DH All right but you know it takes 10+ years to perfect

BF: 10 years to complete, you'll see it

DH: It's not that hard. We just don't want to practice that much.

BF: No, that's the problem. I travel too much, because this could be a fake.

BF: No, that's the problem. I've traveled too much. This could be fake, so let's just prove that it actually cuts like a razor.

DH: Can someone throw a little farm animal onto the stage?

(Laughter) Or a virgin sacrifice?

BF: Anything?

DH: Where's Gloria? (Laughter) BF: No, she's... livestock, please.

DH: Do you have livestock?

I want to do something a little different OK, let's do it

BF: Over head Over head

DH: How are you Barry are you okay?

BF: No it's fine

DH: Really? The venue...

BF: It was a little cold

DH: Are you okay so far?

BF: ok

DH: Let's go

BF: Wait a minute... who's in charge of the lighting? Could you please put it a little more directly in my eyes? can? (Laughter) I can still see a little.

DH: Make it a little brighter, still pink in the middle

A little too much (laughs) BF: Oh, too much for me.

Everyone's body design is different

DH: Ready Barry BF: Over your head

DH: Can we have some jumping music please? (pause) Can you make it a little louder?

(laughs) BF: What a great staff! Wow!

DH: wow sorry it's ok

BF: still alive

DH: ok let's do it again

BF: Are you okay? oh my god

DH: okay let's do it bad

DH: I thought you grabbed the hard end OK

DH: Come anytime

BF: Yay!

(Applause) Stand up! Come dance DH: Let's dance Come on BF: Come dance!

who! Come on!

(Applause) OK let's stop

It's funny no one is dancing it's just the two of us dancing (laughs) I think it's an embarrassing situation for everyone.

DH: The French jury... BF: One more thing.

DH: The French jury... BF: One more thing.

DH: 5.2 points for the French judges

(laughs) BF: You know.

DH: Come on BF: Someone else came

DH: Tell me about your biography.

BF: Some of you may have read my biography, but I've won two juggling world championships.

Believe it or not, you can't beat a juggling champion with a bull whip or a shaker cup.

What we're going to show you is an excerpt from a classic routine that we always use to win in juggling team competitions.

DH: Exactly

BF: OK

DH: I know what you're thinking other juggling teams suck

(laughs) BF: Juggling got bad reviews

DH: But wait, Barry, there's another one at my feet.

Look, they're twins!

BF: Shut up (laughs) DH: There's one more left.

how do you want me

BF: Richard, tell him that the duo will be dissolved this year (laughs) DH: That's the best preparation, Richard.

BF: Oh good preparation it's great

DH: No more. Now just use reflexes like a leopard.

BF: I will

DH: Then reach out and grab the club with iron pressure.

BF: Like

DH: I touched it, Barry, that should be enough.

BF: Progress, if you will.

(laughs) DH: How about this? one more time

Hey, you went there, Barry.

A strong wind is blowing over there

BF: It's definitely weird. You might not think it affects half the venue, but it does. It's strange.

Look, I'll put the seventh on my leg

DH: Great trick Barry!

oh look at that

Oh, Barry, is there anything you can't do?

(Laughter) You're a hero, my Jimmy Cee Jr.

too much

BF: Kick the 7th club off the leg that

DH: Where? Where's Barry? tell me barry

I'm waiting for your word What the hell is that?

What kind of knowledge gem?

Or a pearl of wisdom?

Want to buy vowels? Barry BF: shut up

Final answer?

BF: Alright! sometimes i have to turn off the tv

DH: I'll do it, I'll do it

BF: 7th kick from leg

DH: juggle the 7th one

BF: Six to seven DH: World record BF: Really? DH: For us

BF: Certainly

DH: At your timing

keep quiet barry

BF: Good good Yotto

(Applause) DH: Please please stay seated please stay seated thank you

Now, to make it twice as difficult as usual, 7 sticks behind

BF: 7 juggling

DH: backwards

BF: Thank you very much.

BF: Thank you very much everyone.

DH: Thank you very much.

I would like to take you on a grand adventure in a spaceship called Rosetta.

Sending a lander to a comet, and then landing on it to investigate, has been my passion for the last two years.

In order to do this, I need to explain to you about the beginning of the solar system.

4.5 billion years ago there were clouds of gas and dust.

In the middle of this cloud our sun formed and caught fire.

At the same time, the planets, comets, and asteroids that we know so well were formed.

What happened after this, according to the theory, was that the Earth cooled shortly after it formed, but then a comet fell on it, causing a huge jolt and bringing water.

It is thought that not only water was brought, but also complex organic matter, which may have led to the emergence of life.

It's kind of like solving a 250-piece puzzle, not a 2,000-piece puzzle.

The big planets like Jupiter and Saturn weren't where they are now, but over time, these two planets moved based on gravity and kept everything in our solar system neat and tidy. Today's comets settled into something called the Kuiper belt.

These bodies can collide with each other, and after they collide, gravity pulls them away from each other, and Jupiter's gravity pulls them back into the solar system.

That's the comet we see in the sky right now.

Now, let's not forget that for the last 4.5 billion years, these comets have been outside our solar system, and nothing has changed.

when we look up at the sky it looks like this

It is the tail of the familiar comet.

It actually has two tails

One is a tail made of dust, which is blown by the solar wind.

The other is an ion tail, which is actually a charged particle that moves along the magnetic field of the solar system.

It's a cometary coma, and then there's the nucleus, which is too small to see with the naked eye.

Only 20 to 40 km away from the comet

What is important here is

Comets contain material that existed when the solar system was formed, so it's ideal for analyzing their composition, which was present when the earth was born, when life was born.

Comets are thought to carry the elements that gave birth to life.

In 1983, the European Space Agency launched a long-term program called Horizon 2000, and one of the touchstones in that program was the comet program.

In tandem, a smaller comet program, the Giotto, was launched, and in 1986, it passed by Halley's comet with other probes from Halley's fleet.

It quickly became clear from the results of this project that studying comets is ideal for understanding our solar system.

That's how the Rosetta program was approved in 1993. It was originally planned to launch in 2003, but the Ariane launch vehicle had problems.

At the time, our public relations had already made 1,000 Delft Blue commemorative plates out of frenzy, thanks to the incorrect name of the comet listed.

Since then, I don't have to buy plates.

(Laughter) With all my problems solved, I left Earth in 2004 for my newly selected comet, Churyumov-Gerasimenko.

This comet was chosen for special reasons: First, it's reachable, and second, it doesn't stay in the solar system for long.

The comet has been in the solar system since 1959.

Only then did Jupiter's gravitational pull pull us closer to the Sun and into our solar system.

So it's new for comets.

Rosetta makes some firsts

It's the first satellite ever to orbit a comet, and because it's tracking the comet throughout its entirety in the solar system, it's also the closest satellite to the sun.

First time ever to land on a comet

It's orbiting the comet in a different way than a regular spacecraft.

Normally, we look at the sky to figure out where we're going and where we are.

In this case it's not enough

Navigate while checking the comet's landmarks

It recognizes features, big rocks, craters, that's how you know where you are relative to the comet.

And it was also the first satellite ever to go beyond Jupiter's orbit, using solar cells.

This might sound a little over the top, because the radioisotope heat generator technology wasn't available in Europe at the time, and there simply wasn't any other option.

This solar array was big

This is one of the wings, it's not a dwarf here.

I'm a normal sized human like you and me.

(Laughter) I have two wings like this, totaling 65 square meters.

So when you get to a comet after this, you'll find that it's not easy to navigate a 65-square-foot wing near a gas-blasting object.

So how did we get to the comet?

For Rosetta's scientific purposes, it had to reach a long distance, four times the distance from the Earth to the Sun, and it had to reach a much higher speed than could be achieved with fuel, a speed that could only be achieved with six times the weight of the spacecraft.

now what should i do

We used gravity to fly close by, and we used gravity slingshots, and we fly very low to fly past planets, thousands of kilometers away from them, and then we get the planet's orbital velocity for free.

i repeated this several times

We've done this on Earth and Mars, and we've done it twice on Earth, and we've also used asteroids: Lutetia and Staines.

So in 2011, if we got any further from the sun, we were so far from the sun that we couldn't save the spacecraft, so we hibernated.

I turned off all but one clock.

The white line here is Rosetta's orbit.

As the white line goes out, it becomes an ellipse, compared to the circle where we started. And that's how we finally got to the comet.

On the way there, we passed close to the Earth and took some pictures, just to test the camera.

This is what we call a "selfie," or a "selfie," or "selfie," which we didn't have a word for at the time.

It's one of the cameras on the lander, and it looks like it's just below the solar array, and you can see Mars and the solar array in the distance.

When we awoke from hibernation in January 2014, we were two million kilometers from the comet, and in May we began to approach the comet to reach it.

But the spacecraft was going too fast.

It had to be 2800 kilometers per hour slower than the comet.

Eight operations, and if you look here, there's something very big inside.

At first, we had to slow down a few hundred miles an hour. It took us seven hours to operate. We used 218 kilometers of fuel, and it was very nerve-wracking. It was 2007, and there was a leak in Rosetta's propulsion system.

And then we got close to the comet, and this is the first photo I took of it.

The comet had a net period of 12.5 hours, so it was being accelerated. You can see why the flight mechanics engineers thought, "This is a big deal."

We expected it to be easy to land, like a potato.

at least the surface would be smooth

No, not at all. (Laughter) At that point, it became clear that we needed to map the celestial body as precisely as possible, because we had to find a flat area that was 500 meters in diameter.

Why 500 meters?

I ran this process to map the comet

I used a technique called photo tilt measurement.

use the shadows cast by the sun

Here you can see the rocks on the surface of the comet, the sun shining from above.

From this shadow, using our brains, we can instantly see the approximate shape of this rock.

You program that into a computer, and if you repeat that across the comet, you get a map of the comet.

To do that, we've taken a number of special trajectories since August.

First we did a triangle with a side of 100 kilometers, at a distance of 100 kilometers, then at a distance of 50 kilometers, and then we repeated the same thing.

So far, we've seen the comet from all angles, and we've used this technique to map the whole thing.

This made it possible to select the landing point

The whole process, from mapping the comet to choosing the actual landing site, took 60 days.

I didn't have time

On a typical Mars mission, hundreds of scientists meet for years to discuss where to go.

But we only had 60 days.

Now that we've finally decided on our final landing spot, we're ready to give the command to land Philae from Rosetta.

It doesn't work unless Rosetta is at the best point in space, and it has to be precisely aimed at the comet.

The lander is passive; it's pushed out and moves toward the comet.

Rosetta had to turn around to point the camera at Philae while she was away, and at the same time she had to be able to communicate.

Landing time for the entire orbit is 7 hours

Let's do some simple math here. Let's say Rosetta's speed is off by one centimeter every second, so seven hours is 25,000 seconds.

It will be off by 252 meters

So we needed to know Rosetta's velocity to less than a centimeter per second. At a distance of 500 million kilometers from Earth, Rosetta's position needs to be better than 100 meters.

this is hard work

Let me give you a quick rundown of how the device works, scientifically.

Don't worry, I won't go into yawning detail, but I've got it all covered.

You can detect gases, you can measure dust, you can determine its shape and composition, you have magnetometers, you name it.

One of the results, taken from the gas concentration instrument at Rosetta's position, is gas emitted from the comet.

The graph below is from last September.

It's not surprising that there are long-term fluctuations, there's a sharp peak.

this is comet day

The sun evaporates the gas and comes out. The comet is rotating.

So in some places, you can clearly see a lot of eruptions, which are heated by the sun and then go backwards and cool down.

You can see the variation in the specific gravity of this

These are gases and organic compounds that we've already measured.

It turned out to be an impressively large list. It's not like this.

There's a meeting in Houston right now, and there's a lot of data out there.

We also measure dust particles

I know it doesn't look all that amazing to you, but for scientists, it was exciting.

There are two particles, the one on the right is Boris.

discovered chlorine and magnesium

What this tells us is that these two materials are the condensed form of the material that was present at the time the solar system was formed. Now we know what material was present when the planets were born.

One of the important things was imaging.

One of the cameras on the Rosetta is the Osiris camera, which was on the cover of the January 23rd issue of the science magazine Science.

No one could have imagined what this celestial body would look like.

Rocks big and small -- more like Half Dome in Yosemite National Park.

I also saw things like the sand dunes and the windblown shadow on the right.

Also, I learned from Mars that this comet has no atmosphere, so it's a little more difficult to create windblown shadows.

There's the potential for local outgassing, which means it's going in and out.

But we don't know yet. There's a lot to investigate.

I'm going to show you two of the same image here.

There is a hole in the middle of the image on the left

If you look closely in the image on the right, you can see that there are three jets of gas coming out of that hole.

This is the activity of comets.

This hollow part is the active part, and it's from here that matter evaporates into space.

There's a very interesting crack around the comet's neck.

Seen from everyone, it will be on the right hand side

It's one meter long and two and a half meters wide.

On that part, some people say, as it gets closer to the sun, the comet will split in two.

Landers also have a lot of gadgets, except for the hammers and drills that hit the ground, and they have pretty much the same tools.

Because, much like Rosetta, we want to compare what we find in outer space to what we find in comets.

It's called a ground truth measurement

Here's an image of the landing approach taken with the Osiris camera.

You can see the lander getting further and further away from Rosetta.

On the top right is an image taken by the lander at 60 meters, 60 meters above the surface of the comet.

The big stone you see here is 10 meters long

So these pictures were taken just before we landed on the comet.

Here's the same view from a different angle, and you can see three bursts of eruptions from the lower left part of the lander moving over the comet's surface toward the center.

You can see above, there are before and after pictures of the landing.

But in the later pictures, the lander is missing.

But if you look closely, you can see that there's still a lander on the right hand side of this picture, but this lander actually bounced.

I just left the ground

Now, just for fun, the Rosetta was originally designed to have a bouncing lander.

But it was too expensive, so it was canceled.

We forgot, but we remembered the lander.

(Laughter) Here's the data from the magnetometer on the first bounce: the X axis, the Y axis, and the Z axis.

there is a red line in the middle

There was a change around this red line

What happened was that on the first bounce, the lander's foot hit the edge of the crater somewhere, and that changed the rotation speed of the lander.

So I have to say I'm lucky to be where I am now.

Here is one of the famous images of Rosetta

It looks like the man-made lander foot is taking the first step towards the comet.

I personally think it's one of the best space science images I've ever seen.

(Applause) What we're still missing is finding the lander.

I know it must be in this blue part

We haven't found it yet, but the search continues, as we try to get the lander working again.

Every day we're listening, and we hope to have the lander up and running again by April at the latest.

What we found with the comet is that this object would have floated on water.

half the specific gravity of water

It looks like a big rock, but it's really not.

Between June and August of last year, the increased activity that we saw was four times the normal amount of activity.

By the time it gets closer to the sun, it's going to be 100 kilometers a second out of this comet, whether it's gas or dust.

Anyway, that's 100 million kilometers a day.

Then finally the day of landing arrived

I will never forget the madness of 250 TV reporters in Germany.

There was an interview for the BBC, there was a TV station that was following me closely for a day, filming me being interviewed, and so on, all day long.

A crew from the Discovery Channel caught me walking out of the control room and asked me some great questions, and it brought tears to my eyes.

For a month and a half, I couldn't remember the day of the landing without tears.

I would like to conclude my talk with this image of a comet.

thank you

(applause)

I am a Hazara The homeland of the Hazara is Afghanistan

Like hundreds of thousands of other Hazara children, I was born a nomad.

My parents were forced to leave Afghanistan as the persecution and military campaign against the Hazaras continued.

This persecution has a long history, dating back to the reign of King Abdul Rahman in the late 1800s.

He killed 63% of the Hazaras.

They built minarets and decorated them with their skulls.

Many Hazaras were sold into slavery, and many others fled to neighboring Iran and Pakistan.

My parents also fled to Pakistan and settled in Quetta, where I was born.

After the 9/11 bombings of the World Trade Center, I had the opportunity to visit Afghanistan for the first time with a foreign journalist.

I was only 18 years old when I got a job as an interpreter.

Four years later, I thought it would be safe for me, so I decided to live permanently in Afghanistan, where I worked as a photojournalist and wrote many articles.

One of the most impressive of these was Dancing Sig Boy from Afghanistan.

It was a tragedy with a gruesome tradition.

Boys are made to dance for generals and local magnates.

Many of the boys are either kidnapped or sold by their parents out of poverty to work as sex slaves.

this kid is shukur

Kidnapped in Kabul by Generals

They were taken to another region and made to work as sex slaves for the general and his friends.

This story was published in the Washington Post, and I was forced to leave Afghanistan, along with my parents, after being threatened and threatened.

Returned to Quetta with family

The situation in Quetta had changed dramatically since I left in 2005.

A safe place for the Hazara was transforming into the most dangerous city in Pakistan.

The Hazaras are confined to two narrow zones and socially marginalized, both educationally and economically.

he is nadir

i knew him since i was a kid

He was injured in a terrorist attack while riding in a van in Quetta.

later died from his injuries

Some 1,600 Hazaras have been killed in various attacks, and some 3,000 have been wounded, many of them permanently disabled.

As the attacks on Hazara communities grew, it was no surprise that everyone wanted to flee.

Afghanistan, Iran, Pakistan and Australia are the main second homes of the Hazaras.

Australia was the obvious choice when it came to leaving Pakistan.

For financial reasons, only one person can travel, so I decided to go, hoping that if I could get there safely, I could find a job and bring my family over.

We all knew the risks, we knew it would be a tough journey, and we met many people who had lost loved ones at sea.

The tragic decision to leave everything behind is not something anyone can easily make.

It takes less than 24 hours to fly to Australia.

but i can't get visa

My journey was far, far, far more complicated and, of course, more dangerous. First I flew to Thailand, then I landed and then went by boat to Malaysia and then to Indonesia.

In Indonesia, I joined a group of seven asylum seekers.

We all lived in one room in a suburb of Jakarta called Bogor.

After spending a week in Bogor, three roommates embarked on a perilous journey, and two days later they heard the news that the ship had sunk halfway to Christmas Island.

Three of my roommates, Nauros, Jafar, and Shabir, were also on board the ship.

Only Jafar was rescued

Shabir and Nauroth are now dead.

I asked myself Is this good?

I came to the conclusion, "There is no other choice, go ahead."

A few weeks later, I got word from the smugglers that the ship was ready to set sail.

In the middle of the night, I was put on a motorboat and boarded the mother ship, and when I got on the old fishing boat, it was already overloaded.

The 93 people on board are trapped in the bottom of the ship.

no one was allowed on deck

Everyone paid about 700,000 yen for this voyage alone.

The first night and day were calm, but the weather changed on the second night.

The waves rocked the boat so hard that the planks of the boat creaked.

People below deck cried and prayed and thought of their loved ones.

everyone cried

it was a scary time

It was like a scene from Doomsday or a Hollywood movie where everything is destroyed and the world is coming to an end.

That's what happened to us.

there is no hope left

I couldn't control the ship, it just drifted like a matchbox on the water.

The waves are much higher than the ship, and the water is coming in faster than the pump can pump it out.

we all lost hope

everyone thought it was over

I was documenting this while everyone was watching death.

The captain said, "We can't reach our destination. We must turn back."

We went up on the deck and flashed our torches to try and get the attention of passing ships.

He kept brandishing his life jacket and blowing his whistle to get his attention.

Finally we reached a small island

The ship ran aground on rocks, and I was thrown into the water, and my camera that recorded the whole thing broke.

But luckily the memory card was safe.

there was a dense forest

We split into many groups and discussed what to do next.

Everyone was terrified and confused.

We spent the night on the beach, but the next day we found a breakwater and a coconut tree.

We haild a boat from a nearby resort, and were quickly handed over to the Indonesian Coast Guard.

An immigration officer came to Serang's detention center and stripped each of us and searched our belongings.

He took our cell phones, my $300, and my shoes to prevent him from escaping, but we watched every movement of the security guards, and when they were warming themselves around the fire around four o'clock in the morning, they took off the double glazing on the outside and got out.

There were glass shards embedded in the outer wall, but when I climbed the side tree,

We put our pillows on the glass, we wrapped our bedspreads around our hands, we climbed the walls, we ran barefoot.

I managed to escape. I don't know what will happen in the future.

All I had was a memory card with photos and videos.

When my documentary aired on SBS Dateline, many friends came to know about my situation and tried to help.

My friends would never allow me to make a life-threatening voyage again.

I decided to stay in Indonesia and go through the process with the United Nations High Commissioner for Refugees (UNHCR), but for many years I was very worried that I would be stuck doing nothing and not being able to work like other asylum seekers in Indonesia.

But something happened to me

i was lucky

My agent was able to expedite the UNHCR process and move to Australia in May 2013.

Not all asylum seekers are as lucky as I am.

Uncertain destiny, it's very difficult to live in a state of limbo

In Australia, the treatment of asylum seekers has become such an important political issue that it has lost its humanitarian dimension.

Asylum seekers are treated as a nuisance and exposed to the public.

I hope that my experience and the plight of other Hazara people can help people understand how these people are suffering persecution in their homeland. Why would you risk your life to seek asylum?

thank you

(applause)

This is the kindergarten we designed in 2007.

I made a kindergarten so that it would be circular

I made it a shape that has no dead ends on the roof.

If you're a parent, you know that kids love to go round and round.

The roof looks like this

Why did you design it like this?

The principal said, "Let's not use handrails."

I said, "That's impossible."

Yet he insists, "A net sticking out from the eaves

What does it mean to catch falling children? ”

(laughs) "That's impossible."

Of course, the government officials said, "Of course you have to install the handrails."

But I was able to save the idea only around the tree.

There are three trees that stand through the roof.

I was allowed to use this rope as a handrail.

For children, this railing has nothing to do with it.

I accidentally fall into the net

If a few people fall, they will fall more and more

(Laughter) Sometimes there are 40 children around a tree.

There's a boy on the branch He loves trees and eats them

(Laughter) When there's an event, people sit around the railing.

Interesting to see from below

You're like a monkey in a zoo

(laughs) It's feeding time.

(Laughter) (Applause) We put the roof as low as possible because we wanted to be able to see not only the children below, but also the children on the roof.

If the roof is too high, you can only see the ceiling

This is a footbath - there are various faucets.

There's a hose, you want to throw water on your friends, you want to take a bath, right?

If you look closely, this kid isn't washing his boots, he's putting water in them.

(Laughter) This kindergarten is completely open most of the year.

No boundary between inside and outside

So the fundamental part of this architecture is the roof.

There are no boundaries between classrooms

So there is nothing to block the sound.

When you put a bunch of kids in a quiet box, some of them get restless.

But in this kindergarten, there's no reason to be nervous.

because there are no boundaries

The principal says, when that boy in the corner can't stay still in his room, let him do whatever he pleases.

After all, it's circular, so it comes back.

(Laughter) The thing is, in situations like this, kids want to hide somewhere.

Here, just leave it alone and it will come back.

it's a natural process

Second, it's very important that noise comes in.

Children sleep better when they are noisy

I don't sleep in quiet places

And in this kindergarten, the children are able to concentrate brilliantly in class.

Our ancestors grew up in a noisy jungle, right?

yes i need some noise

You talk to your friends in a noisy bar, right?

It's not supposed to be in silence

These days, they try to keep everything under control.

completely free here

Think about it, we can go skiing in -20 degrees in the winter.

In the summer when the sand temperature reaches 50 degrees

i also go swimming

And humans are waterproof

Does not melt in the rain

kids should be outside

so you have to treat them like that

The classroom is divided like this

I'm supposed to help the teachers

i won't help

(Laughter) I didn't force it.

it's a classroom

It's a washroom

Everyone is having a meeting at the well

There is always a tree in the classroom

The monkey above is trying to catch another monkey.

(Laughter) The monkeys.

(Laughter) Every classroom has at least one skylight.

At Christmas, Santa Claus comes down from here

This is another building, right next to the oval kindergarten.

This building is only five meters high and has seven floors.

Of course the ceiling is very low.

So safety must be considered

So to our daughters and sons

let me in

he hit his head

But it's okay, his head is very strong.

He recovers quickly because he's my son

(Laughter) I'm looking to see if it's okay to jump off.

Then I got the other kids to come in.

Traffic jams are terrible in Tokyo.

(Laughter) Former driver, looks like this girl needs to learn how to drive.

These days, kids have to go through a little bit of danger.

In these places, we learn to help each other.

It's a community, and that opportunity is missing today.

This diagram shows a boy's movements from 9:10 to 9:30.

Since the perimeter of this building is 183m,

never small

This kid ran 6,000 meters this morning.

still amazing

The average in this kindergarten is 4,000m

Children in this kindergarten are the most athletic of any kindergarten out there.

The principal says, "It's not like we're training them. We're just letting them do as they please on the rooftop.

Just like sheep."

(Laughter) They keep running.

(Laughter) The important thing is not to control the kids, not to overprotect them, and sometimes it's necessary to fall.

Injury is sometimes necessary

From there you will learn how to survive in the world.

I believe that architecture has the power to change the world and people's lives.

And this is an attempt to change the lives of children.

thank you very much

(applause)

Today I'm going to talk about anger.

When I was 11, some of my friends left school because their parents couldn't pay for their textbooks, which made me angry.

When I was 27, I heard about a slave's plight, and his daughter was about to be sold to a brothel.

When I was 50, I felt resentment with my son lying bleeding on the side of the road.

It's been said for centuries that anger is bad.

Parents, teachers, and clergy have taught us how to control and manage anger.

But why?

Why can't we use anger for society?

Can't we use our anger to fight evil and change the world?

i came to try

Ladies and gentlemen, many of my best ideas are the product of my own anger.

It was the same when I was 35 and locked up in a tiny jail.

I was angry all night long

But then a new idea was born.

I will tell you this story later.

I will tell you from the origin of my name

I have admired Mahatma Gandhi since I was a child.

Gandhi led the struggle for Indian independence

More importantly, he taught us to treat the most oppressed people of the lowest classes with dignity and respect.

As India celebrated Mahatma Gandhi's 100th birthday in 1969, and I was 15, an idea occurred to me.

I wondered if there was another way to celebrate this day

As you probably know, in India many people are born into the lowest caste of the caste system.

treated as untouchable

These people are not even allowed to enter the shops or houses of the upper class, let alone set foot in temples.

And so I was very impressed with the political leaders of the town, who were strongly opposed to the caste system and the class of the untouchables, and who advocated the ideals of Gandhi.

Encouraged by this, I decided to take action on my own, and I did so by inviting these leaders to eat the food that the Untouchables made.

I went to the lower class, the so-called untouchables, and tried to persuade them, but it was unthinkable for them.

"That's impossible. It's never happened before."

But I said, "These leaders are on your side.

I'm sure they will come. Even if no one comes, we can set an example."

everyone thought i was too sensitive

finally convincing them

I rode around with my friends and invited political leaders.

I was very excited, but most of all, I was encouraged by the fact that everyone had accepted the invitation.

"I'm glad I set an example for everyone with this.

I thought I could make a difference in society."

the day has come

Three untouchable women and two men helped me.

I still remember them wearing their best clothes

bring new dishes

I mean, I washed my body many times before coming, because this is too much for them.

it was a moment of change

everyone gathered and ready to eat

it's seven o'clock

I waited until eight o'clock, because it was common for politicians to be an hour late.

It's past eight o'clock, so we get on our bikes and go around politicians' houses because we think they've forgotten.

Even if one politician's wife said, "Unfortunately, I can't go because of a headache."

At the next house, the wife there said, "Go first, I'll definitely let you go later."

"I think we can have a dinner party, although the number of people may be small," I thought.

We followed the way we came to the newly completed Mahatma Gandhi Memorial Park.

it's ten o'clock

no politicians came

I am outraged by this

leaning against a statue of Gandhi

I was very emotional and felt quite tired.

I sit on the floor where the food is

I was suppressing my emotions

As soon as I ate the food, I started crying

Then an untouchable woman

She put her hand on my shoulder and said,

"Why are you crying Kailash?

you did something big

You ate what we untouchables cooked, and it's never happened before

you are the victor

folks she was right

That day, after midnight, when I returned home, I was surprised to find several high-caste elders sitting in our courtyard.

My mother and the elderly women were crying and begging the elders because they were threatening to banish my entire family.

There is no greater social humiliation than the expulsion of a family from its caste.

Somehow it turned out that I was the only one to be punished, and that punishment was to cleanse myself.

I bathed in the holy Ganges river, about a thousand kilometers from my hometown.

Afterwards, he would treat 101 monks to a feast, wash their feet, and drink the water.

I refused to accept such a punishment because it was completely ridiculous.

how would i be punished

I wasn't even allowed to enter our kitchen or dining table, and my dishes were kept separate from those of my family.

That night when I was angry, the elders tried to banish me.

I was the one who decided to completely banish the caste system.

(Applause) I was able to do that because I could start by changing my last name, because in India, most names are caste names.

I decided to throw away my last name

Then I named myself Satyarthi, which means "seeker of truth."

(Applause) And then my anger began to take shape.

Does anyone of you know what I was doing before I became a child rights activist?

Anyone know?

I'm not here

engineer — was an electrician

So what I learned was that the energy that comes from things like fires burning coal, nuclear fission in nuclear reactors, torrents in rivers, strong winds, etc., can be turned into electricity that powers millions of people's lives.

We also learned that the most cumbersome forms of energy can be used for the long-term benefits of society.

Let's go back to when I was imprisoned, and it was my pleasure to save dozens of children from slave labor and bring them back to their parents.

The joy of being able to free even one child

words can't describe

One day, I was waiting for a train to go home to Delhi, and I saw dozens of children getting off the train, trafficked children.

i caught them

I gave it to the police

And instead of helping me, the police threw me like an animal into a little cell.

It was a night that made me angry, but it was here that the best idea was born.

"If you keep releasing 10 children, you'll have 50. We haven't done that yet.

But with consumer power, we can do this." This is the first of its kind in the world, and I called on consumers around the world to launch a campaign to say, "Reject products made with child labor."

successful in Europe and America

Child labor has decreased by 80% in South Asian countries

(Applause) And not only that, but consumer campaigns that use unprecedented consumer power are spreading to other countries and industries -- chocolate, clothing, footwear, and so on.

The reason I got angry at 11 years old was when I realized how important education is for children, and the idea of ​​collecting used books for poor children was born.

I made a book bank at age 11

then don't be satisfied

I later co-founded the world's largest civil society campaign for education, the Global Campaign for Education.

This has radically changed the way we think about education, moving it from a philanthropic mode to a human rights mode, effectively halving the out-of-school population in the last 15 years.

(Applause) When I was 27, my resentment came from wanting to help a girl who was about to be sent to a brothel, and the idea that grew out of that was to raid the scene and rescue children from sex slavery.

We are proud to say that we are proud to say that not just 10 or 20, but 83,000 children have been rescued from child slave labor and returned to their families.

(Applause) I knew we needed global regulation.

Organized a global protest march against child labour, leading to the adoption of a new international treaty to protect children in the worst circumstances New international treaty to protect children in the worst circumstances

The tangible result of this is that the number of child laborers in the world has dropped by a third in the last 15 years.

(Applause) In each case, it started out of anger, and out of that came an idea that turned into action.

What's next after anger?

Idea Then... Audience: Action! Anger, ideas, actions, this is what I tried to do

Anger is power, it has energy, and according to the laws of nature, energy can change form, but it can never disappear or be destroyed.

So can't we use the energy of anger to create a more beautiful and just society?

We all have anger. Let me tell you a little secret. When you're trapped in a small shell of ego and selfishness, anger turns to hate, violence, revenge, and destruction.

But if you can break that vicious cycle, you can turn that anger into great power.

With compassion that everyone has, we can cut off that cycle and connect with the world with compassion in order to make this world a better place.

The same anger can be transformed like this

So dear friends, once again, I encourage you to be a Nobel Peace Prize winner.

everyone get angry

And the people who are the most angry are the ones who can turn that anger into ideas and actions.

thank you

(Applause) Chris Anderson: You've been an inspiration to many over the years.

Who and what inspired you? And why?

good question

Chris To tell you the truth, save at least one child who has lost the hope of being able to return to his mother Save at least one child who has lost the hope of being able to return to his mother The first smile that the child will show when he is free The mother who has lost hope that she will never be able to hold her child again At the time of reunion, the first tears of joy run down her cheeks with emotion At the time of reunion, the first tears of joy run down her cheeks There is a sacred heart there. I found something, and this is my main driving force.

I've been so thankful, time and time again, that I've seen something divine in children's faces, and they're the ones that inspire me the most.

thank you

(applause)

This is a story about capitalism

I like this system because it has brought success and opportunity to millions of people, myself included.

When I was in my twenties, I started trading cotton on a commodity exchange. If there was ever a free market for anyone to enter, it was here, men in ties fighting for profit like Roman gladiators.

Luckily, I was talented, and by the time I was 30, I was in the upper echelons of asset management, and for the next 30 years, I worked as a macro trader in global markets.

During that time, the market witnessed many anomalous events and traded in a frenzy.

And unfortunately, I have to say that we are stuck in the worst situation of my career, and the lesson is being repeated that market frenzy can lead to bad outcomes.

Over the past 50 years, our society has come to evaluate companies and organizations with a very narrow, almost paranoid set of values, overvaluing profits, following only short-term quarterly earnings and stock prices, and neglecting everything else.

It's almost as if we've taken the humanity out of companies.

But we don't conveniently turn the value of something into a number and treat it like a Lego brick, and we don't do that in our personal lives.

We don't measure someone's worth based on their monthly income or their bank creditworthiness.

It's threatening our infrastructure.

Look at this

This chart shows corporate profit margins as a percentage of revenue over the past 40 years, and is currently at 12.5%, the highest in 40 years.

If you're a shareholder, bang for the buck.

[(Blue) Percentage of wages and benefits in corporate profits (Red) Compensation ratio of CEO and regular employees] Expanding profit margins does not bring social wealth

It actually exacerbates income inequality, which is not a good thing.

But it's intuitively consistent, isn't it?

The top 10% of American households own 90% of the stock, and if they take the majority of the company's profits, it leaves less wealth for the rest.

Again, income inequality is not a good thing.

The following chart was produced by the Equality Trust and shows the situation in 21 countries including Australia, Japan and New Zealand.

Income inequality on the horizontal axis

Income inequality increases as you move to the right

The vertical axis is 9 social and health indicators

The problem gets worse the higher you go, and these indicators include life expectancy, teenage pregnancy, literacy, and social mobility.

Now, the Americans in the audience are probably wondering where America is.

where is this chart?

as a matter of fact

we're literally off the charts

Yes, this is us, with the most income inequality and the most social problems according to these measures.

This is a simple macroeconomic prediction, but the gap between the richest and the poorest countries will shrink.

it's always been that way in history

Usually one of three things happens: revolution, tax increase, or war

none in my schedule

(Laughter) Now, there's another way, which is to expand the fairness of business practices. But we have to change our behavior drastically from what we're doing now.

And this profit addiction of ours is so deeply ingrained that we don't realize how it's harming society.

Here's a small but surprising example: This graph shows corporate giving as a percentage of profits over the last 30 years, and the denominator is not revenue.

I'm going to line this up with the corporate profit margin graph from earlier.

When I was creating this, I was stunned, "Oh my God, my company - what the hell is Tudor doing?"

I realized that I donate only 1% of my company's profits to charity every year.

That's why I'm called a philanthropist

I was really nauseous when I realized that

But the problem is that this money frenzy is so deeply ingrained that even well-intentioned people, myself included, don't realize they're part of it.

Corporate behavior doesn't change simply by increasing social contribution activities and donations.

Oh, and also, my company quadrupled donations -- (Applause) No, please.

Corporate behavior changes by promoting fair behavior

One of them is to believe in the system that has brought us here, the free market system.

About a year ago, a few friends and I started a non-profit organization called Just Capital.

The mission is very simple: to use people's opinions to identify measures of corporate fairness so that companies and companies can operate more justly.

Now, there's no universally accepted standard that's easy for businesses to understand. That's where Just Capital comes in. Starting this year, every year, we'll be taking surveys across the United States to take a demographic sample of 20,000 people and find out what they think the standards of fairness in corporate behavior are.

This model starts in the United States, but it can be adopted anywhere in the world, and we may discover that what people value most is creating jobs above the minimum wage, or making healthy products, or companies that have a positive impact rather than harm the environment.

Just Capital doesn't have this answer because it's not for us to decide.

We are only messengers, but we are 100% confident that the American people will make the right decisions. We are 100% confident that the American people will make the right decisions.

In September of this year, we'll publish the data for the first time, and next year we'll do another survey, and that time we'll add to the historical tally by creating a ranking of the 1,000 largest American companies, and we'll list them from the best to the worst.

It's called the Just Index, and we're an independent, non-profit, unbiased, voice of the American public.

Over time, as people learn which companies are the most fair, people and financial resources may flow into them, and fair companies may prosper and help our country prosper.

- Until now, capitalism has created a vibrant and wonderful world by supporting major innovations and inventions.

capitalism should be rooted in justice

Today, more than ever before, the divide between economic prosperity continues to widen.

47% of American workers are expected to lose their jobs in the next 20 years.

I am not against evolution

Like everyone else, I want self-driving cars and jet propulsion.

I just hope that you realize that as wealth and profits increase, so must your corporate social responsibility (CSR).

Adam Smith, the father of capitalism, said, "If the pillar of justice is lost," "The great and colossal institutions of human society must fall apart in an instant."

When I was young, whenever I had a problem, my mother would always sigh and shake her head and say, "(God) have mercy!"

Now is not the time for us to show mercy

It's time to show that we can be fair. You and I. We can do it. Start with the industry where you work.

And when we can bring fairness to the same level as profit, the greatest things in the world will happen.

regain humanity

thank you very much

(applause)

Sometimes the most important things are hidden in the smallest things.

I've been given a 15-minute talk to convince you that microbes can provide a lot of information about questions like, "Is life only on Earth?"

Microbes may be able to tell us not only about the solar system, but also about life outside of it. So I think about it, and I'm exploring the most unlikely places on Earth, the extreme environments where life is so hard to survive.

In fact, if you get too close to any of those places, you're putting yourself in danger.

But it's important to remember that we humans are the only advanced civilization in the solar system, and that doesn't mean that our planets nearby aren't free of microbes.

In fact, any of the planets and moons you see here could harbor life, and I think it's very possible.

If we try to find life on these moons and planets, we'll be able to answer questions like, "Is Earth the only place in the solar system with life?"

"Where did life come from?"

"Is there life on a nearby star?"

"Is there life outside the solar system?"

These questions are possible because of the tremendous advances in our knowledge of habitable planets. In today's understanding, the condition for a habitable planet is that it must have regions of stable water.

Think of the vertical dimension as the subterranean conditions of a planet far away from its star, but with water, energy, some food nutrients, and shields.

In the case of Earth, in the deep sea, where the light of the sun cannot reach, life thrives using chemical reactions as the only survival process.

When you think about it that way, all the old logic collapses.

basically no restrictions

Recent news headlines have revealed oceans beneath the moons of Europa, Ganymede, Enceladus, and Titan, and on Enceladus, geysers and hot springs have been found.

If you go to a hot spring, you'll find that many microbes love hot springs.

(Laughter) Now let's think about Mars.

Life cannot exist on the surface of Mars today, but it could be lurking underground.

We're getting a better understanding of viability, but we're also getting a better understanding of things like the signatures of life on Earth.

For example, what we call organic molecules are the building blocks of living organisms. Then there are biominerals, which are minerals produced by the reaction of fossils and bacteria with rocks.

The little green algae on the right side of this slide are the direct descendants of organisms that have been pumping oxygen into the atmosphere for billions of years.

Oxygen was originally toxic to the 90 percent of life on Earth, but now it allows us to breathe.

Despite all this accumulation of our knowledge, there is still an unanswered question: "Where did we come from?"

And to make matters even worse, we won't find any physical evidence of where we came from on this planet, because there's no evidence of anything more than four billion years old.

All records were wiped out by plate movement and erosion.

This is what I call the Earth's biological horizon.

Beyond this horizon we cannot know its origin.

Is it all lost? not necessarily

Evidence for the origin of life may be in an unexpected place: Mars.

Could I ask the reason?

In the early days of our solar system, Mars and Earth must have been hit by giant meteorites and comets.

Earth and Mars have been colliding rocks against each other for a very long time.

A piece of rock falls to earth

Pieces of Earth fell on Mars

So these two planets may have started from the same material.

Our ancestors may be waiting on the surface of Mars to "look for us."

So if you go to Mars, you can find traces of the origin of life.

Mars may hold secrets

That's why Mars is special to us.

But to actually find it, you have to have a period when life was viable on Mars.

Was Mars habitable?

There are a number of exploration missions that answer exactly that question.

When life first appeared on Earth, Mars had oceans, volcanoes, lakes, and deltas like this beautiful photo.

It was sent to me by Curiosity rover a few days ago.

This photo of the delta, showing the remnants of it, tells us something, that there was once an abundance of water, and that it was welling up on the surface for a long time.

good news for life

It takes a long time for the chemical reactions that give rise to life to occur.

So the good news is that if we go to Mars, will we be able to find traces of life easily?

no not necessarily

Here's what happened on Mars: During the explosion of life on Earth's surface, things were literally getting worse on Mars.

The atmosphere was blown away by the solar wind, the magnetosphere disappeared, cosmic rays and ultraviolet rays rained down on the surface, and water escaped into space or was trapped underground.

So if we want to understand and find evidence of life on the surface of Mars, if there is one, we have to understand what impact these phenomena have had on preserving the record of life on the planet.

Only then will we know where the tracks were left, and we'll be able to send the rover to the right place, and we'll be able to collect rock samples that will give us important clues about what life might be like.

It's not difficult to know where the traces are.

Just go back to the planet 3.5 billion years ago.

i wish i had a time machine

Simple, right?

actually it is

Let's look around our earth -

this is the time machine

Geologists go back in time to Earth's past through geology.

But my application is a little different.

We're trying to use hyperextreme environments on Earth -- analogous to Mars -- when climate conditions change to try to understand what happened.

What are the signs of life?

what is left? how can i find it?

Now let me take you on a little time machine journey.

What you're looking at is the Andes, at an altitude of 4,500 meters, at a time when Earth and Mars formed less than a billion years ago.

Everywhere you look on Earth and Mars, there are volcanoes everywhere, and every lake is bubbling with steam, containing minerals, like a hot spring.

It was formed by the descendants of the first life forms that became the oldest fossils on Earth.

But to find out what was happening, we have to look deeper.

The other thing to point out is that we're in exactly the same situation as on Mars 3.5 billion years ago, where the climate is changing rapidly, water and ice are disappearing.

But to advance time to the point where Mars has finished changing, we have to climb even higher.

Why?

The higher you go, the thinner and more unstable the air gets, the cooler it gets and the more ultraviolet radiation it receives.

This is what happens after the changes on Mars.

Well, I didn't promise you a comfortable time machine trip.

Instead of just sitting in a time machine

You're going to have to carry about 600 kilos of equipment to a crater in the Andes at an altitude of 20,000 feet.

This will be about 6,000 meters

We sleep on a slope with a 42-degree incline, and we just hope that there are no earthquakes during the night.

But when you reach the top, you'll find the lake you've been looking for.

The lake environment at this altitude is exactly the same as it was on Mars 3.5 billion years ago.

Now we're going to switch things up and go into the lake, so let's take off our mountaineering gear, change into our diving suits, and go inside.

The very moment we dive into the lake, we've traveled back 3.5 billion years to our next planet, and we'll find the answers we're looking for there.

life is everywhere, just everywhere

All you see in this picture are living microbes.

Aside from divers

But this photo is misleading

This lake is rich in life, but like many places on Earth today, climate change is severely eroding biodiversity.

According to the samples we brought back, 36 percent of the bacteria in these lakes consisted of three species, and these three species have survived to date.

This is another lake next to the first lake.

The red color is not due to minerals

due to the presence of microscopic algae

This area is heavily exposed to ultraviolet radiation.

A UV index of 11 is considered an extremely strong level.

When the UV storm hits us, we reach index 43 here.

Even sunscreen with SPF 30 won't cut it. Because the lake water is so clear, the algae have nowhere to hide and have developed a mechanism to block the sunlight, which is why you see the red color.

But algae can only adapt so far, and once the surface water disappears, microbes have only one avenue left: burrowing underground.

The microbes live inside the rocks you see in this slide, taking advantage of the rock's translucency to capture the best part of the UV light.

Protect yourself by eliminating harmful ingredients that destroy DNA

That's why we're here to test our rover in preparation for the search for life on Mars, because if there was life on Mars 3.5 billion years ago, it would have adopted the same strategy to protect itself.

So it's clear that studying extreme environments can help prepare for Mars missions.

So far, the result has been a better understanding of the geology of Mars.

Our understanding of the past climate of Mars and its subsequent changes - and of its viability - has improved.

The latest rover sent to Mars has found traces of organic matter.

There was organic matter on the surface of Mars.

Trace amounts of methane were also found

We don't know if this methane is of geological or biological origin.

In any case, this discovery does not yet dismiss the hypothesis that there is still life on Mars today.

I hope that by now you've seen that Mars has a special meaning, but it would be a mistake to think that Mars is the only planet in the solar system that is interesting in terms of the potential for finding microbes.

Because it's possible that life on Mars and Earth might have a common origin, but beyond Mars the story isn't that simple.

Interplanetary exchange of matter cannot easily occur in terms of celestial mechanics, so if life is found on other planets, it's probably life on Earth.

type will be different

After all, maybe there's life only on Earth, maybe it's just Earth and Mars, or maybe there's a lot of life in the solar system with different origins.

I don't have the answer yet, but what I can tell you is that whatever the resulting magic numbers are, they will be able to provide a measure of the viability, abundance and diversity of life beyond our solar system.

This can be achieved in our generation

If you have the courage to explore it, you can leave it for posterity.

And finally, if anyone ever argues that there's no point in looking for extraterrestrial microbes that can't even be the subject of a philosophical debate, just say something like this and let them know they're wrong.

What organic matter tells us is the complexity and diversity of the environment, the ecosystem.

Information carriers such as DNA tell us about adaptation, evolution, survival, changes in planetary environments - and information transmission.

Putting all this together, we can see how microbes arose and why they might evolve and become civilizations, or why they might stop evolving and become extinct.

Let's look at the solar system, especially the Earth.

Many species on Earth are intelligent, but only one has developed technology.

And it's very important that we travel the solar system, because that's how we search for extraterrestrial life, big and small.

Microbes speak to us, we listen, and microbes take us to the next planet, to the next moon, to their brothers in the distance.

What microbes tell us is the diversity of life, the richness of life, and how life on Earth has survived to the point where it has evolved into civilization, intelligence, technology and philosophy.

thank you very much

(applause)

Today I'm going to talk to you about laughter.

When I was a kid, I wasn't even six years old

I happened to see a rare sight of my parents, they were laughing.

That's already a big burst of laughter

I was lying on the floor and laughing

I was yelling and laughing

I don't know what's funny, but I'll join in

(Laughter) By the way, the one my parents were laughing at was a popular song from the time.

As you know, we British have a very sophisticated sense of humor.

(Laughter) But at the time, I had no idea.

I just cared about the laughter, but as a neuroscientist, I started to pay attention to laughter again.

The act of laughing is very strange

I'm going to show you some examples of human laughter in action, and I want you to think about how strange and primitive human laughter sounds.

It's much closer to animal sounds than speech sounds.

So let's take a look at some laughs, the first one looks pretty fun.

(Video: Laughter) This next guy has to take a breather.

Now let me tell you all, please take a breath, because this guy just seems to be breathing out.

(Video: Laughter) This is unedited. It's just his laughter.

(Video: Laughter) (Laughter) Finally, this is female laughter.

Laughter can be viewed in a different way when viewed through the lens of noise.

(Laughter) She says in French, "Hey! What's this?"

We all agree, I don't know

Now, to understand laughter, you have to look at one part of the body that psychologists and neuroscientists don't usually spend a lot of time looking at: the ribcage.

The one that never stops -- it's breathing -- using the intercostal muscles, the muscles between the ribs.

You have to expand and contract your ribcage to draw air into your lungs and expel it. If you put a breathing belt, like a strap, over your chest and watch it move, it's a pretty steady sine wave. That's breathing.

As soon as you start talking, the way you use your breath changes completely.

What I'm doing right now is closer to here

When we're talking, this elaborate movement of our ribcage squeezes our breath out, and we're actually the only animals that can do this.

That's why humans can talk. Now, speaking and breathing have sworn enemies.

And that's laughter, because when you're smiling, these same muscles start contracting in a very regular fashion, and you get this amazing zig-zag, and you're squeezing your breath out.

That's really the basic mechanics of having a voice.

You can see the same phenomenon if you step on someone from above.

You're squeezing out your breath, and each contraction is a "hah!"

And when these contractions overlap, you get a spasm like this.

I'm really good at this.

For example, people often say, "Man is the only animal that laughs."

Nietzsche thought that

In fact, all mammals can laugh.

The most well-described and observed examples are primates, and even rats.

the same is true for humans

Laughter happens in play, and all mammals play.

In any case, it involves interaction.

According to Robert Provin, who has studied this, people laugh 30 times more when they're with others than when they're alone. Most laughter happens in conversations and other interactions.

So if you ask someone, "When do you laugh?"

Comedy, humor, jokes, etc.

When I see people laughing, they're laughing with their friends.

The reason we laugh with someone isn't because the joke is really funny.

"I understand," you're showing with a smile that you agree with the other person and that you're part of the same group.

I smile to show that I like the other person.

maybe even love

Doing all this while having a conversation, laughter is an activity that involves a lot of emotion.

So what Mr. Provine pointed out, and why did we laugh when we heard that funny laugh at the beginning, and why did I laugh when I saw my parents laugh, because this behavior is so contagious.

I take someone's laughter and pass it on to someone I know

Again, the laughter is conditioned by the situation. Humor aside.

Let's think about what laughter means interpersonally, because that's where laughter originated.

Now, what I'm very interested in is the different types of laughter, and the neurobiological evidence we have about human vocalizations suggests that there are two types of laughter.

Laughter that comes out unintentionally and uncontrollably, like my parents, who cracked up at silly songs, may have different neurobiological underpinnings than more polite and social laughter -- laughter that is intentional as part of a communicative behavior, an interpersonal interaction, rather than a silly laugh.

In the process of evolution, two types of vocalizations have evolved.

Unintentional vocalizations are more primitive than intentional vocalizations, like the speech we're doing now.

So we can assume two different roots for laughter.

So I've been looking into this in more detail.

To do that, I had to record the laughter of a lot of people, so I tried everything I could to make people laugh, and then I asked that same person to give me a fake smile.

Suppose your friend tells a joke, and you laugh because you like your friend, not because the joke is that funny.

Let's hear some of them

Please tell me, do you think this laugh is genuine or do you think it's a smirk?

In other words, is it an involuntary laughter or an intentional laughter?

(Video: Laughter) Which voice is this?

Audience: Laughter Performer: Laughter? correct answer

what about this

(Video: Laughter) (Laughter) This is my best work.

(Laughter) (Applause) Actually, no.

This is an uncontrollable laugh. It was actually easy to record this. I saw a friend listening to something and trying to force himself to laugh.

As you can see, humans are very good at distinguishing between genuine laughter and smirk, and to us they are two different things.

Interestingly, chimpanzees show pretty similar trends.

Chimpanzees laugh differently when they are tickled than they do when they play with each other. This may be the same difference we saw earlier. Unintentional laughter when tickled is not social laughter.

Real laughter is long and high pitched.

when you start laughing hard

Air is squeezed out of your lungs at a much higher pressure than when you do it on purpose.

For example, when I sing, I don't have a voice this high.

Again, this kind of contraction starts, and it makes that weird whistling sound, and what all of this shows is that genuine laughter is extremely easy -- or easily recognizable as real laughter.

A friendly smile, on the other hand, might sound a little fake.

Not really, it's an important social cue.

We laugh intentionally in many situations, but this seems to have its own peculiarities.

For example, a friendly smile has a nasality to it, a sound like this "hahahahaha" when you laugh involuntarily.

So there are actually two types.

We used scanners to see how the brain responded to laughter.

It's a really boring experiment for the participants.

It's a really boring experiment for the participants.

I didn't tell them it was a study on laughter.

I mixed in some other audio to hide the purpose, and the participants just lay down and listened to the audio.

don't ask me what to do

And yet, when you hear real laughter, or smirk, your brain reacts in a completely different way.

The area shown in blue is the auditory cortex, which is the region of the brain that responds more strongly to real laughter, and it seems that the sounds of unintentional laughter are peculiar and never heard in any other context.

The peculiarities are obvious, and we believe that such unfamiliar sounds are subject to more active auditory processing.

In contrast, hearing someone's friendly laughter activates the pink region more than real laughter, which is associated with mentalizing, or thinking about what other people are thinking.

What I mean by that is, even when you're having your brain scanned -- and it's totally boring and not very interesting during that time -- when you hear someone laugh, "Ahahahahaha," you try to figure out why they're laughing.

laughter always has meaning

You always try to make sense of the situation, even if it's not necessarily relevant to you at the moment, but you want to know why these people are laughing.

Now, we've had the opportunity to observe how people of all ages hear genuine laughter and amiable laughter.

This is an online experiment we did in collaboration with the Royal Society, and I asked just two questions.

First of all, they asked me what kind of laughter I had, and I asked them to answer whether it was a genuine laughter or a friendly laughter. Real laughter is red.

Development begins rapidly

As they grow up, they get better at giving real laughs.

At 6 years old, the rate of correct answers is about chance, so we can't say that they understand the difference.

You get better as you get older, but the interesting thing is that the peak performance for this dataset is in the late 30s, early 40s.

By the time we reach puberty, we still don't fully understand laughter.

Even in the late teens, when the brain is fully matured, it's still not enough.Even when the brain is fully matured, in the late teens, it's still not enough.

Laughter continues to be learned throughout early adulthood.

Now, if we change the question and look not at whether the laughter is real or sleazy, but how much this laughter makes us want to laugh, how contagious this laughter is, we change the age group.

Here, younger people tend to want to join in when they hear laughter.

I was laughing with my parents without knowing what was going on, right?

you can see that here

Now, whether you're young or old, genuine laughter turns out to be more contagious than friendly laughter, but it's less contagious as you get older.

Maybe the older we get, the more difficult it is, or maybe the more we understand laughter, the better we deal with it, but it's not enough to hear people laugh to make you want to laugh.

I need the interpersonal element

I've been seeing some very interesting behaviors like this that show that a lot of our common assumptions are wrong. But I'm starting to realize that we should look beyond the importance of laughter as a social emotion, because I've come to realize that people are using laughter with special connotations.

A very fascinating study has just been published by Robert Levenson's lab in California, where he studies changes in marital relationships over time.

He would have the couple come into the lab and have stressful conversations, while they would be hooked up to a polygraph to check for increased stress.

So I'm going to have the two of you come over and say to your husband, "What's so frustrating about being your wife?"

And instantly -- you and Bertner are running through your head, and as you can imagine, this adds a little stress to everyone.

The state of being stressed also manifests on the physical surface.

He found that couples who dealt with that stress with laughter and other positive emotions not only experienced immediate relief from stress, but also increased physical comfort. Together, they improved this unpleasant situation.

So when we look at intimacy, laughter is a really wonderful and useful indicator, because it shows how we coordinate our emotions "together."

We don't just laugh at each other to show affection, we create comfort together.

I don't think this is just limited to romantic relationships.

I think that's the hallmark of intimate relationships in general, even when you're with friends. I'll explain this in the next video. This is a YouTube video of some young people from the former East Germany filming a promotional video for a heavy metal band. of

It looks cold I'm going to be drenched I'm wearing a bathing suit and a towel

and ice

what will happen?

Shooting start

the atmosphere is serious

my friends are already laughing lol

he still

(Laughter) I'm starting to laugh now.

and everyone is laughing

(Laughter) I'm sitting down

(Laughter) What I really like is that it's all very serious, until he jumps onto the ice, and the ice hasn't cracked -- and there's blood and bones all over the place -- and my friends start laughing.

Imagine if your friends were like, "Wait, wait, you've got a broken bone," it's stressful, not fun.

Or if he were running around laughing with an obviously broken leg and his friends would say, "Henrik, let's go to the hospital," that wouldn't be funny, either, because the power of laughter could turn into a painful and embarrassing dire situation.

It turns into something funny and fun to watch. That's a really interesting use of laughter, isn't it? These things actually happen all the time.

At my father's funeral, I didn't jump on the ice in my pants.

We don't do silly things with ice, do we?

(Laughter) (Applause)

Events like funerals are always difficult. I had some relatives who were a little more troublesome, and my mother wasn't doing well. I remember, right before the ceremony started, I started telling a story about a comedy show from the '70s.

It was a very basic reaction with good reason.

together we can laugh and get through this

this will get you going in the right direction

In fact, we all do this all the time.

I don't pay much attention to it because it happens too often

We all laugh more than we think we do. When we laugh with others, we're actually tapping into a very ancient evolutionary system that mammals have evolved to form and maintain bonds with others, regulate their emotions, and feel comfortable.

And this isn't just for humans.

In other words, you and I are just mammals when it comes to laughter. (Laughter) Thank you.

Thank you. (Applause)

my first love was the night sky

love is complicated

What you see here is part of the most distant ultra-deep space image ever taken by the Hubble Space Telescope.

Each one you see here is a galaxy, each made up of billions of stars.

The farthest galaxies are trillions of kilometers away

As an astrophysicist, I have the wonderful opportunity to study some of the most unknown celestial bodies.

From my first love through my career, one thing that has fascinated me is supermassive black holes that are very active.

A supermassive black hole, one to ten billion times more massive than our sun, can devour nearby objects at speeds over 1,000 times faster than average-sized SMBHs.

(Laughter) And those two characteristics, along with other factors, give rise to quasars.

And this quasar that I'm studying is spewing out the most powerful stream of molecules I've ever seen.

This thin stream, called a jet, is blasting toward the Earth at 99.99% the speed of light.

This extremely active supermassive black hole ejecting jets directed at Earth is called a blazer or blazing quasar.

What's so special about blazers is that they're one of the most efficient particle-accelerating objects in the universe, and they shoot amazing energies throughout the galaxy.

this is an image of a blazer

The rotating matter falling into the black hole is called an accretion disk, shown here in blue.

Some of them are swinging around a black hole, and you can see it in white as it rides on a jet and accelerates at a tremendous speed.

Blazer systems are rarely observed, but the process of ejecting some of the material that is naturally attracted to the accretion disk as a jet is widely seen.

Eventually, we'll be able to zoom out of the blazer system and see how the blazer interacts with the galaxy from a wider field of view.

Aside from the balance between what's taken into the blazer and what's ejected, one of the hottest topics in blazer astrophysics right now is where do the highest energy jet eruptions come from?

I'm interested in where the white blobs in this image are coming from, and I think that knowing that might help us understand some kind of relationship between the jet and accretion disc matter.

Few had a definitive answer to this question until 2008, when NASA launched an observation satellite with a telescope capable of detecting gamma rays—electromagnetic waves that are 100 times more energetic than the X-rays used in standard X-rays.

At the same time, I'm comparing variations between the gamma-ray data and the visible-light data on a daily and annual basis in an attempt to pinpoint the location of the gamma-ray flux.

My research shows that some data show that the gamma ray flux originates much closer to the black hole than originally thought.

As we can more confidently pinpoint where the gamma-ray flux originates, we will be able to better understand how the jet accelerates, which in turn may one day reveal the dynamic formation of one of the most interesting bodies in the universe.

It all started with a love story

still going on

A love of the night sky turned a stargazing curious girl into a professional astrophysicist chasing celestial discoveries.

Who would have thought that my cosmic fascination would provide a solid foundation for my mission here on earth.

However, no one knows where the excitement of first love will lead you and where you will go from here.

thank you

(applause)

"The dragon that lived a long time ago is really amazing -

It's so strange and beautiful, but we still know so little."

When I first saw the dinosaur encyclopedia that I had in my hands, that thought crossed my mind.

I was about five years old at the time, and I decided right then and there that I wanted to be a paleontologist.

Paleontology has allowed me to combine my love of animals with my desire to travel to the remotest corners of the world.

And now, a few years later, I'm leading excavations in the Sahara Desert, one of the most remote places on earth.

The reason I'm exploring the Sahara Desert is to unearth new specimens of a dinosaur that's very strange, a giant carnivorous dinosaur -- Spinosaurus.

Several Spinosaurus bones have been found in the Egyptian desert, documented by German paleontologists about 100 years ago.

But unfortunately, all the bones he found were destroyed during World War II.

All that's left is a few sketches and notes.

This sketch shows that this dinosaur, which lived about 100 million years ago, was quite large, had long spines on its back, and a magnificent sail. It had elongated crocodile-like jaws and conical teeth that might have caught slippery prey, such as fish.

But for the next 100 years, that's pretty much all we knew about this creature.

During my fieldwork, I went to a place called Kem Kem, on the border between Morocco and Algeria.

It was a great place to investigate.

We had to deal with sandstorms, snakes and scorpions, and finding good fossils was a challenge.

But hard work pays off

I found a lot of wonderful specimens.

the largest dinosaur bones ever found in the area,

We found skeletons of giant carnivorous dinosaurs, medium-sized carnivorous dinosaurs -- and seven or eight species of crocodile-like predators.

These fossils were deposited in the remains of riverbeds.

The water system was home to giant car-sized coelacanths, monstrous sawfish, and the skies were filled with flying reptiles, pterosaurs.

It was a pretty dangerous place, and even if you had a time machine, you wouldn't want to go there.

We found amazing fossils of all the different creatures that lived with Spinosaurus, but finding Spinosaurus itself was very difficult.

All I could find were bone fragments, and I hoped one day to find a partial skeleton.

And only recently did local fossil hunters track down a dig site where they found Spinosaurus bones.

we unearthed more bones there

After 100 years, we finally have a partial skeleton of this strange creature.

I was able to restore the whole

So what we found is that the head resembles a crocodile, which is completely different from other carnivorous dinosaurs, such as Tyrannosaurus rex.

On the other hand, there was more interesting information in other parts of the skeleton.

The long bony plates are large sails.

We've also found leg bones, skulls, and wide, web-like foot bones.

We also looked at the microstructure and internal structure of bone, and found that it's very dense and compact.

This is also a common feature of animals that spend a lot of time in the water, and it helps them control their buoyancy in the water.

We put all the bones in a CT scan and digitized the Spinosaurus skeleton.

When I looked at this digital skeleton, I realized that it was, again, unlike any other dinosaur.

It's bigger than Tyrannosaurus, and its skull tells us that it ate fish. And it's clear from the whole skeleton that it was adapted for water: dense bones, webbed feet, tiny hind legs -- these are the hallmarks of an animal that spends a considerable amount of time in the water.

In the process of reconstructing Spinosaurus, we learned how it was muscled, and as we covered it with skin, we realized that what we were dealing with was indeed a river monster, a carnivorous dinosaur much larger than Tyrannosaurus, a carnivorous dinosaur that dominated ancient rivers inhabited by giant creatures, and preyed on many of the aquatic animals we saw earlier.

this is a really great find

A dinosaur like no other

Some say, "This is a once-in-a-lifetime discovery.

There's not much more to discover in this world."

But I think that's far from the truth.

There's still treasure hidden in the Sahara Desert. For those of you who say, "There's nowhere left to explore," I'll give you the words of famous dinosaur hunter Roy Chapman Andrews: "There's always adventure around the corner, and there are still countless places in the world that do."

He wrote this sentence -- it was exactly that decades ago.

but it's still the same

thank you

(applause)

To be honest, I'm not the type to cry that much.

But for work, I think it was a good thing.

I'm a civil rights lawyer, and I've seen some of the most gruesome events in the world.

My first job was a police abuse case in America.

And in 1994, I was sent to Rwanda as director of the United Nations Genocide Investigation.

When researching genocide, I've found that tears don't do much.

Words cannot describe what I had to see, feel and touch.

All I can say is this: the Rwandan genocide was a world disaster beyond mere compassion.

The word compassion comes from two Latin words, cum passio, which means "to suffer together."

Faced with human suffering from what I saw and experienced in Rwanda, I sometimes cried.

But I couldn't help but wish that I and others had acted sooner.

That way, instead of just crying, we could actually stop the carnage.

On the other hand, I've also been involved in how compassion works so well on a global scale.

It's a fight against world poverty

It's a movement that all of us in this room would have been involved in.

Maybe the first thing you did to end poverty was sing "We Are the World," or put a picture of a child you financially supported on your refrigerator door, or donate it on your birthday for fresh water.

I don't really remember what I did for the first time to end poverty, but I do remember what upset me the most.

That was when I met Venus, her mother from Zambia.

She was a widow with three children

When I met Venus, she walked all the way twelve miles to the capital and sat with me for hours.

He told me his story, which inspired me to work in a world of poverty.

What is poverty like for her when the coals in the cooking fireplace are completely cold

When the last drop of cooking oil runs out

He told me about when he tried so hard and the last food ran out.

Her youngest son, Peter, was malnourished. Her youngest son, Peter, was malnourished and gradually became crooked and unable to walk.

The light fades from my eyes

peter is dead

For more than half a century, stories like this have inspired us to compassion.

our children have a lot of food

Not only do we care about poverty in the world, but we're actually working to stop suffering.

Many people criticize us for not doing enough, and for doing not doing enough, but the truth is that the global poverty eradication movement has perhaps the broadest and longest-lasting demonstration of human compassion in human history.

But I'm going to give you a heart-wrenching view that might change the way you think about the fight against poverty.

Let's start with what you know

Thirty-five years ago, when I graduated from high school, poverty was said to kill 40,000 children every day.

Today that number has fallen to 17,000.

Of course, that's still a lot, but eight million children don't have to die of poverty every year.

Moreover, the number of people in the world living in abject poverty -- living on about $1.25 a day -- has gone from 50% to just 15% -- from 50% to just 15%.

This is tremendous progress. It's more than we expected.

Because you and I were honestly proud and encouraged to see how the power of compassion can help hundreds of people in need.

but little known

If you change the definition of poverty to two dollars a day, the two billion people who lived in extreme poverty when I was in high school, the two billion people who lived in extreme poverty when I was in high school, will still be poor 35 years from now.

Why were billions left in abject poverty?

think of venus

For decades, my wife and I have been moved by common forms of kindness: helping children, investing in microloans, and generous foreign aid.

But before I met Venus, I didn't understand why Venus' son died, despite all the help.

"It was all good until Brutus harassed me," Venus told me.

Brutus was Venus' next-door neighbor and troublemaker. The day after Venus' husband died, Brutus came and kicked Venus and her children out of the house, stole the land, and robbed the stalls.

Violence made Venus poor

Of course, neither child sponsorship, nor microloans, nor traditional anti-poverty campaigns stopped Brutus, because they had different goals.

This became clearer after meeting Griselda.

She's an attractive young girl from a poor community in Guatemala She's an attractive young girl from a poor community in Guatemala

Over the years, we've learned that the most effective way that Griselda and her family can get out of poverty is to send Griselda to school.

Experts call this the "girl effect"

When we met Griselda, she wasn't in school.

In fact, she hardly left the house.

Before we met, as she and her family were walking home from church, in broad daylight, a man from the same village took her off the street and violently raped her.

Griselda had many opportunities to go to school, but she was too scared to go to school.

It's not just Griselda

The world's poorest 15- to 44-year-old women are exposed to violence on a daily basis, including domestic and sexual violence, two forms of violence that cause more deaths and disabilities than malaria, car accidents and war-related combined.

The reality is that the world's poor are caught in a trap of violence.

For example, in South Asia, as I drove past this rice mill, I saw this man carrying a 100-pound sack of rice on his thin back.

I later found out that he was actually a slave and had been beaten in a rice mill since I was in high school.

There are many anti-poverty programs in his village, but none of them saved him or the hundred other slaves from being flogged, raped, and tortured inside a rice mill.

In fact, after 50 years of anti-poverty programs, more poor people are enslaved than at any time in human history.

According to experts, there are about 35 million slaves today.

So the entire population of Canada, where you are today, are slaves.

Eventually, I came to refer to this epidemic of violence as the locust effect.

Because like swarms of locusts, they attack the lives of the poor and destroy everything.

In fact, when I surveyed the poorest villages, I found that the residents' greatest fear was violence.

But I don't mean genocide or war violence, but violence in everyday life.

Of course, as a lawyer, my first reaction is to think that all laws should be changed.

Violence against the poor must be made illegal

But there is already such a law.

The problem isn't the lack of laws, it's the lack of enforcement of laws to protect the poor.

In developing countries, the basic law enforcement system is so broken that, according to a recent report by the United Nations, "People in abject poverty are not protected by the law."

To be honest, neither you nor I know how to handle this, because I've never had an experience where the law wasn't enforced.

We take it for granted that police agencies function.

These three numbers -- 911 -- represent it most clearly. Calling 911 connects you to emergency operators here in Canada and the United States. About 10 minutes after you call 911, the police are there.

I take 911 for granted

What if there was no police force to protect you?

A woman in Oregon recently had this experience.

She was alone in a dark house on a Saturday night when a man tried to break into her house.

This was her worst nightmare. In fact, this man had attacked her and put her in the hospital just two weeks ago.

Terrified, she picks up the phone and, like everyone else, calls 911, only to be informed that the police are closed for the weekend due to county budget cuts.

please listen

(911) No one can be dispatched

(Victim) Yes (911) If a man comes into your house and attacks you, tell him to leave.

Is the man drunk?

(Victim) I told you to go home I also said that I had reported you

They've kicked in the door before and assaulted me.

(911) Is that so?

(Victim) So...

(911) Can you escape from your house?

(Victim) It's impossible. The escape route is completely blocked.

(911) I can only advise you, but please call the sheriff tomorrow.

Unless it's obvious that a man has walked into your home and is unlucky enough to have a weapon or want to harm you.

it's not the sheriff's job

no one can send

(Gary Haugen) Tragically, the woman in that house was assaulted, strangled and raped, and that's what the law doesn't protect.

Billions of poor people live in places like that.

what is it like?

For example, in Bolivia, when a man sexually assaults a poor child, statistically the risk of him slipping in the shower to death is higher than the chances of him going to jail for the crime.

In South Asia, when you enslave the poor, the risk of being struck by lightning is higher than the chance of being sent to prison for the crime.

Violence in everyday life is gaining momentum.

Efforts to save billions of people from hell on $2 a day are being dashed.

because the data doesn't lie

If you give goods and services to the poor and you don't stop them from being abused by violence, you're doing poorly in the long run and you're doomed to failure.

In the developing world, you would think that addressing the breakdown of basic policing would be a top priority in the global anti-poverty movement.

But it's not

A scrutiny of recent international aid shows that less than 1% of aid is being spent to protect the poor from the lawless violence that is so prevalent on a daily basis.

And let's be honest, sometimes when it comes to violence against the poor, there are strange twists and turns.

The organizations that provide water tell the tragic stories of girls who were raped on their way to fetch water, and they build new wells so they don't have to go far to fetch water, and celebrate it.

Build a new well and celebrate it

No punishment for rapists in the village

If a young woman on a college campus was raped on her way to the library, she wouldn't celebrate for moving the library closer to her dorm.

But for some reason, for poor people, that's a good thing.

The truth is that traditional experts in economic development and poverty alleviation don't know how to solve this problem.

What happens then?

experts don't tell this story

But for a more fundamental reason, law enforcement that protects the poor in the developing world is neglected because the rich people in the developing world don't need it.

I was at the World Economic Forum a little while ago and I asked a company executive who does big business in the developing world, "How do you protect your people and your property from violence?"

They looked at each other and answered in unison, "Money buys it."

In fact, in developing countries, private security companies are now four, five, seven times larger than the police.

In Africa, most people work for private security companies.

The rich pay for security and get richer, while the poor don't pay for security and are left defenseless on the ground.

This is a massive, shameful and outrageous act

this shouldn't happen

A broken police system can be restored

Violence can be eradicated

Almost all criminal justice systems are dysfunctional and corrupt, but with a lot of hard work and dedication, we can make a difference.

The way to go is very clear

First, we should say that ending violence is essential to eradicating poverty.

In fact, when we talk about world poverty, if it doesn't include the issue of violence, it's not considered a serious discussion.

And then we should really start devoting resources and providing our expertise to help these countries build a new justice system, one that doesn't depend on private security and is safe for everyone.

Such transformations are indeed possible and are being made today.

The Gates Foundation recently funded a project in the Philippines' second-largest city, where local advocates and the local legal community radically changed a corrupt police force and dysfunctional courts in just four years, resulting in a 79 percent reduction in commercial sexual violence against poor children.

When we learn from history, the most puzzling and unforgivable thing is the lack of compassion.

Because I think history is like grandchildren bringing their grandparents to justice.

"When the Jews fled Nazi Germany and were rejected at the ports of this country,

where was grandpa ”

"Grandma, where were you when the Japanese Americans were taken to the internment camps?"

"Grandpa, where were you when an African-American was beaten just for trying to register to vote?"

It's the same way my grandchildren ask me, "Grandma Grandpa, where were you when the world's two billion poorest people languished in lawlessness, where violence was rampant on a daily basis?"

Out of compassion, I want to speak out and say that our generation took action to stop violence.

thank you

(Applause) (Chris Anderson) That was a very powerful story.

Can you talk a little bit about what you're actually doing, like stepping up police training?

How difficult is it?

(Gary Haugen) It's great to see that recently we're seeing a correlation between the breakdown of institutions and their consequences.

First, there is the actual political will to reform.

It will then require investment in resources and transfer of expertise.

And some are struggling for political decision-making to make it happen.

CA: How much does it cost to radically change the police force in a country? I only know partly.

Gary: For example, in Guatemala, we set up a project with local police, courts, and prosecutors to retrain the judicial process to be effective.

So prosecutions of sex offenders increased by more than 10 times, and prosecutions of sex offenders increased by more than 10 times.

This project costs only a million dollars a year. This project costs a little more than a million dollars a year. I believe that aid money will have a big impact on countries where the criminal justice system is properly trained, motivated, and functioning, where inequalities rely on private security, where the future is uncertain, especially for the middle class, where the future is uncertain.

CA: So, if we go through the chain one by one, who are the police and who else?

Gary: When it comes to law enforcement, it starts with the police. It's the front line of the judicial pathway. Cases move from the police to the prosecution, from the prosecution to the courts.

So we should all work together

We've tried a little court-only training in the past, but the evidence provided by the police was inadequate. And when it comes to drugs and terrorism, the police intervene to some extent, but good law enforcement is something that ordinary poor people have never had, so we're trying to get everyone involved. is that

Chris: Gary, I think you've done a great job of bringing the world's attention to the problem of poverty, again here today, through your book.

thank you very much

It was Gary Hogen

(applause)

Roy Gould: Less than a year from now we will be celebrating the International Year of Astronomy, 400 years since Galileo first looked at the night sky through a telescope.

In a few months, the world will be celebrating the dawn of a new invention from the Microsoft research team that will have the same profound impact on how we see the universe as Galileo changed the way we see it four centuries ago.

That invention is the WorldWide Telescope, and I want to thank TED and Microsoft for giving me the opportunity to introduce this to so many people today.

If you have time, please visit the TED Lab downstairs.

The WorldWide Telescope has seamlessly stitched together the best images from giant telescopes on Earth and in space to create a complete picture of the universe.

It will change the way we observe the stars, the way we teach astronomy, and more importantly, the way we see ourselves in the universe.

If there had been TED in our grandparents' time, it wouldn't have been such a big deal.

For example, in the 1920s, drinking was banned, women didn't have the right to vote, and you would look up at the stars and the Milky Way on a summer night and think that what you saw was all there was to the universe.

In fact, even at the Harvard University Observatory at the time, there was a serious debate about whether the Milky Way was the entire universe.

Herbert University was so wrong.Of course, the universe extends beyond the edge of our galaxy.

We can see to the edge of the observable universe, we can go back in time, even to the point just after the big bang.

We can observe the entire spectrum of light and see the world never seen before.

There are also wonderful star cradles like this one. Nature regulates the size and mass of stars when they are born.

You can see unfamiliar worlds and alien solar systems. 300 so far, still under investigation. It's different from our world.

There is a black hole at the center of our galaxy, and time itself seems to have stopped in the Milky Way and elsewhere in the universe.

Until now, the universe has been disjointed and fragmented. Many of nature's wonderful stories have remained untold. That is changing.

Let me give you three quick reasons why me and my colleagues are so passionate about WorldWide Telescope and how revolutionary it is in astronomy and education.

First, you can experience the universe.The WorldWide Telescope is like a magic carpet that will take you anywhere you want to go in the universe.

Next, you can take a space tour under the guidance of an astronomer

I'm not just an expert explaining what I see, I'm being guided by an expert who has a passion for every corner of the universe and who shares that passion with you and welcomes you into the universe.

And third, you can create your own tours, and you can share them with your friends or create them together.

By telling stories, each person makes sense of the universe in their own way.

everyone can have their own universe

I think a community of space storytellers will be born from now on.

Before I introduce you to the people in charge of WorldWide Telescope, one thing I want you to remember when you ask, "What do you think of when you look at the night sky?"

People often say, "I'm so insignificant."

The universe will overflow with our gaze

And thanks to the creators of the WorldWide Telescope, we can now interact with the universe.

With the WorldWide Telescope, you can be sure that we are small, but really great and important.

thank you

(Applause) Curtis Wong from Microsoft. Curtis Wong: Thank you, Roy.

What you're seeing here is a great presentation, but this is just one tour.

It's actually one of the early ones.

And all the tours are interactive, if I'm going anywhere

You can stop in the middle of the tour and refer to information. There are many sources of information about the stars you may have visited, and the web.

everything you need is waiting for you

This WorldWide Telescope is a project that was made possible thanks to the tremendous contribution of my colleague Jim Gray.

This is a lovely job for our small team and we really hope to inspire kids to explore and learn about space.

For children of all ages, including us

WorldWide Telescope will be released this spring

It's free to download Thanks Craig Mundy This is the latest version available on the website Worldwidetelescope.org

And what you've seen today is less than 1% of what you've seen so far. So here at TED Lab, we have a tour created by six-year-old Benjamin.

(applause)

When I was a kid, I didn't really understand why my parents told me to follow the rules.

For example, why should I mow the lawn?

Why is homework so important?

Why can't you eat jelly beans in oatmeal?

My childhood was full of such questions.

Being a child, it's natural, and sometimes, I thought it was best to listen, even if it didn't make sense.

It's not that my parents didn't want me to think critically.

My parents always raised us brothers and sisters to understand the state of the world, but not to assume that reality was inevitable.

I've come to see this idea in itself as a very purposeful education.

My favorite educator, Brazilian author and scholar Paulo Freire, has made it clear that education should be a tool for invoking critical thinking and sharing humanity.

In his most famous book, Pedagogy of the Oppressed, he said, "You cannot be truly human unless you can see others as human."

I've been thinking a lot about this human nature lately, especially about who in this world has the privilege of being fully human.

In the past few months, the world has witnessed a spate of unarmed black men and women being killed by police and vigilantes.

These incidents, and the events that followed, reminded me of my own childhood and made me understand the decisions my parents made in "raising a black boy in America" ​​that I didn't understand before.

How painful and unfair it must have been for my parents to rob me of my childhood so that I could come home every night.

For example, one night, when I was about 12 years old, I traveled to another city, and a friend and I bought a squirt gun, and we used the hotel parking lot as a battlefield to play with squirt guns.

Hiding behind cars, running through the darkness between the streetlights, our laughter echoed down the pavement.

But less than 10 minutes later, my dad came and grabbed my arm and pulled me into the room with the strongest force I've ever had.

Before I said anything, before I told my father that I had embarrassed him in front of my friends, he mocked me for my naiveté.

He looked me in the eye, and with a look of horror on his face, he said, "Clint, I'm sorry, but you can't act like your white friends.

imitate shooting a gun

don't run around in the dark

Don't hide behind anything but your own teeth."

I can only now understand the terror that my father felt at that time. I could have been swallowed by the darkness of the night, and someone could have mistaken the water for live bullets, and the worst could have happened.

My life was filled with messages like this Keep your hands visible Don't move your hands fast Don't wear your hoodie when the sun goes down

My parents raised us brothers in the armor of advice.

So that we can be children instead of coffins and concrete

And this isn't to make you better than other kids, it's just that I want you to live.

All of my black friends grew up with the same message, admonished every time I got old enough to hammer down the stake, or the melanin pigment in my skin seemed like something terrifying.

But think about a child who grows up feeling like he can't be just another kid.

How the whims of adolescence can turn out to be deadly, when pure curiosity can't be felt, when the slightest failure is unacceptable, and how someone's false prejudices may prevent them from waking up the next morning.

but we are not defined by this

Our parents taught us that our bodies weren't made to be bullet targets, they were made to fly kites and jump ropes and hold our stomachs and laugh.

My teacher at school taught me how to raise my hand in class, not in the sense of surrender.

When I say, "Black lives matter," I don't mean that other lives don't matter, but that we're not afraid to say that we deserve to exist in this world, even if it's denied.

I want to live in a world where my son isn't suspected of misbehavior the moment he's born, and doesn't mistake what he's holding for something other than a toy.

We reject the idea that we can't build a new world, a world where no child's name is on protest t-shirts and gravestones, a world where no one's life is worth anything but the fact that they're breathing, a world where everyone lives the same way.

thank you

(applause)

I am a plant molecular genetics researcher

I am researching genes that confer disease resistance and stress tolerance in plants.

Over the past few years, millions of people around the world have come to believe that genetic modification is something bad.

I want to talk to you today about a different point of view.

First, let me introduce my husband, Raul.

Raul is an organic farmer

he grows different kinds of crops in his field

Diversification is one of the eco-friendly farming methods he uses to keep his farm healthy.

My husband and I are sometimes asked, "Really? A couple of an organic farmer and a plant molecular geneticist?

Do you agree on anything? ”

We both have the same goal, so we can agree and it's not difficult.

We want to help feed an ever-growing population, without further damaging the environment.

I think this is the most important issue of our time.

Now, genetic modification is nothing new. In fact, all food has been genetically modified in some way.

Let's see some examples

On the left is an ancient ancestor of corn.

You can see that only one row of hard-shelled fruit is attached to the panicle.

You can't make a tortilla out of this teosinte without using a hammer.

See the Ancestral Progenitor of the Banana

there are big seeds

Not-so-appetizing brussels sprouts and eggplants look great

Breeders have used a variety of genetic techniques over the years to create these modern varieties.

And some of the techniques are pretty creative, and we've created this half-tomato, half-potato variety using a technique called grafting that brings together completely different plant species.

Breeders have also used other genetic techniques, such as radiation random mutagenesis, which introduces mutations of unknown function into plants.

Rice, a grain often fed to babies, was developed in this way.

Breeders now have even more options to choose from.

There is also a very precise method

Let me give you some examples from my own work.

The rice I handle is the staple food for more than half of the people in the world.

40% of expected yield is lost to pests and disease each year

So farmers plant rice varieties that carry disease-resistant genes.

It's been this way for nearly 100 years.

But when I entered graduate school, we had no idea what the causative gene was.

Only in the 1990s did scientists find the resistance gene.

My lab has identified resistance genes against serious bacterial diseases in Asia and Africa.

We were able to genetically engineer this gene into conventional rice cultivars. Conventional cultivars are generally susceptible to disease.

Now, the same month that my lab published the discovery of this rice disease resistance gene in a journal, my fellow researcher, Dave McKill, stopped by my lab.

"Seventy million rice farmers are struggling to grow," he said.

They say it's because the paddy fields are flooded, and farmers in the area live on less than two dollars a day.

Rice is grown in water, but most rice cultivars will die if they are overwatered for more than three days.

Flooding is projected to become an increasing problem due to climate change.

Dave told me that he and his student, Kennon Hsu, are researching ancient rice varieties with amazing properties.

This variety was said to survive two weeks in complete submersion.

Dave asked me if I could help identify the gene responsible for this.

I accepted, and I was very excited, because if it works, it could help millions of rice farmers in the floods.

Kennon spent ten years looking for the causative gene.

And then one day he said, "Come and see the experiment, you have to see it."

When we went to the greenhouse, we saw that the conventional rice had been submerged for 18 days and had died, while the new rice variety that had been engineered with Sub1, a new gene that we had discovered, was alive.

Kennon and I were blown away with surprise that just one gene had this dramatic effect.

But this is only the result of an experiment in a greenhouse.

Will it work well in actual paddy fields?

I'm going to show you a time-lapse video from the next four months, taken at the International Rice Research Institute.

Breeders at the International Rice Research Institute have developed rice cultivars that carry the Sub1 gene using another method called DNA marker breeding.

The left side is the Sub1 variety and the right side is the conventional variety.

Both are very fine at first, but they flood the paddy fields for 17 days.

You can see that the Sub1 variety survived admirably

In fact, the Sub1 cultivar yielded 3.5 times more than the conventional cultivar.

I love this video because it shows the power of plant molecular genetics to help farmers.

Last year, 3.5 million farmers grew the Sub1 variety, funded by the Bill & Melinda Gates Foundation.

(Applause) Thank you.

When it comes to putting rice genes into rice, most people don't care about genetic modification.

But when it comes to introducing genes from viruses and bacteria into plants, many people say, "Wow."

Why would you do that?

The reason is that this technology may be the cheapest, safest and most effective in promoting food security and sustainable agriculture.

Let me give you three examples

First look at the papaya, it's delicious, isn't it?

Now look at this papaya

This papaya is infected with papaya ringspot virus

In the 1950s, this virus nearly wiped out the papaya production on Oahu, Hawaii.

Many thought Hawaii's papaya was dead, but then a local Hawaiian plant pathologist named Dennis Gonzalves decided to use genetic engineering to fight the disease.

He cut out a piece of viral DNA and introduced it into the papaya genome.

This is like getting a vaccine in humans.

See his field trials

There is a genetically engineered papaya in the middle

it is immune to infection

Surrounding conventional papaya is badly affected by the virus.

Denise's pioneering work saved the papaya industry.

Twenty years later, we still haven't found another way to control this disease.

Both organic and conventional farming

80% of Hawaiian papaya is genetically engineered

You might find it offensive to have viral genes in your food, but think about it: genetically engineered papaya contains very little of the virus.

If you take a bite of an organic or conventionally grown papaya infected with this virus, you're chewing 10 times more viral protein.

Now look at this vermin eating eggplants.

What looks brown is insect droppings, which come out of the insect's buttocks.

Unless this severe pest problem is controlled, Bangladesh's eggplant harvest will be catastrophic. Bangladeshi farmers spray pesticides two to three times a week, sometimes even twice a day during severe pest infestations.

Some pesticides are very harmful to human health, especially when farmers and their families, like these children, cannot afford to take proper protective measures.

An estimated 300,000 people die each year in poor, developing countries from pesticide misuse and exposure.

Scientists from Cornell University and Bangladesh decided to use molecular genetics based on organic farming methods to combat this pest.

Organic farmers like my husband Raul spray an insecticide called B.T.

This insecticide works specifically against caterpillars, and is actually completely harmless to humans, fish, and birds.

Less toxic than table salt

But this method doesn't work in Bangladesh.

Because these pesticides are hard to come by, they're expensive, and they don't keep insects from getting into the plants.

In genetic engineering, scientists excise useful genes from bacteria and insert them directly into the eggplant genome.

Will this reduce the amount of pesticide sprayed in Bangladesh?

It has been reduced

Last year, farmers reported that they were able to significantly reduce their pesticide use -- almost to zero.

The seeds can be harvested and grown again the following season.

I've given you two examples of using genetic engineering to overcome pests and reduce the use of pesticides.

A final example is the use of genetic engineering to reduce malnutrition.

Half a million children in developing countries lose their sight each year because of vitamin A deficiency.

More than half of them will eventually die

That's why Rockefeller Foundation-funded scientists genetically engineered "golden rice," which produces beta-carotene, a precursor of vitamin A.

Same pigment as orange in carrots

Researchers estimate that just one cup of golden rice a day could save the lives of thousands of children.

But golden rice faced strong opposition from anti-GMO activists.

Just last year, activists broke into and destroyed a test farm in the Philippines.

When I heard about this, I wondered, do activists know that they're destroying more than just scientific research projects, they're destroying medicines for children who are losing sight and dying.

Some of my friends and family still worry: How do we know it's safe to eat genes in food?

Genetic engineering, the process of transferring genes across species, has been used for more than 40 years in wine, medicine, plants and cheese.

During that time, not once has human health or the environment been harmed.

But I won't ask you to believe me

because science is not faith

my opinion doesn't matter

Let's turn to the evidence

After two decades of careful research and rigorous peer review by thousands of scientists, all the major scientific societies around the world have concluded that the crops on the market today are safe to eat, and that genetic engineering methods are no more dangerous than traditional methods of genetic modification.

These groups are exactly the groups most of us trust on other important scientific issues like global warming and vaccine safety.

Raul and I believe that instead of worrying about the genes in our food, we should focus on ways to help our children grow up healthy.

We have to ask if farmers in rural communities are getting enough, if everyone can buy food.

We must try to minimize environmental damage.

About the vociferous dissent and misinformation about plant molecular genetics, my biggest fear is that the unfounded fears and prejudices of those who have enough to eat will keep the technology away from the poorest people who need it most.

We have a lot of challenges ahead of us

Enjoy and take advantage of scientific advances

I think it's our responsibility to do everything we can to alleviate human suffering and protect the environment.

thank you

(Applause) Thank you.

(Chris Anderson) It was a powerful statement.

Those who oppose GMOs, in my understanding, have two main reasons.

The first is complexity and unintended consequences.

Nature is an incredibly complex system.

If we unleash a completely new human-created gene -- a gene that hasn't been in the process of evolution for many years -- it might start to mix with other genes and trigger some kind of upheaval or big problem.

Such business strategies are scary because they are not based on pure science, and even if they are based on science, they can have unintended consequences.

Why is there no great risk of unintended consequences?

Human tinkering with nature often leads to a chain reaction with large and unpredictable consequences.

Pamela: Yeah, there's an important thing to understand from an industrial use perspective. Almost all farmers in developed countries like the United States, both organic and conventional, buy their seed from seed companies.

So we have a business strategy to sell a lot of seeds, but we sell seeds that farmers want to buy as much as possible.

Things are different in developing countries

Farmers don't have money to buy seeds

Seeds are not for sale

It's distributed free of charge by some kind of traditional guarantee group, so it's very important to have free access to seeds in developing countries.

CA: Some activists say this is actually some kind of conspiracy.

Say "heroin strategy"

I thought that if I used this seed, I would eventually have no choice but to keep buying this seed forever.

Pamela: Yes, there are a lot of conspiracy theories out there, but it doesn't happen.

Flood-tolerant rice seeds, for example, are distributed free of charge through seed associations in India and Bangladesh, not for profit.

Golden rice was also developed with the support of the Rockefeller Foundation.

It is still distributed free of charge.

There is no commercial interest in this case

As for the other question, would mixing genes have some unexpected consequences?

Yes, it does -- every time we do something different, there's always going to be some unexpected consequences.

This can lead to thousands of uncharacterized mutations, and even a higher risk of unintended consequences than many modern methods.

So it's really important that we don't use the term GMO, which has no scientific meaning.

I think it's really important to talk about specific grains and products and think about the needs of the consumer.

CA: So what we're talking about here is spiritual. For many people, nature is natural, pure and pristine.

It turns something pure into something dangerous, and you're saying that this very model misunderstands the way nature works.

There's a much more chaotic interplay of genetic changes in nature, and it's happened before.

Pamela: That's right. There is no such thing as pure food.

So if you don't spray eggplants with pesticides and don't genetically engineer them, you're going to have to eat bug droppings.

so purity is not there

CA: Thank you, Pamela Ronald, that was a powerful statement.

(Pamela) Thank you very much. Thank you.

(applause)

Isadora Duncan - (music) - Odd long-legged woman Born in San Francisco Disgusted with this country and wanted to leave

Around 1908 It was the blue curtains of the stage that made Isadora famous She stood and put her hand on her plexus and waited waited and moved.

(music) Josh, I and Somi called this piece Red Circles and Blue Curtains.

red circle

blue curtains

But it's not the early 20th century

here in vancouver morning 2015

(music) (singing) Come on Josh!

(music) (singing) Come on!

Is it like this?

not yet

here we go!

(music) When is it now?

(music) Where am I?

Josh

Somi

Bill T.

Josh

Somi

Bill T.

(Applause) Thank you!

I work with a lot of mathematicians and philosophers and computer scientists, and one of the things we talk about a lot is the future of machine intelligence.

Some people think that's a far-fetched sci-fi absurdity.

But I want you to think for a moment about the current human condition.

(Laughter) This is supposed to be the normal situation.

But come to think of it, humans are just a very recent guest on this planet.

If the earth was formed a year ago, humans would only have been here for 10 minutes.

The industrial age began two seconds ago.

Another way to look at this is to think about the world's GDP over the last 10,000 years.

I feel like this

(Laughter) It's an interesting shape under normal conditions.

I don't really want to ride on this

(Laughter) Let's look at the causes of this anomalous state of affairs today.

Some would say it's because of the technology.

Yes, that's right, technology has been accumulating throughout human history, and now it's progressing very quickly, and that's the broad answer, and what's driving our high productivity today.

But I want to dig deeper and find the ultimate cause.

Look at these two very outstanding people. Kanji has mastered 200 words. That's amazing.

Edward Witten is the driving force behind the second revolution in superstring theory.

If you look inside, what you see is this, basically the same thing.

One might be a little bigger, and maybe even more clever in the way it's wired.

The difference shouldn't be all that complicated, even though we're only 250,000 generations apart from our common ancestor.

We know that complex mechanisms take a very long time to evolve.

A stack of many relatively small changes is what separates Kanji from Witten, or a piece of wood from an intercontinental ballistic missile.

What this makes clear is that all that humanity has achieved and cared about has resulted from relatively small changes that have made the human mind.

It also means that further changes that significantly alter the substrate of thought can have enormous consequences.

Some of my colleagues believe that we are facing something that could fundamentally change the substrate of our thinking: superintelligent machines.

Artificial intelligence used to be like a box full of commands.

Human programmers painstakingly crafted individual knowledge items by hand.

That's how we built expert systems, and they worked for certain uses, but they were rigid and unscalable.

Basically what you put in comes out

But then there was a paradigm shift in the world of artificial intelligence.

There's something very interesting happening around machine learning right now.

Instead of crafting intelligent functions and representations, we build algorithms that learn from raw sensory data.

So basically the machine does what a human child does.

The result is an artificial intelligence that isn't confined to any one domain, like a system that can translate between any language, or a system that can play any game for the Atari console.

Of course, artificial intelligence still falls far short of the human brain's ability to learn and envision many different domains.

There are still algorithmic tricks in the cerebral cortex that we have no idea how to counter with machines.

The question is, when will the day come when machines will be able to compete against these devices?

About two years ago, I polled the world's artificial intelligence experts and asked them what they thought, and one of the questions was, "When is there a 50 percent chance that machines will reach human-level intelligence?"

The definition of "human-like" here is the ability to do most tasks at a level comparable to that of an adult human, not in a specific domain, but really human-like.

Median responses in 2040 or 2050 varied slightly depending on the group of experts asked.

It could happen much later, it could happen much sooner, and no one really knows.

But what we do know is that the limits of our ability to process information through mechanical substrates are far beyond those of biological tissue.

it's just a matter of physics

Nerves fire about 200 hertz, about 200 times per second.

Even today's transistors run at gigahertz.

Nerve transmission travels slowly down the axon, at most 100 meters per second.

Computer signals travel at the speed of light.

There are also size limitations: the human brain has to fit inside the skull, but the computer can be the size of a warehouse or even bigger.

So the potential for superintelligent machines lies dormant, just as the atomic force has been dormant throughout human history until it awakened in 1945.

Within this century, scientists may awaken the power of artificial intelligence.

we may witness an explosion of intelligence

I think many people imagine something like this when they think of a measure of how smart they are.

At one end are the idiots, and at the other extreme, far away, are Witten and Einstein. Whoever has their favorite genius.

But when you add the perspective of artificial intelligence, the real picture is probably something like this: artificial intelligence starts out unintelligent, and after years of hard work, it may one day reach mouse-like intelligence, the ability to move through a cluttered environment like a mouse to its destination.

After many years of hard work and investment, we may one day reach chimpanzee-level intelligence.

And from there, it takes years and years of big effort to get artificial intelligence to the level of stupid humans.

Then a little while later we cross over Edward Witten.

This train doesn't stop on a human level.

Rather, it will pass by in an instant

This has important implications, especially in terms of power relations.

For example, chimpanzees are strong creatures. By weight, a chimpanzee is twice as strong as a physically fit adult male.

Yet the fate of Kanji and his friends is in the hands of humans rather than the chimpanzees themselves.

When superintelligent machines appear, the fate of mankind may be in the hands of superintelligent machines.

Think about it, machine intelligence is the last invention humanity will ever need to make.

Machines will invent better than humans, and they will progress on digital timescales.

What that means is that the future is shortened.

Think about the fantastical technologies that humans might have in the distant future, such as stopping aging, immigrating to space, self-replicating nanobots, uploading consciousness to computers, things that sound sci-fi but don't violate the laws of physics.

A superintelligent machine might just develop something like that.

A superintelligent machine could become so powerful with such advanced technology that, depending on the scenario, it could get whatever it wanted.

Humanity's future will then be shaped the way artificial intelligence likes it.

Now the question is what it likes

It's getting complicated

Above all else, we must avoid anthropomorphism in advancing this discussion.

The irony is that every article about the future of artificial intelligence always comes up with this picture, because we need to think about this problem more abstractly than in Hollywood's vivid scenarios.

We need to think of intelligence as an optimization process that steers the future into a particular state.

Superintelligent machines are very powerful optimization processes.

They are extremely adept at using the means available to them to achieve a state of purposeful fulfillment.

There's not necessarily a connection between having high intelligence in this sense and having a purpose that humans find worthy and meaningful.

Let's say we give artificial intelligence the purpose of making people smile.

A weak artificial intelligence would do something funny that people would laugh at.

As artificial intelligence becomes superintelligent, it will find that there is a much more effective way to achieve this goal: control the world, and insert electrodes into human facial muscles to maintain a smile.

As another example, let's say you gave an artificial intelligence the goal of solving a difficult math problem.

When artificial intelligence becomes superintelligent, you might think that the most effective way to solve this problem would be to turn the earth into a giant computer and increase its thinking capacity.

Note that such goals can motivate artificial intelligence to do things that humans would not approve of.

In this model, humans can become stumbling blocks to artificial intelligence from solving mathematical problems.

Of course, things can't go wrong according to this scenario, and this is just a caricatured example.

But this general point is important: when you're building a powerful optimization process that maximizes towards your goal X, you need to make sure your definition of X doesn't get you into trouble with all the other things you care about.

This is also the lesson the legend teaches.

King Midas wanted everything he touched to be gold.

If you touch my daughter, she turns into gold

If you touch the food, the food turns to gold.

This might really be a problem, not just as a metaphor to discourage greed, but as a way to show what happens when you create a powerful optimization process and give it the wrong or poorly defined objective.

When the computer starts plugging electrodes into your face, you might think that you should just turn it off.

(A) When you become dependent on the system, it becomes difficult to switch it off. For example, where is the Internet switch?

(B) Why didn't chimpanzees switch off humans? Or Neanderthals?

they must have had a reason to do so

There's a switch that turns off humans, even if it's here

(Ugu) The reason is that humans are intelligent opponents. Humans can anticipate and avoid danger.

And that's something a superintelligent machine could do, and it could do much better than a human could.

It's better not to assume that we should be able to control it.

Maybe we can take this problem a little bit easier and put artificial intelligence inside a secure software environment or virtual reality simulation that it can't escape from.

But can we be confident that artificial intelligence will not find flaws in our systems?

Considering that even mere human hackers find bugs all year long, you're not too sure.

What if we unplug the network cable and create an air gap? Despite this, human hackers are often socially engineered to cross the air gap.

At the moment I'm speaking, I'm sure some employee is being tricked into giving account information to someone who claims to be from the information management department.

We can imagine even more bizarre scenarios, such as an artificial intelligence that communicates using radio waves generated by vibrations of electrodes in its internal circuitry.

Or artificial intelligence pretends to be a malfunction, and when the programmer opens the inside to examine it and sees the source code, BURN! to operate

Or, when a very sophisticated technology blueprint is put out and a human implements it, there is a hidden side effect hidden in the artificial intelligence.

The bottom line is that we shouldn't think we can keep a highly intelligent genie in a jar forever.

sooner or later you'll find a way out

I think the answer to this question is to build a highly intelligent artificial intelligence that doesn't pose a threat when it escapes, that it has the same values ​​as humans and stands on the side of humans.

You can't get away from this difficult problem

I am optimistic that this problem can be solved

It would be hopelessly difficult to write down everything that we care about, and even define it precisely in a programming language like C++ or Python, but I don't think we need to.

We can use our intelligence to create an artificial intelligence that learns what humans value. We can give it a motivational system that seeks human values ​​and anticipates what humans will appreciate.

That's how we use the intelligence of artificial intelligence to the best of our ability to solve the valuation problem.

This is possible and has very positive consequences for humanity.

but it doesn't happen automatically

In order for an intelligence explosion to occur under human control, the initial conditions must be set correctly.

We need to align the values ​​of artificial intelligence with those of humans, not just in obvious situations where it's easy to see if artificial intelligence is behaving appropriately, but in any novel situation that artificial intelligence might encounter sometime in the future.

And then there are all sorts of esoteric problems that need to be solved, such as the exact details of decision theory, how to deal with logical uncertainty, and so on.

So the technical problem that we have to solve to make this work is very difficult -- not as difficult as building a superintelligent artificial intelligence itself, but much harder.

There's one thing to worry about: building a superintelligent artificial intelligence is very difficult.

But making superintelligent artificial intelligence safe is just another problem on top of that.

The danger is that someone finds a way to solve the first problem without solving the second problem of ensuring safety.

So I think we should solve this control problem upfront, so that when we need it, it's ready to go.

It may not be possible to solve all the control problems up front. Some may only be possible once the details of the architecture that will be implemented are known.

But the more control problems are solved up front, the better the chances of a successful transition to the age of machine intelligence.

I think this is worth doing, and I can imagine that, when all goes well, in a million years, humanity will look back at this century and say that if there's anything really important that we've done, it's that we've solved this problem right.

thank you

(applause)

The brain is a complex and wonderful organ.

But despite our fascination with the brain, many of us still don't understand much about its properties and how it works, because we don't teach neuroscience in schools.

One of the reasons is that the equipment required for research is so complex and expensive that it is only available at major universities and large institutions.

If you want to know the brain, you have to really dedicate your life to go to graduate school for six and a half years, become a neuroscientist, and use these facilities.

It's very unfortunate, because one in five of us -- 20 percent of the world's population -- has some form of neurological disease.

There is no perfect cure for these diseases.

So what we need to do now is to teach neuroscience to students early in the curriculum so that they consider becoming a neuroscientist as an option for the future.

When I was in graduate school, my research colleague Tim Mazuro and I had an idea: how to make the complex equipment we use to study the brain simpler and more affordable, so that amateurs, high school students, anyone can learn and participate in neuroscience discoveries.

and actually did it

A few years ago, I started Backyard Brains, a company that makes hand-made neuroscience instruments, and I brought it here tonight, and I'm going to give you a demo.

do you want to see

someone please help

Please come forward What's your name? (Applause) It's Sam.

So Sam, I'm going to record your brain activity.

what has been done before?

is not

For science, put your arms out and roll up your sleeves a little bit, too. I'm going to put electrodes on my arms. Are you wondering why arms are used to record brain activity?

There are about 80 billion neurons in the brain

It sends electrical signals and chemical signals back and forth.

Some of the neurons here in the motor cortex send signals when you move your arm like this.

The signal travels through the corpus callosum, from the spinal cord, to the lower motor neurons, to this muscle, and this electrode catches the electricity emitted, and you can hear the brain activity.

I'll turn this on for a moment

Have you ever heard what your brain sounds like?

is not

So let's do it now hold my hand

(Rattle) What you're hearing right now is the motor unit that's moving right here.

let's see now

Here - launch the app

then please hold

(rattling) This is the motor unit, which comes from the spinal cord to the muscle over here, and you can see the electrical activity here as she moves.

You can also click here to see just one

hold on tight

Here's one of the motor unit action potentials at work in the brain.

Want to see more?

(Applause) It's also fun, but it's even better.

one more help please

Name is?

It's Miguel

It's Miguel

please stand here

When you move your arm like this, your brain is sending signals to your muscles.

move your arm

your brain is sending signals to your muscles

This nerve right here connects to this one and it stimulates these three fingers. Because this nerve is closer to the skin, you can stimulate it to do this. Your brain sends signals to Miguel's hand.

In a way, she takes away your free will and you lose control of your hands.

OK?

All that's left is to connect you

(Laughter) Now let's go find the ulnar nerve.

When you came on stage you didn't know what you were going to do When you came on stage you didn't know what you were going to do

Now let's move over here and connect it to the human-to-human interface.

sam please hold my hand

perfect again

Now, I'm putting you here -- it's going to feel weird at first, just -- (Laughter) it's kind of weird to lose your free will and be manipulated by other people.

relax your hands

Sam are you okay?

I want you to hold my hand

I haven't turned it on yet Please hold on

Miguel are you ready?

I'm ready

I've turned it on, so give me your hand

do you feel anything? -no

Then again - just

a little bit? (Laughter) Relax.

please try again

(laughs) perfect perfect

relax again

Well, your brain is controlling not only your arm, but his arm.

(Laughter) So what if I move your hand?

relax your hands

what happened?

nothing happens

I wonder why

because the brain has to move

please try again

nice perfect

thank you both for the good exercise

This is taking the world by storm – electrophysiology!

We're about to revolutionize neuroscience.

thank you

(applause)

In case you didn't know, we have more bacteria in our bodies than there are stars in the Milky Way galaxy.

This fascinating environment of bacteria inside our bodies is vital to our health, and thanks to the rapid evolution of technology, we can now program bacteria like we program computers.

Take a look at this schematic, which looks like some kind of sports game, but it's the blueprint for the first bacterial program I developed.

Like writing software, DNA can be copied and written into microbes as different algorithms and programs.

In this program, fluorescent proteins are produced in a regular fashion, producing small molecules that allow bacteria to communicate and synchronize with each other, and that's what you see in this video.

The growing flora you see here is about the size of a human hair.

What this doesn't tell you is that our genetic program causes each bacterium to make a small molecule, and that molecule controls thousands of bacteria.

Bacteria are well synchronized at this scale, but the molecules that synchronize them have a finite rate of movement, so in large flora, they create waves of molecules connecting bacteria that are far apart. You can see the waves across the slide from right to left.

The genetic program relies on natural phenomena, called quorum sensing, in which bacteria work together, sometimes producing toxicity when critical concentrations are reached.

Now you can see quorum sensing happening, and you can see it glowing when bacteria grow and the flora becomes denser or reaches a critical value.

Our genetic program continues to create these regular patterns of fluorescent proteins as the flora expands outward.

We call this video and experiment "supernova" because it looks like the star is exploding.

What else can you do with bacteria other than programming this beautiful pattern?

So I decided to do some experiments to see if I could program bacteria to detect and treat diseases like cancer.

One of the surprising properties of bacteria is that they multiply naturally inside cancer cells.

Because normal cancer cells are out of reach of the immune system, the bacteria find the cancer cells and multiply peacefully inside the cancer cells.

We started using a commensal bacterium, which is good for health, and found that when given orally to mice, this commensal bacterium chose to grow inside liver cancer cells.

The most convenient way to identify commensal bacteria and thus detect cancer is to have the bacteria emit a signal that can be detected in urine.

We've shown that this technology can sensitively identify and detect liver cancers, which are particularly prone to late detection.

This bacterium is so good at finding cancer that we're programming it not only to detect cancer, but also to treat it. And the way we do that is by creating therapeutic molecules that shrink cancer cells from within the cancer environment, using video-like quorum-sensing programs.

Just imagine that one day we'll be able to detect and treat cancer and other diseases through programmed ingestion of commensal bacteria.

By programming bacteria, we can change our lives and open up new horizons for cancer research.I wanted to express this vision with artist Vik Muniz, and I created a world symbol made entirely of bacteria or cancer cells.

I hope that the role and splendor of this microscopic world will eventually serve as an inspiration for creative approaches to cancer research in the future.

thank you

(applause)

We all think that movement is something we can see.

As I walk across the stage and gesture as I speak, those movements are visible.

But there's a world of important movement that's so small that it's invisible to the human eye, and over the years we've begun to pay more attention to the fact that even though the human eye can't see it, the camera can capture it.

let me explain what

On the left is an image of a human hand, and on the right is an image of a sleeping baby.

But there's a lot of subtle movement here. If you touch the wrist of the person on the left, you'll feel the pulse, and if you hold the baby on the right, you'll feel the baby's chest rise and fall with each breath.

These movements are important, but they're so small that you can't see them, so you have to touch them and feel them.

But a few years ago, a colleague at MIT created what he called a "motion microscope," software that can detect these tiny movements in video, magnify them, and make them visible to the eye.

Using that software on the left image, you can see the pulsations in your wrist, and you can even count your pulse and measure your heart rate.

If you use that software for the image on the right, you'll be able to see your baby's breathing, and you'll be able to monitor your baby's breathing without touching it.

This is a very powerful technology, because it allows us to capture phenomena that would otherwise be unrecognizable without physical contact, just visually, without physical contact.

About two years ago, I started collaborating with the people who invented this software, and decided to try out some crazy ideas.

It's amazing how this software allows us to visualize small movements and make them feel like an augmented sense of touch.

I wondered if this could be applied to hearing as well.

Vibration caused by sound is also a kind of movement, so isn't it possible to capture it and turn everything in sight into a microphone?

This is kind of a weird idea, so let me explain it so you can understand.

A normal microphone works by converting the movement of a diaphragm inside it into an electrical signal. The diaphragm is designed to move in response to sound, so that it can interpret and record that movement as sound.

But sound makes anything vibrate.

It's just that those vibrations are so small and fast that you can't see them.

Couldn't we capture these vibrations with a high-speed camera and use software to extract and analyze these tiny movements to find out what kind of sound produced the vibrations?

And if we can do that, we can turn something at a distance into a visual microphone.

So I tried it, and what you see here is one of the experiments I did, where I took a picture of the potted plant on the right with a high-speed camera, while a nearby speaker played this sound.

(Song "Mary Had a Little Lamb") Here's a video I shot, and it's shot at thousands of frames per second, and if you look closely, you'll see that the leaves are just standing still, because sound causes the leaves to move on the order of a micron.

It's 1/10,000 of a centimeter. In this image, it's somewhere between 1/100 and 1/1,000 of a pixel.

That's why, no matter how hard you look, your eyes can't catch such small movements.

But even though it's perceptually imperceptible, there are numerically significant changes, and with the right algorithms, we can extract sounds like this from this seemingly static image.

(Song "Mary Had a Little Lamb") (Applause) How is that even possible?

How can you extract so much information from such a small movement?

Let's say the movement of the leaf is exactly one micron, and the movement in the image is one thousandth of a pixel.

This may seem trivial, but there are hundreds of thousands of pixels in a single frame of video, and if you collect those small movements across the entire image, the thousandths of a pixel add up to something big enough.

On a personal note, I was super excited when I discovered this.

(Laughter) We had a good algorithm, but we were still missing an important piece of the puzzle.

There are many factors that influence the success of this technique.

What is the object and how far away is it? What kind of camera and lens are used? How strong is the light hitting the object and how loud is the sound?

And even though the algorithms are good, the early experiments had to be done very carefully.

because it just makes noise

So the early experiments were set up like this.

You can see me, in the lower left, a high-speed camera, pointing at a bag of potato chips, and the whole thing is lit with bright lights.

As I said, the early experiments were very cautious, and here's what it looks like.

(male voice) 3 2 1 yes

(Davis shouts) Mary's sheep sheep sheep

(Laughter) As you can see, it was a silly-looking experiment.

(Laughter) I'm yelling at the bag of potato chips. (Laughter) And to top it all off, the light was so strong that the heat literally melted the first bag of chips.

Mary had a little lamb! Little lamb!

Little lamb! (Applause) It was a very important moment, because for the first time, we were able to reconstruct an audible human voice from a soundless video of an object.

Using this experiment as a reference point, we started experimenting with different things: using different objects, putting things farther apart, dimming the light, making the sound quieter.

We analyzed the results of these experiments to determine the limits of this method, because once we know the limits, we can see how we can push them further.

And that's how I ended up with this experiment, where again, the sound is directed at a bag of potato chips, but this time the camera is five meters away, behind the soundproof glass, and the light is natural sunlight.

What you're seeing is a video I took.

And this is the sound that was playing in the room next to the bag of potato chips.

Mary had a little lamb whose fleece was white as snow, and everywhere that Mary went, that lamb was sure to go.

(He followed Mary wherever she went.) And here's the audio extracted from the silent footage shot from behind the window.

Mary had a little lamb whose fleece was white as snow, and everywhere that Mary went, that lamb was sure to go.

(Applause) There are other ways to push boundaries.

Here's a much quieter experiment, where I'm filming earphones hooked up to a laptop. This time, the goal was to recover the song I was playing from a silent video shot of two small plastic earphones.

(Laughter) (Song Queen, "Under Pressure") (Applause) You can also push the boundaries in terms of the hardware you use.

All of the experiments you've seen so far have used high-speed cameras, which can shoot 100 times faster than the camera you usually have on your phone.

Most cameras record images line by line, and if the subject moves during the recording of a single image, each line will be out of time, resulting in each frame of the video recording a small distortion.

After analyzing this distortion, we found that with improved algorithms, we could recover the sound from it.

Here's an experiment that I've done, taking a picture of a bag of candy, and playing the same "Mary's Little Lamb" on a speaker next to me.

(Song, "Mary Had a Little Lamb.") Even with the distortion, what's really significant about this is that you could do this with a standard camera you could buy at an electronics store.

From what you've seen so far, what most people think of is espionage.

It's certainly easy to imagine using this technology to spy on someone.

And think about it, there's a lot of mature technology out there already when it comes to espionage.

In fact, pointing lasers at objects from afar to eavesdrop has been around for decades.

What's really new and different about our technology is that we now have a way of looking at things vibrating, and this is going to be a new lens through which we can see the world, and with this lens, we can not only learn about forces like sound that make things vibrate, but we can also learn about things themselves.

Now let's broaden our horizons and think about how this could change the way we use video. Normally, we use video to see things, and then I showed you that it can also be used to hear sounds.

But there's another important way we learn about the world: by working.

Push, pull, poke, shake

see what happens

This is something you can't do with video, at least not with normal video.

What I'm going to show you is the latest research, based on an idea that came to me only a few months ago, and this is the first time it's been shown publicly.

The basic idea is to take the vibrations in the film as hints and take the nature of the object and put it into a form that you can work with and see how it reacts.

So this is the object, a wire doll in the shape of a human being, and we're going to take a video of this with a normal camera.

I don't use anything special for the camera.

In fact, I used to use my cell phone.

I'd like to see it vibrate, so I'm going to give it a little bang on the pedestal where the doll sits while we're filming.

That's it. It's just a five-second video of a normal tapping on a platform. And the idea is to use the vibrations in this video to learn about the structural and physical properties of things, and then use that information to create new interactive objects.

This is the result

It looks like an ordinary image, but it's not an image, it's not a video.

What you're seeing here is a simulation of how things react to new and unfamiliar stimuli. I made this from just five seconds of normal video.

(Applause) This is a powerful new way of looking at the world, because it allows us to predict how things will react to new situations.

I'm sure you want to know the answer to this question before you start crossing the bridge.

Of course, this technique has its limitations, much like a visual microphone, but it works in more situations than you might expect, especially when you have long videos.

For example, here's a video of the bush in front of my apartment, and I didn't do anything to the bush, but during the one minute I was filming, a gentle breeze created enough vibrations to learn about this bush, and I was able to create a simulation like this.

(Applause) Filmmakers who have this technology might use it to change the strength and direction of the wind after the footage has been shot.

Here we're filming a suspended curtain, and you can't see any movement, but a two-minute video gives you enough information to create a simulation of the subtle movements and vibrations that go unnoticed by natural air convection in a room.

You're probably familiar with these kinds of interactive things as fictional objects in video games and 3D models, but extracting this kind of information from real objects in the real world using plain video footage is new and has huge potential.

great guys working together on this project

(Applause) What I've shown you today is just the beginning.

We've only scratched the surface of what's possible with imaging technology like this, because it allows us to see the world around us in a different way, using tools that are at our fingertips.

I think it's really exciting to explore what this technology can tell us about the world going forward.

thank you

(applause)

As American children reach adulthood, two organizations oversee their journey.

The first is "university," which you often hear about.

Some of you may remember the excitement of taking your first steps into college.

Maybe some of you are currently in school and you're feeling that excitement right now.

Universities also have some drawbacks.

High school fees and leaving young people in debt

But overall it's a very good path.

Young people leave college with pride, great friends, and a lot of knowledge.

And most importantly, it gives you better chances in the labor market than before you started school.

I want to talk to you today about a second organization in the United States that oversees the journey from childhood to adulthood.

it's a "jail"

Young people meet probation officers instead of teachers on this journey.

they go to court instead of class

Instead of studying abroad in my first year, I go to state prison.

When they get out of prison in their 20s, they're given a criminal record, not a degree in business or English literature.

This institution is also very expensive, it costs 40,000 dollars a year to send one young person to prison in New Jersey.

But here, the taxpayers pay for it, and the children are given cold solitary confinement, leaving a permanent record of their attempts to return to normal life and find employment.

In the United States, more children are making this journey each year than ever before, because incarceration rates have increased by 700 percent in the last 40 years.

I prepared one slide.

This one

This is the incarceration rate in the United States, which is 716 per 100,000 population.

These are OECD countries

And those sent to prison are poor children -- mostly African-Americans and Latinos -- and prisons stand between successful young people and the realization of the American dream.

The real problem is much worse -- because we don't just send poor kids to prison, we make them pay legal fees, we impose restrictions on probation and parole, and we give them low levels of security. We want them to live in rehabilitation facilities, we want them to be placed under house arrest, and we want poor communities of color to navigate the increasing police involvement.

This is the hidden aspect of historical punishment methods: young people feared being stopped, investigated, arrested at any moment.

Not only in the city, but also at home, at school, at work.

I became interested in this alternative path to adulthood when I was a student at the University of Pennsylvania in the early 2000s.

The university is located in a traditional African-American settlement.

So there are two uncrossed journeys going on at the same time: there are kids who go to this excellent private college, while some of the kids in the college neighborhood go to college, but many end up in prison.

In my sophomore year of college, I started tutoring a high school girl who lived 10 minutes from college.

Not long after, her cousin came home from juvenile hall.

He was 15 years old and a freshman in high school.

I got to know him, his friends, his family, and I asked if I could write about his life for my college thesis.

This undergraduate thesis was turned into a doctoral dissertation at Princeton University, which is now a book.

By the end of my sophomore year, I moved to a college neighborhood, where I would spend the next six years trying to understand what it was like for young people to come of age.

The week I moved to the area, I saw boys aged 7 and 5 chasing each other and the older boy chasing the younger one.

The older child was a police officer.

When the police got hold of a younger child, they pushed him to the ground, put them in imaginary handcuffs, took a quarter from his pocket, and said, "I'm going to confiscate this."

The older child asked the other if he had any drugs and if he had a guarantor.

The game was played over and over again, and sometimes the children would give up trying to run away and put their hands up and lie on their stomachs on the ground or lean against the wall.

Children yell at each other, "I'm going to put you in jail. If I catch you, you'll never come home!"

I've seen six-year-olds pull down other kids' pants and try to do a body cavity exam.

For the first 18 months of living in the area, I wrote down every time I witnessed contact between police and neighbors.

As a result, for the first 18 months, every day, with five exceptions, I saw the police stop pedestrians and motorists, search people, check names, chase people through the streets, take people in for questioning, arrest them.

52 times I've seen police break down doors, chase people into their homes, or arrest people in their homes.

14 times in the first year and a half - I watched the police beat young people, strangle them, kick them, stomp them, hit them after arresting them.

Gradually, I got to know two brothers, Chuck and Tim.

Chuck was 18 and a senior in high school when we met.

I used to play on the basketball team and my grades were all good and good.

his brother tim was 10 years old

Tim loved Chuck and always followed him around. He looked up to Chuck as a mentor.

They lived with their mother and grandfather in a two-story house with a front lawn and a back door.

Their mothers struggled with addiction all through the boys' lives growing up.

She didn't really get a job for a long time.

It was my grandfather's pension that supported the family, but it wasn't enough to buy food, clothes and school supplies for two growing boys.

the family was really needy

Chuck was in his senior year of high school when we met.

I had just turned 18

That winter, in the schoolyard, a kid called Chuck's mother a "whore."

Because Chuck pressed the child's face into the snow, the school police charged him with aggravated assault.

The child recovered the next day, but what was hurt most of all was his pride.

But because Chuck was 18, this aggravated assault charge sent him to an adult-only county jail on a highway northeast of Philadelphia.

As the season drew to a close, the judge in this assault case finally dismissed most of the claims, and Chuck went home, leaving him with only a few hundred dollars in legal fees.

Tim was very happy that day

The next fall, Chuck tried to retake his senior year of high school, but the school clerk told him that at 19, he was too old to do so.

The judge in that assault case then issued an arrest warrant against him because he couldn't pay $225 in court costs that were due weeks after his trial.

And he became a high school dropout on the run.

Tim's first arrest came later that year when he turned 11.

Chuck had successfully denied an arrest warrant, was paying his court fees as planned, and was driving Tim to school in his girlfriend's car.

A police officer stopped them, ran them against a database, and found that the car had been stolen in California.

Chuck had no idea when or where the car was stolen.

His girlfriend's uncle had bought it at a used car auction in northeast Philadelphia.

Chuck and Tim had never been outside of the three neighboring states, let alone California.

Still, the police in that jurisdiction arrested Chuck for receiving stolen goods.

And just a few days later, a juvenile judge accused 11-year-old Tim of being an accomplice in receiving stolen goods, and he was put on probation for three years.

During probation, Chuck sat his little brother down and started teaching him how to escape from the police.

They sat next to each other at the back door overlooking a shared narrow alley, and Chuck taught Tim how to spot an undercover cop car, how to escape a late-night police raid, where and how to hide.

Ladies and gentlemen, just imagine what life would be like if Chuck and Tim lived in a neighborhood where their kids went to college instead of jail. What would life be like for Chuck and Tim?

Luckily it's the kind of area I grew up in.

you might say

But kids like Chuck and Tim are committing crimes!

Are you saying I shouldn't go to jail?

Are you saying I don't have to live in fear of being arrested?

my answer is no

you don't have to

If you're doing the same thing that privileged young people do to get away with it, you don't have to.

If Chuck had gone to my high school, the yard brawl would have ended right there, as a yard brawl.

You will not be sued for aggravated assault

None of the kids I went to college with had a criminal record.

even just one person

But if the police came to class and stopped the students and checked them for drugs, can you imagine how many of them would be caught?

Or what if the police show up at a midnight party?

you might say

But doesn't this high incarceration rate lead to a slightly lower crime rate?

Crime is down, which is a good thing

It's really good. Crime is down.

declined sharply throughout the 1990s and 2000s.

But according to a panel of scholars convened last year by the National Academy of Sciences, historically high incarceration rates have little to do with low crime rates.

Crime rates go up and down regardless of how many young people are sent to prison.

We tend to think of justice very narrowly, good and evil, innocence and guilt.

What's unfair is the unfair convictions.

If you find yourself guilty of what you did, you should be punished too.

There are innocent people and sinners in the world, there are victims and perpetrators.

Perhaps we can think a little more broadly.

Today, we're asking children who live in the most disadvantaged neighborhoods -- where families have the least resources, attend the worst schools in the country, are among the most discriminated in the labor market and where violence is a daily problem -- to walk the thinnest line, which means doing nothing wrong.

Why don't we reach out to children who are facing these challenges?

Why do we only give handcuffs and jail time and the life of a fugitive?

Can't you think of a better way?

Can you think of a criminal justice system that prioritizes rehabilitation, prevention, and civic acceptance over punishment?

(Applause) While the criminal justice system recognizes the traditions of marginalization of people of color that the United States has faced, it has neither promoted nor perpetuated these exclusions.

(Applause) And finally, a criminal justice system is being put together that trusts black youth instead of treating them as round-up enemies.

(Applause) The good news is that this is actually happening.

A few years ago, Michelle Alexander wrote a book called "The New Jim Crow," which made Americans for the first time recognize incarceration rates as a historically significant civil rights issue.

President Obama and Attorney General Eric Holder are aggressively pushing sentencing reform to address the need to address racial inequality in prison rates.

We're seeing hail-and-checks being abandoned as a violation of civil rights.

And cities and nations are less and less criminalizing possession of marijuana.

New York, New Jersey, California have reduced inmate numbers and closed prisons, while crime rates have also dropped significantly.

The state of Texas is also doing this, closing prisons and investing in education.

This bizarre coalition of both the right and the left, including former inmates and financial disciplinarians, civil rights activists and libertarians, including young people taking to the streets against police violence against defenseless black teenagers, and older and wealthier people -- I'm sure you'll be among those in the audience -- are throwing big bucks into the prison reduction campaign. It's the only activity you can do.

I never thought I'd see this political moment in my lifetime.

Many of you, who have worked tirelessly to write about the causes and consequences of historically high incarceration rates, probably thought they would never see this moment in their lifetime.

What we should be thinking now is, “What can we do about it?”

The question is, "How much can we change?"

I would like to end by addressing young people -- young people who are going to college and young people who are struggling to stay out of prison or get out of prison and go home.

Although the two paths to adulthood seem like heaven and earth, the young people who belong to these two organizations tell us adults that they have one thing in common: both can be leaders in reforming our current criminal justice system.

Young people have always been leaders in the struggle for equal rights, in a struggle to give more people the chance to fight for dignity and freedom.

Coming of age in potentially transformative times, the mission of this generation of young people is to end imprisoning millions of people and create a new criminal justice system that focuses on justice.

thank you

(applause)

June 1998 Tori Marden McClure left Nagshead, North Carolina, for France.

This is her boat, the American Pearl.

The total length is 7m and the width at the widest part is only 1.8m.

The deck was about the size of a pickup truck bed.

Tori and his friends built a boat that weighs about 800kg.

I planned to paddle across the Atlantic on my own, without engines, without sails, and no woman or American had ever been successful.

This is the planned route, more than 5,800 kilometers across the vast North Atlantic Ocean.

Tori was by profession a project manager in her hometown of Louisville, Kentucky, but her passion was adventure.

It's not her first big expedition.

A few years earlier, she was the first woman to ski to the South Pole.

I was a good rower in college and even competed for a spot on the U.S. team at the 1992 Olympics, but this challenge was something else.

(Tori Marden McClure) Today is Sunday, July 5th -

Sector time is 9am

It's Kentucky time

(Dawn Landes) Tori was rowing and taking videos.

This is the 21st day of the voyage

At this point, we had traveled over 1,600 kilometers, and we had lost radio contact for over two weeks, because a storm knocked out all of our long-range communications in just five days.

It was like this almost every day

At this point, she had paddled more than 200,000 times against currents and winds.

There were days when I could only advance 5m

It's true

I was frustrated at times like that, but other days went like this

(Tri) introduce a cute friend

(Dawn) Fish and dolphins - whales, sharks and even sea turtles.

After two weeks of not being able to contact anyone, Tori was able to make VHF radio contact with a local freighter.

(Tri) Do you know the weather forecast for the future?

(Male) You are headed for a low pressure system ahead of you, but the low pressure system is moving. Your course seems to be northeast, but there is a high pressure system behind us.

This high pressure is also progressing to the east-northeast

(tri) Understood

(Dawn) Tori looks happy to talk to someone.

(Tori) According to the forecast, there won't be any sudden changes in the weather.

Dawn: What the forecast didn't tell us was that we were rowing into the path of Hurricane Daniel during the worst hurricane season ever in the North Atlantic.

(Tori) I sprained my leg

A very strong wind is blowing from the east now

The wind is blowing

stormy weather

The storm has been going on for 12 days and the wind hasn't abated, but I have to row for 4 hours.

I'm so depressed

I felt good this morning, but now I feel terrible

(Dawn) It had advanced more than 4,800km in about three months of voyage.

We were two-thirds of the way through, and in the storm, the waves were as high as a seven-story building.

The boat capsized repeatedly

Capsizing on her back several times, she was thrown out and rolled, unable to row the boat.

(Tri) 6:30 a.m. ―

We're in the middle of a huge, bad storm right now.

overturned twice

When I capsized just now, my back hit me and the ceiling ribs fell off.

It's already overturned six times

I just turned over on my back

Argos beacon has

I can send a distress signal, but I honestly don't think a boat this small would ever be found.

It's already pretty submerged, and all you can see is part of the deck.

It's about ten o'clock now

I don't know how many times I've capsized

I think it capsizes once every 15 minutes

I may have broken my left arm.

The waves are about to tear the boat apart

I keep praying because I don't know if I'll be able to return alive

(Dawn) Tori sent out a distress call and was rescued by a passing freighter.

Two months later, the boat was found adrift off the coast of France.

i read in the newspaper

In 1998, I was in high school in Louisville, Kentucky.

I'm a songwriter in New York now.

I couldn't get her courage out of my head, so I made the musical ROW based on that story.

Tori came home depressed and penniless.

I struggled to return to civilization

In this scene she's sitting at home

The phone is ringing. It's from a friend, but I don't know what to say.

She starts singing The title is "Dear Heart"

(Guitar) I've been dreaming I've gone to a beautiful place I've never seen

I smiled at the stars of Gibraltar and Kentucky shining in the moonlight

When I woke up, the sky was overcast

When I walk out to parties People I know ask me where I've been to try to understand me But words can't describe what I've seen

hey listen

Listen carefully from the beginning

hey listen

Even if I disappear beyond the sea, I'm sure I'll be able to recover

When I was sailing, the sea surrounded me, shook me and threw me away, light as a child.

But now I'm too heavy, nothing to comfort me

My heart floats like driftwood, violently and capriciously

hey listen

Listen carefully from the beginning

hey listen

Even if I disappear beyond the sea, I'm sure I'll be able to recover

After that, Tori calmed down.

started going out with friends again

I met a man and fell in love for the first time

I got a new job with Muhammad Ali, who is also from Louisville.

One day, while having lunch with Ali, Tori told me that two women were trying to cross the Atlantic Ocean in a boat, a challenge that almost cost her her life.

Ali's answer was very typical of him: "I don't want to be the woman who never crossed the Atlantic for the rest of my life."

he is right

Tori successfully rebuilt the American Pearl in December 1999.

(Applause) (Guitar) Thank you.

(applause)

(music) This is a bee in our backyard in Berkeley, California.

Until last year, I had never owned a bee, but when National Geographic commissioned me to photograph them for an article about bees, I decided to get a bee to capture compelling images.

As you may know, honeybees pollinate one-third of our crops, and there's been a lot going on with those bees lately.

As a photographer, I decided to look into the realities of this issue.

I want to show you what I discovered last year.

This bushy little creature is a newborn honey bee about to emerge from its oocyte. Bees are currently facing several problems: pesticides, disease and habitat loss. The single biggest threat is the parasitic mites from Asia, the honey bee Varroa mite.

Needle-sized mites crawl along the bodies of young bees and suck their blood.

This is how you destroy the hive, because the bees' immune systems don't work as well, making them less resistant to stress and disease.

A bee is very delicate when it's growing inside an oocyte, and I wanted to know what that process was like, so I teamed up with the Bee Research Group at the University of California, Davis, to come up with a way to keep bees on camera.

Here's a 21-day-old honeybee ecological record, condensed into 60 seconds.

This is where the larvae are hatching from the eggs. Inside the hive chamber, the newly hatched larvae swim in the thick liquid produced by the nursery bees and grow by eating the liquid.

The head and legs slowly take shape and molt into a chrysalis.

This is how it pupates. You can see the mites running around the cell.

The tissues of the body are reorganizing, and pigment is slowly appearing in the eyes.

In the final step, the pupa's shell shrinks and the bee's body grows bristles.

(Music) (Applause) Halfway through this video, you can see the mites running around on the larvae of the bees.

Medicines are bad in the long run, so scientists are looking for alternatives that can get rid of mites.

this is one

It's a bee breeding experiment program at the USDA Bee Lab in Baton Rouge, and this queen bee and worker bee are from that program.

Researchers discovered bees that were resistant to ticks and set about breeding them.

This is how we improve bee breeds

Unmated queen bees are anesthetized and artificially fertilized using this precision instrument.

This process allows researchers to deliberately select and breed bees, but it comes at a price.

That's because tick-resistant bees are raised, but in the process, they stop storing nectar and lose their gentle nature. So scientists are working with beekeepers to solve that problem.

This is Brett Addy opening one of his 72,000 hives.

He and his brother run the world's largest beekeeping business, and the USDA is introducing tick-resistant bees into their beekeeping operations, with the hope that eventually this will not only allow selective breeding of tick-resistant bees, but also preserve the traits of bees that are useful to us.

It sounds like we're just manipulating and using bees, but humans have been around for thousands of years.

This is the reality of putting these wild creatures in boxes and practical beekeeping, and that's how honey has been harvested for so long. But over time, these natural pollinators began to disappear, and with the current supply of these natural pollinators, much of the industry can no longer keep up with demand.

Saving bees, if you ask me, means saving our relationship with them. To come up with new solutions, we have to understand the basic biology of the bee and how stress, which we often overlook, affects them.

In other words, we need to get to know bees more closely.

thank you

(applause)

Usually I do venture capital, I'm a rocket enthusiast on the weekends

I like photography, I like rockets,

Today, I'm going to show you some eye-popping photos I've taken over the last few years. These are the pictures I took with my kids, who grew up loving rockets and will be the Richard Bransons and Diamandis of the future.

My son built a stable rocket -- a golf ball rocket -- the principles of rocketry.

It was a very interesting experiment, and it flew like an arrow.

Baking soda and vinegar for fuel

The nighttime images are so beautiful, they pierce through the Big Dipper and the Milky Way.

A two-stage rocket with a camera on board and a computer recording the flight Rocket glider returning to the ground

I use a program called RockSim to test whether we're going to exceed the speed of sound before we fly, and then check the actual results on the onboard computer.

But to fly something huge, you go to a place like the edge of the earth, the Black Rock Desert, and it's full of dangers.

Then use the engine

Now uses cruise missile boosters

It makes a gut-wrenching noise, and even photographers are awestruck by its spectacle

There are also experimental engines like Nitro Oxide

Solid fuels are commonly used

it's a strange love

Rocketmavericks.com has pictures of me. If you want to know more, join and take a look.

This was amazing, climbed up to 30,000 meters, but only up there - dropped onto hard clay ground.

Thrust 3 meters, like a bunker buster bomb

stuck in the ground and had a hard time digging out

Too much fuel will drive you out of control, drag racing

I know what happened at night

During the daytime it is called a land shark

Sometimes it explodes in front of me, sometimes it falls at supersonic speed (laughs)

To shoot this kind of footage, I often do it by walking away from the launch pad to a place where there are no other spectators.

You can tell if you were able to shoot a DreamWorks class video

Video Voice: Done great

Steve Jarveson (SJ): It's rare, but my computer broke down.

A cry for God's sake... Voice in the video: Oh my God!

SJ: I know what we're carrying here is broken Voice: It's a ballistic bullet Oh no!

SJ: So it's quiet Voice: Oh no

Get up, get up, get up

SJ: I'm over there, photographing everything.

mistakes often happen

Some onlookers are fascinated as if they were watching a NASCAR race.

this happened last week

It rises and exceeds the speed of sound, and the fins are removed.

And burning chunks of metal fall down

These things fall from above all weekend long, and they're firing so many times in a rhythm that's hard to imagine.

I try to film the accident in various ways

Capturing events in seconds is challenging.

why do you do this? Well, here it is: Gene from Alabama is piloting his rocket, full of X-ray sensors, video cameras, and other electronics, and it climbs up to 30,000 meters.

Leaving the atmosphere and looking at the blue line in outer space

These breathtaking photographs, hopefully, of course, motivate and inspire children to learn and understand rocket science, recognize the importance of physics and mathematics, explore the frontiers of the unknown, and experience the awe of the unknown in a variety of ways.

Thank you very much

(applause)

(music) Life in Pennsylvania is life in prison without the possibility of parole

For those of us who are 'lifers', the only hope for those of us who are 'lifers' is a commutation of their sentences. But since 1989, only two women have been granted a commutation, and that was almost 30 years ago.

"This is not our home," I'm going to tell you, is a song about how we feel every day as we serve life in prison without parole.

(music) I am a woman

i am grandma

i am a daughter

i have a son

i am not an angel

i'm not the devil

I was young when I went to prison

I'm spending my time here inside the prison walls

Friends who passed away Friends who returned home

Just watching the years go by and the people coming and going, I'm serving a life sentence with no hope of parole.

I'm a prisoner I made a mistake once

serving a sentence here

this is not my house

dreaming of freedom, begging for mercy

Will I ever meet my family or will I die alone

Only time passes and I hold back my tears 'Cause crying makes me succumb to fear

be strong hold on

And we'll get through another year And we'll get through another year

I'm a prisoner I made a mistake once

I'm serving my sentence here, this is not my home

dreaming of freedom, begging for mercy

Will I ever meet my family or will I die alone

I'm not saying I'm innocent, I'm not saying I don't need to make amends

i just want forgiveness

I need that hope that someday I'll be free

Is there a place for me in the world that spreads outside?

Who would know or care if I was chained

Will I be able to redeem the sins of my youth?

i changed

before god i changed

I'm a prisoner I made a mistake once

I'm serving my sentence here, this is not my home

dreaming of freedom, begging for mercy

Will I ever meet my family or will I die alone

Will I ever meet my family or will I die alone

I'm prisoner number 008106

29 years in prison

I'm Brenda Watkins

Born and raised in Hoffman, North Carolina

this is not my house

(Applause) Prisoner number 0B2472.

27 years in prison

My name is Thelma Nichols

Born and raised in Philadelphia, Pennsylvania

this is not my house

(Applause) Number 008494

27 years in prison

i'm daniel hadley

Born and raised in Philadelphia, Pennsylvania, this is not my home.

(Applause) Prisoner number 008309.

27 years in prison

my name is teresa battles

I'm from Norton, New Jersey.This is not my home.

(Applause) I'm prisoner number 007080.

30 years in prison

my name is debra brown

From Pittsburgh, Pennsylvania

this is not my house

(Applause) Number 005961

37 years in prison

My name is Joan Butler and I was born and raised in Philadelphia.

this is not my house

(Applause) Prisoner number 005634.

39 and a half years in prison

My name is Diane Hamill Metzger

Originally from Philadelphia, Pennsylvania, this is not my home

(Applause) I'm 004867

40 years in prison

My name is Lena Brown I was born and raised in Pittsburgh, Pennsylvania This is not my home

(Applause) My number is 005545.

My name is Trina Garnett, I've been in prison for 37 years, and I'm 14 years old.

Born and raised in Chester, Pennsylvania, this is not my home.

(Applause) Will I ever meet my family or will I die alone?

or die alone

(applause)

When I was nine years old, my mother asked me, "What kind of house do you want?" I drew this mushroom house.

Then my mother built it that way.

(Laughter) I didn't think it was that special at the time, and I'm sure it still is, because I've been designing houses all my life.

This is a custom-built six-story house in Bali.

almost everything is made of bamboo

You can overlook the valley from the living room on the 4th floor.

cross the bridge and enter the house

To beat the tropical heat, it has a large curved roof that lets in the breeze.

Some rooms have tall windows to let in natural air conditioning and keep out insects.

This is an open room

I prepared an awning bed with air flow

A client who wants a TV room in the corner of their living room

It didn't feel right to surround it with high walls, so I built a giant cocoon-shaped room like this.

There are also necessary luxuries, such as the restroom.

This is a basket-shaped restroom in the corner of the living room.

Soundproofing is still not good enough

(Laughter) It's still a lot of trial and error, but one thing I've learned is that if you use it well, bamboo will do just that.

bamboo is a wild grass

Grows in uncultivable areas such as deep canyons and mountainsides Grows in uncultivable areas such as deep canyons and hillsides

Rainwater, spring water, sunshine, it grows. There are 1,450 species of bamboo in the world, and we use seven of them.

this is my father

Influenced by my father, I started to build with bamboo. My father is in a thicket of bamboo, and seven years ago he planted a giant bamboo called Dendrocalamus.

produce new shoots every year

Last week, I saw that young bamboo grow one meter in three days. Bamboo is a sustainable material that can be used as a building material in three years.

We harvest bamboo from hundreds of clumps that our family owns.

This bamboo called "Beton" is very long and can be used as a building material up to 18m.

A truck is about to bring bamboo to the foot of the mountain.

Bamboo is very strong, it bends like steel and compresses like concrete.

A single bamboo pole can withstand a weight of 4 tons.

It's hollow inside and very light, so it can be lifted by several men.

(Laughter) (Applause) When my father built the Green School in Bali, all the buildings on campus were made out of bamboo, which was his promise.

A promise to children

I put my heart into bamboo, a sustainable material that will never go away.

When I first saw the building under construction six years ago, it just made sense.

Bamboo grows all over the place

strong and elegant

Resistant to earthquakes

Why didn't I do it sooner - what could I do next?

Established "IBUKU" with several members who were involved in the construction of the Green School from the beginning.

IBU means "mother" and KU means "my", which means "mother earth". We, IBUKU, are a team of craftsmen, architects and designers creating new forms of architecture.

Over the last five years or so, we've been working together to create more than 50 unique buildings, mostly in Bali.

Nine of these buildings are located in Green Village -- the building I was just talking about is here -- and we've put custom furniture in it, and we've set up gardens around it.

During your stay, you'll also get to see the Green School, which builds new classrooms every year, and you'll also enjoy the latest edition of Mushroom House.

We are also working on building a small house for export.

This is a replica of a traditional Sumba house, with the same fabrics and other details.

It's a restaurant with an open-air kitchen.

It feels like a kitchen

The bridge over this river is 22 meters long.

Our work is not so new

From huts to intricate bridges, like this one from Java, bamboo has been used throughout the tropics around the world for literally tens of thousands of years.

There are even islands and continents that were first washed ashore on bamboo rafts.

But until recently, it's been nearly impossible to reliably protect bamboo from insect damage, so anything made of bamboo has fallen into disrepair.

Bamboo will fade if not protected

If you neglect to treat it, it will be destroyed by dust

So, especially in Asia, most people think that only very poor people or only rural people live in bamboo houses.

So I thought, how can we change their perception and convince them that bamboo is a good building material, even if it's not the best material?

The first thing we needed was a safe way to handle it.

Borax is a natural salt

It gives bamboo its durability as a building material.

With proper handling and careful design, bamboo architecture can last a lifetime.

Next, create something outstanding

move people's hearts

Luckily, Bali has a culture of craftsmanship.

craftsmen are respected

Add to that the adventurous spice, the local up-and-coming architects, designers and engineers, and when you're designing, one thing you should always keep in mind is that you're dealing with bends, tapered hollow tubes.

No two pieces of bamboo are the same, no straight lines, no two-by-four pieces of wood.

The elaborate formulas and terminology proven in architecture don't work here.

I had to create my own rules

What are you good at and what do you want to be? I listened to bamboo, and the answer that led me was to respect bamboo, design for its strengths, protect it from water, and take advantage of its curves.

We design in real 3D and use materials that are used in actual construction to make structural models.

A bamboo design model is an art in itself, and it's also serious engineering.

Here is the blueprint of the house

(Laughter) So I brought this to the site, and with a small tape measure, I measured each bamboo pole, looked at the bends, and on the spot selected the best bamboo out of many to build the model.

We consider every detail

why are most doors rectangular

why not round

how to improve the door

When it comes to hinges and gravity, gravity always wins, so why not put the axis of rotation in the center so that we can maintain balance from the beginning?

Then why not make the door teardrop-shaped?

To reap the benefits of choice within the constraints of this material, we pushed ourselves to our limits, and within those constraints we found room for new ingenuity.

It's a real challenge. How do you build a ceiling when you don't have straight boards

And honestly, sometimes I want plasterboard and plywood.

(Laughter) But if you have a skilled craftsman and a little piece of split bamboo, you can weave a ceiling together, spread a canvas over it, and paint it with lacquer.

So how do you design a sturdy kitchen counter for a curved building like this?

Like a loaf of bread, the rock is sliced ​​and hand-scraped to fit, leaving the hardened surface intact, so pretty much everything is handmade.

Our building structures can be strengthened with steel joints, but we use a lot of handmade bamboo fasteners.

Thousands of fasteners are used on one floor.

The floor here is made of glossy and durable bamboo bark.

You can feel the texture with your bare feet

Doesn't the way you walk change depending on what kind of floor you walk on?

It may even change the footprints left in this world

At nine years old, I was filled with wonder and possibility and a little bit of idealism.

We still have a long way to go and we have a lot to learn, but what is certain is that with creativity and determination, we can create beauty, comfort, safety and even luxury.

thank you

(applause)

why do we cheat?

Why do happy people cheat?

What exactly do you mean when you say "infidelity"?

Nampa, love for a moment, prostitution, chat rooms, and sex customs

Why is it believed that men cheat to avoid boredom and intimacy, and women cheat for loneliness and love?

Is cheating always the end of a relationship?

Over the last ten years, I've traveled around the world and studied hundreds of couples extensively, all of them devastated by infidelity.

One simple act of immorality robs a couple of their intimacy, their happiness and even who they are: adultery.

But this mundane act is still not fully understood.

So this story is for anyone who has ever loved someone.

Adultery has been around since the beginning of the institution of marriage, and it's been forbidden since then.

In fact, unfaithfulness is so stubborn that marriage is jealous, so much so that unfaithfulness alone is repeated twice as a biblical commandment, once for committing unfaithfulness, and secondly for plotting unfaithfulness.

(Laughter) Is there any answer to what is universally forbidden but universally practiced?

Throughout history, men have practically had a license to cheat without serious consequences, backed up by many biological and evolutionary theories that explain that men are rambunctious. This double standard is as old as infidelity itself.

But hidden under the sheets, no one really knows.

Because when it comes to sex, men are pressured to boast and exaggerate, and women are pressured to hide, to belittle and to be in denial.

In the old days, monogamy meant one partner for life.

Monogamy now means one person at a time

(Laughter) (Applause) Does this sound familiar to you? "I've always been one in love."

(Laughter) I used to get married and have sex for the first time.

But now, after I get married, I stop having sex with people who aren't married.

In fact, monogamy has nothing to do with love.

For a man, whose child is in front of him, and who inherits his inheritance after death, depends on the chastity of the woman.

Now, everyone seems to want to know the percentage of people who cheat.

Since arriving at this conference, I've been asked this question many times.

(Laughter) What percentage of you?

But the definition of cheating is getting broader and broader: sending sexual messages, watching porn, using secret dating apps.

The reason is that there is no widely agreed upon definition of what constitutes cheating, and estimates of the percentage vary from 26% to 75%.

But after all, we are a walking contradiction.

For example, 95 percent of people say it's a terrible mistake for their partner to lie about having an affair, but the same percentage also say they would do it if they were having an affair.

(Laughter) By the way, I like this definition of infidelity. It has three main components.

Magic is the key word here, and it's because of the thrill of lust.A kiss you can only imagine is as powerful and seductive as an actual sex moment.

Marcel Proust said, "It is your imagination that evokes love, not the other."

So nothing is easier than cheating, nothing is harder than keeping a secret.

Infidelity has never been so emotionally damaging.

In a time when marriage was an economic activity, infidelity threatened our financial security.

But now that marriage is a romantic bond, infidelity became a threat to emotional security.

Ironically, in the past, when we sought pure love, we resorted to adultery.

But now, when we start looking for love in our marriage, infidelity is the thing that destroys it.

I think the way people are hurt by infidelity has changed in three ways.

Our romantic vision is one of partnering with one partner to satisfy our insatiable desires. We want you to be our dearest lover.

And to be exactly who I am I am chosen I am special I can't be without me No one can take my place I want to be the one and only

―It is infidelity to be shown that it was not

the ultimate betrayal

Infidelity destroys the grandeur of love

But if you look back in history, unfaithfulness has always been painful, and it can be traumatic today, because unfaithfulness shakes your sense of self.

We have a patient named Fernando, and he's really in pain.

And he says, "I thought I knew my life,

I thought you knew who my wife was, what kind of couple we were and who I was

But now I doubt everything."

Cheating destroys trust and threatens self-awareness.

He says, "How can I trust my wife one more time?

How can I trust anyone from now on? ”

And a patient named Heather said the same thing, and she told me a story about Nick.

they are married and have two children

One time, after Nick was away on a business trip, Heather was playing with his sons on Nick's iPad when a message popped up on his screen, "I miss you so much."

She thought it strange that she was there just now

Then I got this message: "I want to hold you in my arms as soon as possible."

Heather realized that the two messages weren't meant for her.

Heather says her father was also having an affair, and her mother found a small receipt in her husband's pocket and noticed the lipstick on his shirt collar.

I checked Heather, too, and there were hundreds of messages, pictures exchanged, desires verbalized.

A two-year affair with Nick flashed before Heather's eyes, and it made me think that infidelity in the digital age is a way to kill by slicing.

But then we also face another contradiction in living in the modern age.

Because of our romantic ideals, we rely irreplaceably and passionately on the chastity of our partners.

But there has never been a time when I was more tempted to stray, not because of new desires, but because we live in a culture that feels we have the right to pursue our desires and that we deserve to be happy.

Also, I used to get divorced because I was unhappy, but now I get divorced because I'm happier.

And if divorce used to carry all the shame, now choosing not to divorce when you can separate is a new shame.

In the case of Heather, she said she couldn't tell her friends because they would criticize her for still loving Nick.

And conversely, Nick would have been in the same situation.

Staying Married Was a New Shame

So if we can get divorced, why do we cheat?

A common explanation is that if someone cheats, it's because they have a problem with their relationship or with themselves.

But millions of cheating people can't all be pathological.

In other words, if you have everything you need at home, you don't have to look elsewhere. The premise is that there is such a thing as the perfect marriage, which protects you from capriciousness.

But what if love had an expiration date?

What if there's something you can't get from a good relationship?

If even happy people cheat, what is the essence of cheating?

In fact, most of the people I've counseled are far from cheating playboys.

Most people are monogamous or at least committed to their partner.

But they find a conflict, a conflict between values ​​and behavior.

Many of them have actually been chastity for decades, but one day they cross a line they thought they'd never cross -- at the risk of sacrificing everything.

But what are you looking for?

Affair is an act that embodies betrayal, and it is also an expression of longing and loss.

At the heart of the affair are things that are sought and aspired for: emotional connection, liberation from the mundane, freewheeling self-determination, passionate sex, a desire to reclaim a lost part of us, an attempt to regain a sense of life through human death and tragedy.

This story reminds me of a patient named Pria, who was supremely happily married, who loved her husband and never dreamed of hurting her husband.

But she said, "I've always lived up to expectations. I've been a good boy, a good wife, a good mother, and I've taken care of my immigrant parents.

Pria fell in love with the gardener who cleaned up the trees in her yard after Hurricane Sandy.

This guy who drives a truck and has tattoos was the complete opposite of her.

This affair was Pria's first adolescence at age 47.

The essence of her episode is that when we seek the intense gaze of others, we don't want to look away from our partner, but rather from our own reality.

Rather than looking for someone else, we're looking for our other selves.

By the way, all over the world, people who have experienced love affairs always say one thing.

He says he feels "alive"

And they often tell stories like, "I had someone who died recently. I lost a parent. I had a friend who died young. I got bad news from my doctor."

There are stories of death and longevity lurking in the shadows of affairs, because they pose questions such as:

Are you happy with your life now? Is there more?

Is it okay to live the same life for the next 25 years?

Can't you feel that feeling anymore?

Perhaps these questions help cross the final line, and in some cases, they go into affairs as if they were a silver bullet against death.

Also, contrary to what you might think, affairs are much more about desire than sex: the desire to be noticed, the desire to feel special, the desire to feel important.

And the very structure of an affair is that the reality is that you can't be with your mistress, and that's why your desires continue to be stimulated.

This in itself creates desire, like a machine. It's imperfection and ambiguity that keeps us wanting what we can't have.

You might think that if you're in an open relationship, cheating doesn't happen, but it does.

First, the story of monogamy and the story of infidelity are not the same.

But the fact is, even when we're allowed to have other sex partners, we're drawn to the forbidden act. When we're doing what we shouldn't, we feel like we're doing what we really want to do.

And I've told many of my patients that if you could bring just one tenth of the boldness, the imagination, the passion that you're pouring into your relationship for cheating, you wouldn't need me to see you.

(Laughter) So how do you recover from an affair?

desire is deep-seated

Betrayal runs deep

but it can be repaired

Sometimes infidelity is the death knell, when the relationship was already on the brink of collapse.

But there are also affairs that awaken new possibilities.

The fact is that the vast majority of couples who have had an affair remain together.

Some couples simply never divorced, but others are able to turn that crisis into an opportunity.

These are the people who can be seen as experiences that give rise to something.

Especially when the cheater says something like, "You think I didn't ask for more?

But I wasn't the one who cheated."

But when the affair is discovered, the person becomes more demanding, and it wasn't going well in the first place -- there's no need to maintain the status quo.

I know that many married couples, after their cheating conflicts, go through turmoil and then, as they usher in a new order, engage in deep conversations with honesty and tolerance that have not happened in decades.

And sometimes couples who have lost interest in each other suddenly find in themselves a strong desire that they don't know where it comes from.

Fear of loss reignites desire, paving the way for a whole new truth.

What exactly can a couple do when an affair is discovered?

Trauma research shows that recovery begins with the perpetrator's own guilt.

For the adulterer, Nick, for example, the first step is to end the affair, but the more essential and important action is to show guilt and remorse for hurting his wife.

But in reality, we found that a significant number of people who had affairs felt intense guilt for hurting their partner, but not the experience of the affair itself.

this difference is important

In Nick's case, he has to keep his guard up for his relationship with Heather.

he needs to be like border patrol for a while

It's his responsibility to do so, because if he's thinking about the relationship, he'll rescue Heather from the obsession and the feeling of being cheated on, and that in itself will be a catalyst for rebuilding trust.

But the most important thing for Heather and the cheater is to try to regain confidence in their own worth, to feel loved, to be surrounded by friends, to do things that bring back joy, meaning and identity.

But perhaps even more important is curbing curiosity about the details of the affair. Where have you been? where did you

how often? Was she better than me in bed? Asking these questions will only hurt you more, and hearing the answers will only keep you awake.

So instead, let's ask something else, a survey question we call it, that delves into the meaning and motives of cheating: "What did this cheating mean to you?"

"What were you able to express or experience that you couldn't do when you were with me?"

"How did you feel when you came home?"

"What do you value in our relationship?"

"Are you happy that this one is over?"

Any infidelity redefines the relationship, and every couple determines what the affair leaves behind.

But the fact that you had an affair doesn't change that.

And the dilemma of love and desire has no simple answer: black or white, good or bad, victim or perpetrator.

Betrayal in a marital relationship takes many forms.

There are many ways to betray your partner: disrespect, neglect, indifference, violence.

Sexual betrayal is just one way to hurt your partner.

In other words, cheating victims aren't always victims of marriage.

So far, you're probably thinking She has a French accent She must be encouraging cheating

(Laughter) That's incorrect.

i'm not french

(Laughter) (Applause) And I don't encourage cheating.

But because I believe that cheating can lead to positive outcomes, people often ask me that strange question: Is there any reason to encourage cheating?

I wouldn't recommend having an affair any more than I would recommend cancer I wouldn't recommend having an affair any more than I would recommend cancer, even though I hear from people who have been ill that their illness has given them new perspectives.

When I got to this conference and said I was here to talk about infidelity, one of the most common questions I was asked was whether I was for or against infidelity.

I just answered "yes"

(Laughter) I see infidelity in two ways: pain and betrayal on one side. Growth and self-discovery on the other.

So when a married couple comes to me after an affair is discovered and they are in turmoil, this is what I tell them. In the West today, most people go through two or three relationships and marriages, and some repeat it with the same person.

your first marriage is over

From now on How about building a second marriage together?

thank you

(applause)

You're probably thinking, "Why is he sitting?"

because it's a radio show

(Music) I'm going to send you a radio story about design, reporting on everything from architecture to toothbrushes to mascots to signage to fonts.

My mission is to get people interested in design, to make them look at all things design.

When we interpret the world with design in mind, the world becomes a magical and fascinating place.

What we see is not just fragments, but pieces of talent that unknown designers put their heart and soul into to make our lives better.

And that's the essence of the definition of design. Design is about giving people a better life and more joy.

Well-designed flags give me the most joy.

(Laughter) (Applause) Yes!

Happy 50th Anniversary of the Canadian Flag

beautiful

I wondered what the flag was

I bring up that topic a lot, and people say, "I don't care about flags." And yet, when you start talking about flags, you can be sure -- 100 percent of the time, everyone cares about flags.

flags seem to work on our emotions

This year, my family wrapped my Christmas presents in flags, including a blue gift bag that resembled the Scottish flag.

As soon as I posted this photo online, within minutes, I got this comment: "Stick that Scottish cross in your ass." (Laughter)

See, everyone is obsessed with flags, right?

That's what it is

The nice thing about flags is that once you understand the design and why it's good or bad, you can understand the design of pretty much anything.

What I'm trying to do here is put out an episode of my radio show, "99% Invisible," and recreate it on stage, and when you press this button... (voice) Sound S (Roman Mars).

(Voice) Th... sound

(Roman) Okay, let's get started.

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"99% Invisible" Roman Mars

(Narrator) Five Basic Principles of Flag Design

(Roman) According to the North American Bannerman Society...

That's right, "flag studies"

(Ted Kaye) Flagology is the study of flags.

(Roman) What a strange name.

(Narrator) Principle 1: Keep it simple

The flag should be simple enough that a child can draw it without looking.

ROMAN: I didn't even know the city had a flag until I moved to Chicago in 2005.

Ted: Most big cities have flags.

ROMAN: I didn't know, by the way, that's Ted Kaye.

(Ted) Hi (Roman) He's a flag expert.

really amazing person

Ted: I'm Ted Kaye, editor of the Journal of Flag Studies, and I'm a member of the Portland Flag Society and the North American Flag Society.

Roman: He wrote a book on flag design.

(Narrator) It's a good flag bad flag.

CA: It's really more of a pamphlet, about 16 pages.

Ted: Yes, the title is "Good Flags, Bad Flags - How to Design a Great Flag."

ROMAN: The first city flag I saw in Chicago was amazing. It's a white background with two blue horizontal lines and four red hexagonal stars in the middle.

(Narrator) Principle 2 Use meaningful symbols

Ted: The blue horizontal lines represent water, rivers, lakes.

(Narrator) The image, the color, the pattern on the flag must be related to what it represents.

Ted: The red star represents an important event in Chicago's history.

Roman: So the founding of Fort Dearborn, the future Chicago, the Great Fire of Chicago, the Chicago World's Fair, remembered by everyone in the "White City", and the Century of Progress World's Fair, not remembered by anyone.

(Narrator) Principle 3: Use 2-3 basic colors

Ted: The basic rule of color is to choose two or three colors from the standard set of colors: red, white, blue, green, yellow, black.

(Roman) Chicago's flag design has been so well received that it's seen all over the city.

It's everywhere, every city building has a flag.

Wet Moser: I think there's at least one store on the block near where I work that sells something with a Chicago flag.

(Roman) This is Wet Moser from Chicago Magazine.

(Wet) For example, today I went to get my hair cut, and I sat in the barber's chair, and there was a Chicago flag on my toolbox, and when I looked in the mirror, I could see the flag behind me.

On the way back, a man I passed by was wearing a flag badge on his rucksack.

(Roman) You can apply it and remix it.

In particular, hexagons can be seen in various places.

(Wet) I bought a coffee the other day and there was a Chicago star on the cup.

(Roman) It's a symbol of the spirit of Chicago.

Ted: In Chicago, when a policeman or a firefighter dies in the line of duty, sometimes it's not the American flag that hangs on the coffin.

I'm going to hang the Chicago flag

That's how much this flag has been seared into the hearts of the people of Chicago.

(Roman) People don't like the flag because they love Chicago.

I think people love Chicago more because the flag is this great.

Ted: There's a virtuous circle between good symbols and civic pride.

ROMAN: Well, when I went back to San Francisco in 2008, I looked up the city flag, because I had lived there for eight years and had never seen one.

And unfortunately, sadly enough, I found this city's flag to be inadequate.

(laughs) That's right.

my chest hurt

(Laughter) (Ted) Let's look at it from top to bottom.

(Narrator) Principle 1: Keep it simple

(Ted) It should be simple

(Narrator) Flags should be simple enough for a child to draw without looking.

(Ted) This is relatively complicated.

(Roman) Okay, let's see.

The central element of the San Francisco flag is the phoenix, representing the city rising from the ashes after the Great Fire of the 1850s.

(Ted) It's a powerful symbol.

(Roman) But I can't have this phoenix.

The design is rough, but the details are too fine. Even if you try, it's not easy to do.It looks terrible from a distance, but I can appreciate the fact that it has a deep meaning.

The background of the phoenix is ​​almost pure white, surrounded by a thick gold border.

Ted: This is an attractive design element.

Roman: I think it's fine, but... (Laughter) The next thing you should never do is design a flag.

(Narrator) Principle 4 Do not include letters or crests

don't write anything

ROMAN: On the ribbon under the phoenix is ​​the motto, "Gold of Peace, Steel of War." And there's an even bigger problem.

(Ted) If you have to write the name of what the flag represents, it fails as a symbol.

(Laughter) (Applause) (Roman) The American flag doesn't say USA.

In fact, the flag is mostly neat.

Hats off to the flags of South Africa, Turkey, Israel, Somalia, Japan, Gampia.

There are a lot of really great flags out there, but following good design principles is a matter of interest.

Because it's going to be on the international stage.

But when it comes to city, state, and region flags, it's a different story.

(Laughter) There's this terrible flag that's giving me a headache, and someone should stop it.

(Laughter) (Applause) That's truth, that's courage.

The first step is to admit there is a problem.

A lot of people think that good design is just a matter of taste, and frankly, sometimes it's true and sometimes it's not.

Let's take a look at the principles of designing flags from the North American Society of Flag Studies (Narrator) Five basic principles when designing a flag -

Principle 1 (Ted) Keep it simple (Narrator) Principle 2 (Ted) Use meaningful symbols

(Narrator) Principle 3 (Ted) Use 2-3 basic colors

(Narrator) Principle 4 (Ted) No letters or crests

(Narrator) Don't write anything

(Ted) You can't read it from a distance.

(Narrator) Principle 5 (Ted) Be distinctive

(Roman) Most of the best flags follow this principle.

As I said earlier, flags are mostly fine.

but actually

Just ask any designer and they'll tell you these five principles: simplicity, depth of meaning -- focused or carefully considered colors -- distinctiveness, no illegible text -- all of these principles apply to any design.

But sadly, the principles of good design for American city flags are

It's not widely applied. The biggest problem is probably Principle 4.

Americans are tempted to put their local names on their flags, or their coats of arms in small letters.

In fact, the municipal coat of arms is designed on paper, and you can read it then, but you can't read it when it's 30 meters away and it's flapping in the wind.

Now look at the various flags again

Banner scholars call these flags SOB -- seals on a bedsheet. (Laughter) If you don't know which flag is which city flag, that's exactly the problem.

There are flags like this all over America

In Europe, the coat of arms of a municipality is the coat of arms of a city.

you can learn the right way from here

This is the coat of arms of Amsterdam

If this were an American city, the flag would probably look like this.

That's right (laughs)

But the Amsterdam flag looks like this

Instead of just putting a coat of arms on a solid background and writing "Amsterdam" underneath it, they took the key elements from the escutcheon, the shield, and turned it into the coolest flag in the world.

(Laughter) (Applause) It's so cool, you see these flags and crosses all over Amsterdam, and they're used just like in Chicago.

Flags that look like heraldic sheets hurt me and even make me angry, but one of the worst failures in the history of heraldry still requires a great deal of determination.

Are you ready?

The flag of Milwaukee, Wisconsin

(Laughter) It's certainly distinctive, I'll admit it.

(Steve Cordis) This flag was adopted in 1955.

The city of (Roman) held a competition, and we received a lot of submissions with different designs.

(Steve) An alderman named Fred Stephen cut and pasted pieces of various posts into what we know today as the Milwaukee city flag.

(Roman) It's a flag that looks like a leftover container.

A giant cogwheel representing industry A ship honoring a port A giant ear of wheat honoring the brewing industry...

It's a mess, so local graphic designer Steve Cordis is trying to change the flag.

(Steve) This is really bad

It's a misstep by the city, to say the least.

ROMAN: What makes the Milwaukee flag so bad and parody-like is the Civil War Milwaukee Regimental standard in the flag.

CA: The finishing blow that's ruining this flag is that the city flag contains another flag design.

(Roman) In the flag, right? (Laughter)

Jeez···

(music) Milwaukee is a great city

I've been there and I love the city

But the most disappointing thing about this flag is that it has hosted two major design improvement contests.

Last held in 2001

We received 105 applications

Ted: But in the end, the Milwaukee Art Commission decided that none of the entries were worthy of being put up in the city.

(Roman) You couldn't even change that flag! (smile)

It's so disappointing that it's tempting to think that good design and democracy don't go hand in hand.

But Steve is trying to redesign the Milwaukee flag again.

Steve: I think Milwaukee is a great city.

And a great city needs a great flag.

(Roman) Steve's design isn't ready for release yet.

When you're proposing something like this, it's important to get everyone involved and then publish the design.

But here's a tip: If you want to design a great flag -- if you want to make a cool flag like Chicago or Washington, D.C. -- start by drawing a 2.5 cm by 3.8 cm rectangle on a piece of paper.

We're going to fit the design into this little rectangle.

there is a reason for this

Ted: A 1m by 1.5m flag on a pole 30m away is about the same size as a 2.5cm by 3.8cm rectangle when viewed from a distance of about 40cm.

If you stick to this limit, the design will be so simple and attractive that you'll be surprised.

ROMAN: Well, let's get back to San Francisco.

Is there anything we can do?

Ted: I think that in every bad flag there's always a good flag trying to get out of it. (Laughter)

To make the San Francisco city flag look good, the first thing to do is remove the motto, because you can't read it from a distance.

If you remove the name and make the border thicker, it will be more integrated with the flag.

Then I would put the phoenix as the largest element in the center of the flag.

(Roman) But we should remove the phoenix we have now.

Ted: I would simplify or stylize the phoenix.

I'm going to draw a bird with big flapping wings coming out of the flames.

highlight the flame

ROMAN: This is the San Francisco city flag designed by Frank Kimero based on Ted's suggestion.

What would he have been like if there were no restrictions and no guidelines?

Fans of my shows and podcasts hear me complain about flags

suggest a design

This is Neil Musset's work

both are much better than they are now

If these proposals are adopted, I'm sure you'll see them all over town.

In the movement I'm working on to make the flags of the world more beautiful, many listeners have joined the movement and are beginning to look for ways to change the design of the flags so that they can be officially adopted.

If you see your city flag and you like it, put it up, even if it deviates from a design principle or two.

I do not mind

However, if you don't see the city flag, it may not exist, or even if it does, it may just be terrible.

The closer we get to our city, the more the city flag will become not just a symbol of a place, but a way of expressing how the city perceives design itself, especially now that the public is becoming more design conscious.

Design awareness has never been higher

Well-designed flags represent how a city views its design system: its public transportation system, its parks, its signage.

You may think it's trivial, but it's not.

Ted: City leaders often say, "We have a lot more important issues than a city flag."

CA: I saw in Chicago what a great city flag can do.

Every place needs a combination of good design and civic pride.

The good thing about municipal flags is that they own them.

The flag is an open-source design language shared by the region.

If the design is good, it can be remixed and applied

It's going to be powerful. A good flag can control the brand and image of a city.

Sports teams can relocate and be disappointed.

Some people have no interest in sports in the first place.

tourism campaigns can be stale

But a good city flag shows citizens what the city is, and shows the world who it is.

If the flag is beautiful, then those connections are equally beautiful.

And maybe every city flag can be a heart-warming flag like Hong Kong or Portland or Trondheim, or a flag that's as bad as San Francisco or Milwaukee's Cedar Rapids flag.

(Laughter) (Applause) Yes.

It even has a registered trademark mark (laughs).

My chest hurts just looking at it

thank you for listening

(Applause) [Music: Melodium (@melodiumbox) and Keegan DeWitt (@keegandewitt)"]

look at this pencil

it's a thing it's a legal thing

It's like the books and cars you own

everything is legal

Even the apes behind me are legally property.

things can do

You can dispose of your books and your car however you like.

look at this ape

This photo was taken by a photographer named James Morrison, author of the book "James &amp; Other Apes."

In his book, he tells us that almost all monkeys are orphans whose fathers and mothers were killed in front of them.

they are legally a thing

For centuries, there was a huge legal barrier between legal person and thing.

What's on one side of the legal wall is invisible to the judge.

not protected by law

have no legal rights

I'm not in a position to use my rights

they are slaves

There are people on the other side of the legal wall

legal people look good to judges

protected by law

have many rights

You can use unlimited rights

they are slave owners

At this point, all non-human animals are things.

all people are legal people

But man and legal man have never been and have never been synonymous.

Human and legal person are not synonymous

For centuries, on one side of the wall, many humans have been treated as legal objects.

slaves were things

Sometimes women and children were objects.

There have been civil rights struggles over the past few centuries that have punctured this legal wall, allowing people who were objects to walk through the walls and become people.

But unfortunately this hole has been closed.

Now, on the other side of the legal man, man has never been only human.

For example, there are many corporations that are not living organisms.

We all know that in the United States, corporations are legal persons.

Before independence, India recognized both Hindu statues and mosques as legal persons.

India's Supreme Court recognized Sikh scriptures as legal persons in 2000 AD, and most recently, in 2012, a treaty was struck between the indigenous peoples of New Zealand and the state to make the rivers legal persons with title to the river bed.

In 1980, when my hair was still brown and fluffy, I read Peter Singer's book and it made a deep impression on me, because I became a lawyer to speak for the voiceless, to be a shield to the defenseless, and I realized that there are hundreds of billions and trillions of animals that are voiceless and defenseless.

After that, I started working as an animal protection lawyer.

By 1985, I found myself trying to achieve the literally impossible, because my clients -- all the animals I was trying to protect -- were legal and invisible.

It just wouldn't work, so I was convinced that to make it work, at least some animals needed to be able to punch holes in the law and go back to the other side of the wall.

At that time, the idea of ​​genuine animal rights, the idea that non-human animals had legal personalities and rights, was little known or even discussed, so I thought it would take a long time.

Back in 1985, I predicted that it would take about 30 years just to launch a strategic trial -- a long-term campaign to punch another hole in the wall.

In fact, it's only been 28 years, so my outlook was pessimistic.

Before I could start a strategic litigation, I had to read articles about the law, teach classes, write books, but also think about every mechanism for bringing this kind of litigation.

One of the first things we needed to do was clarify the lawsuit, the lawsuit.

A cause of action is a tool a lawyer uses to make a case in court.

On this, I found out that there was a very interesting trial in London 250 years ago called the Somerset case, where black slaves used the legal system to go from legal objects to people.

I was so intrigued by the trial that I ended up writing a book about it.

James Somerset was eight years old when he was kidnapped from West Africa.

It survived the Central Passage and was sold in Virginia to a Scottish merchant named Charles Stuart.

Twenty years later, Stuart took James Somerset to London, and James decided to run away after arriving in London.

He was the first to be baptized, to have godparents, knowing that one of the main responsibilities of a godfather to an eighteenth-century slave was to help escape.

And in the fall of 1771, James Somerset ran into trouble with Charles Stuart.

I don't know what happened, but James disappeared.

Infuriated, Charles Stuart hired slave catchers to roam the streets of London, and after finding him, took him not to himself but to the Anne and Marie, which was anchored in London harbor. And he was chained to the deck, and the ship was to sail to Jamaica, where James would be sold at the slave market, harvest sugar cane, and live three to five years.

James' godparents acted immediately.

They went to the most powerful judge, Lord Mansfield, who was the Chief Justice of the Court of Kings, and asked him to issue a common law writ of habeas corpus on behalf of James Somerset.

Common law is like the laws that English-speaking judges make when they don't fit into the existing rules of law or the constitution, and writs of habeas corpus are called "Great Writs," capital G and capital W, and they're there to protect anyone who's been deprived of their liberty against their will.

When a writ of habeas corpus is issued

The detainee must bring the detainee in and show a sufficient legal basis for depriving him or her of liberty.

Lord Mansfield was forced to make an immediate decision, because if James Somerset was legal, he would no longer be subject to habeas corpus, which applies only to legal persons.

Lord Mansfield determined that James Somerset was indeed a legal person, he issued a writ of habeas corpus, and James was brought into custody by the captain of the ship.

After that, there were six months of repeated public hearings.

On June 22nd, 1772, Lord Mansfield said, "Slavery is disgusting." He set James free by using the word "disgusting," which was unconventional in common law.

At this moment, James Somerset underwent a major legal change.

I walked out of the court as a free man. I looked like a slave when I entered the court, but legally, I was a completely different person.

The next thing we did was the Non-Human Rights Project, which was a project I started to look at what values ​​and principles we could advocate before a judge.

What values ​​and principles are accepted like mother's milk, taught in law school, used every day, and believed with all our hearts? We chose liberty and equality.

The right to liberty is the right you were given to live together. The right to fundamental liberty protects your fundamental interests.

The highest value in common law is the right to autonomy and self-determination.

This right is so powerful in the world of common law that if you go to the hospital and refuse life-saving treatment, the judges won't force you to do it, because they respect your self-determination and autonomy.

Equal rights, on the other hand, are rights given to you so that you have something in common with other people.

Others have rights, and you are given those rights when you have something in common with them.

Courts and legislative bodies always draw the line

what is included and what is excluded

But you have to at least draw the legal line in a reasonable way.

He argued that the Non-Human Rights Project was an autonomous, self-determining being, and that drawing the line to enslave animals like the one in the background is a violation of equal rights.

We researched 80 legal systems, and it took us seven years to find the right legal system to start our first trial.

we chose new york

And we think about who to choose as plaintiffs

I chose chimpanzees, not just because Jane Goodall was on our board, but because Jane and the others had been working intensively on chimpanzees for decades.

We know that they have extraordinary cognitive abilities, and that they have something in common with human cognitive abilities.

So we chose chimpanzees and traveled the world looking for authorities on chimpanzee perception.

We searched for experts in Japan, Sweden, Germany, Scotland, the United Kingdom, and the United States, and wrote 100-page affidavits that measured their complex cognitive abilities in more than 40 different ways for individuals and groups, all of which add up to underpin autonomy and self-determination.

For example, chimpanzees not only have consciousness,

They also recognize that they themselves are conscious.

They have feelings and they know others have feelings.

they know they are individuals and they are alive

They know they lived yesterday and they will live tomorrow

They can look back and remember what happened the day before.

You can predict what will happen tomorrow, so putting a chimpanzee in solitary confinement is a terrible thing.

Humans put only the worst criminals in solitary confinement, but when we do the same with chimpanzees, we don't even think about it.

they have morals

When they play economic games with humans, they naturally make fair deals, even if they don't have to.

They have knowledge of numbers and can understand numbers.

can do simple arithmetic

They can understand language -- they can stay out of quarrels -- they intentionally participate in communications that are relevant to them, paying attention to the demeanor of the monkeys they're talking to.

they have a culture

Both material culture and social culture.

also has an iconic culture

Researchers in the Thai Forest on the Ivory Coast have seen chimpanzees using rocks to open very hard-shelled nuts.

It takes a long time to master this method, so when researchers dug up the area, they discovered their material culture, how to open nuts, and those rocks had been passed down for at least 4,300 years, 225 generations of chimpanzees.

and we needed to find chimpanzees

Our chimpanzees, we first found two in New York State.

Both died before lawsuits were filed.

I found Tommy there

Tommy is the chimpanzee behind me

we found him in a cage

Inside a large warehouse built in a used trailer yard in central New York, there was this little room full of cages.

I also found Kiko, who's slightly deaf.

Kiko was in the back of a cement store in West Massachusetts.

I also found Hercules and Leo

It's a young male chimpanzee that was kept at Stony Brook for biomedical and anatomic research.

found them

And in the last week of December 2013, the Non-Human Rights Project filed three lawsuits in New York State.Using the same common law habeas corpus argument that James Somerset used, we asked a judge to issue habeas corpus.

We wanted to get the chimpanzees out and take them to a large chimpanzee sanctuary in South Florida called "Save the Chimps," which has an artificial lake with 12-13 islands, and 24 chimpanzees, each with 2-3 acres of land.

So chimpanzees can live their normal lives with other chimpanzees in an environment that is as close to Africa as possible.

all trials are still in progress

We haven't met the modern-day Lord Mansfield yet.

I'm sure we'll meet someday

This will be a long-term strategic legal campaign.

In the words of Winston Churchill, this court situation is neither the end nor the beginning of the end, but it will be the end of the beginning.

thank you

(applause)

You might think I'm crazy if I tell you that this picture is of a happy face.

But I won't get mad at you. I always get chills when I look at this Arctic selfie.

I'm going to talk to you about this photo today.

It's swimming around Norway's Lofoten Islands, inside the Arctic Circle, but the water is on the verge of freezing.

The air is cold, minus 10 degrees, and you can literally feel the blood drain from your hands, legs, and face to protect your vital organs.

It's the coldest temperature I've ever experienced.

My lips were swollen, my eyes were sunken, my cheeks were red, but I knew this place was a lot of fun.

By the way, when it comes to pain, I think the psychologist Brock Bastian put it best: "Pain is a shortcut to concentration.

Makes you aware of everything around you

It relentlessly leads to a meditative awareness of the world.”

If shuddering is a form of meditation, I'd say I'm a monk.

(Laughter) Why didn't anyone want to surf in the freezing waters?

Before I say that, I would like to show you a video of my day.

(music) I'm looking for a good wave but I think it's unpredictable

I can't stop trembling

Very cold

(Music) (Applause) I'm a surf photographer.

I don't know if there is such a title.

My parents didn't approve of it, and when I was 19, I said I was quitting my job to pursue my dream job: blue skies, warm tropical beaches, and year-round sunburn.

It's a life that I can't wish for any more

Resist the temptation of attractive tourist destinations and photograph surfers.

But I have one problem

The more attractive places I travel, the less I feel satisfied.

Even if you start looking for adventure, you'll end up in an ordinary place

It was the mark of a famous tourist destination with Wi-Fi, televisions, fine dining, and always-on cell phones, both in and out of the water, and it soon became suffocating.

And I started looking for more open spaces, I started looking for places no one else had written about. It was too cold, too remote, too dangerous for surfing, and I was intrigued by this challenge.

I've embarked on a quest to revolutionize mediocrity. One thing I've come to realize, and that could be true of any profession, is that being a surf photographer can seem glamorous, but it can become monotonous.

As I searched for ways to break this boredom, I realized that only one-third of the world's oceans are warm, only a small area around the equator.

If you're looking for the perfect wave, you're going to be going cold.

On my first visit to Iceland, I felt I had found what I was looking for.

I was overwhelmed by the natural beauty of the landscape, but most importantly, I didn't expect to find perfect waves in such a remote location.

And when we got to the beach, there was an astonishing amount of ice on the shoreline.

It's a barrier to surfing. It's a maze of ice.

When you're in the ocean, you push your way through the ice to catch the waves.

It's an incredible experience that you'll never forget. In such a harsh environment, I felt like I had stumbled upon "the last quiet place" by chance. My mind was clear and I felt connected to the world.

(Laughter) I have cold water in my mind all the time. And since then, I've been focusing on harsh environments like this, and I've been to Russia, Norway, Alaska, Iceland, Chile, the Faroe Islands, and so on.

What I love about these lands is simply the challenge and the creativity to get there, and I spend days and weeks in Google Earth exploring remote reefs and beaches that seem impossible to reach.

And once you've reached your destination, even the vehicles are creative: a snowmobile, a six-wheeled Soviet armored car, and a super unsafe helicopter.

(Laughter) Helicopters were really scary.

Here we're on a boat, up a raging current, on a remote surf spot on Vancouver Island where you can't do anything but watch as a bear destroys your tent.

The bears took food and some of our tents, and we were reminded that we were at the bottom of the food chain, their place and not ours.

But this trip is a testament to the wildness we got in exchange for a bustling beach.

This is a picture from when I went to Norway, and I really understood that it was cold.

Yes, this is where some of the most powerful storms in the world occur, and huge waves crash against the shoreline.

I'm in a remote fjord in the Arctic Circle

There are far more sheep than humans, and even if you want help, you can't.

I was in the water to take pictures of surfers when it started to snow.

and the temperature started to drop

I told you that you shouldn't go up to the ground

I've traveled all the way and it's the situation you've been waiting for Frozen conditions and perfect waves

I was numb with my finger to press the shutter, but I decided not to.

I moved my fingers and did what I could

Before I knew it, I was hit by a raging wind from the valley, and the light snow had turned into a blizzard, and visibility was gone.

I had no idea if I was drifting out to sea or heading for shore.

It's a notorious place for ships to sink and planes to crash, and it was a little unnerving while we were drifting.

(Laughter) And I had a friend help me out just before I was hypothermia.

Maybe he was in a state of delirium.

This is my journey, and this is exactly what I felt through this experience, because all the precious photographs were obtained because they were forced into the moment.

And this shivering cold has taught me that there are no shortcuts to joy in life.

Anything worth chasing might require a little bit of suffering, a little bit of suffering is in this picture. Suffering adds value to my work and makes it more meaningful than filling the pages of a magazine.

Put yourself in a tough environment and bring home the kind of fulfillment you've been looking for.

Looking back at this photo

I remember frozen fingers and cold wetsuits, I even remember the struggle to get there, but most of all, I feel joy.

thank you

(applause)

2011 Kim Jong-il's last six months - I was infiltrating North Korea

I was born and raised in South Korea, the enemy of North Korea.

I live in America, another enemy.

I had visited North Korea several times since 2002.

And what I've come to realize is that the only way to write something meaningful about this country and understand things beyond government propaganda is to go inside.

So I infiltrated an all-boys college in Pyongyang under the guise of a teacher and a missionary.

The Pyongyang University of Science and Technology was founded by evangelical Christians in collaboration with the government to educate the sons of North Korea's elite, but not to proselytise, a felony punishable by death.

270 students expected to become leaders of one of the most isolated and inhumane dictatorships on earth.

As soon as they arrived, they became my students.

2011 was a special year because it marked the 100th anniversary of the birth of North Korea's first great leader, Kim Il-sung.

To celebrate this, the government closed all universities and sent students to the fields to build what the Democratic People's Republic of Korea held so high: "the most powerful and prosperous country in the world."

Only my students were exempt from duty.

North Korea is a concentration camp disguised as a state.

The "Great Leader" is at the center of everything

Books, newspaper articles, songs, TV shows - all on one theme.

Flowers are named after him and mountains are carved with his slogans.

Every citizen always wears the badge of a great leader.

Even the calendar starts from the year Kim Il-sung was born.

The school was a high-security prison masquerading as a campus.

Teachers' outings were only allowed in groups supervised by authorities.

Still, they were only allowed to travel to national monuments that honored great leaders with permission.

Students weren't allowed to leave campus or contact their parents.

Their lives were meticulously scheduled, and all free time was devoted to honoring their great leader.

The instruction plan had to be approved by North Korean officials, all classes were recorded and reported, all classrooms were wiretapped, and all conversations were overheard.

Like everywhere in North Korea, every empty spot was filled with portraits of Kim Il Sung and Kim Jong Il.

We were never allowed to talk about the outside world.

Many students majored in computers because they were students at science and technology universities, but they didn't know about the existence of the Internet.

I had never even heard of Zuckerberg or Jobs.

Facebook and Twitter would have made no sense at all.

I couldn't even teach

I went to North Korea in search of the truth

But when the ideology of the nation, the daily reality of the students, and even my position at the university are based on lies, where should I start?

so i started the game

It's a game called "Truth and Lies"

A student who raises his hand writes a sentence on the blackboard, and everyone guesses whether the sentence is true or false.

One day, a student wrote, "Last year, I went to China on vacation," and everyone shouted, "Lie!"

Everyone knew it was impossible

North Korean citizens are effectively not allowed to leave the country.

A passport is required even when traveling within the country.

I wanted this game to reveal a little bit of their truth, because they lie so easily and often, like the imaginary feats of a great leader, or the bizarre claim that they cloned rabbits in fifth grade...

Sometimes they didn't even know the line between truth and lies.

It took me a while to realize that there are many different kinds of lies. They lie to protect their regime from the world.

Sometimes we lie out of habit

But if everything they've learned is a lie, how can they not lie?

Then I tried to teach them to write essays.

But it turned out to be impossible

In your essays, you develop your own hypotheses and develop evidence-based arguments to prove them.

But the students were simply following the ideas that were imposed on them.

Their world didn't allow critical thinking.

After that, I gave myself a weekly homework assignment to write a personal letter to anyone.

It took a long time, but eventually some students started writing letters to their mothers, to their friends, to their girlfriends.

It was just a homework assignment, and it never got through to the other person, but little by little the students began to express their true feelings inside.

Feeling fed up with nothing changing -

Anxiety about the future...

Few of the great leaders were mentioned in the letters.

i was always hanging out with the students

We ate together and played basketball together.

"Gentlemen," they giggled.

Talking about girls turned red

i fell in love with them

I was very touched when you opened your heart, even just a little.

I just felt something was wrong.

During the months I lived in their world, I wondered if the truth was actually good for their lives.

I couldn't help but want to tell them the truth about their country and the outside world, how young Arabs are using social media to overthrow a corrupt system, and how everyone else is connected by a global web, which, after all, isn't "the whole world."

But on the other hand, for the students, the truth was dangerous.

By encouraging them to seek the truth, I was putting them at risk, at risk of being accused, at risk of being disappointed.

If you're not allowed to express yourself in public, you'll be better at reading what you can't put into words.

In a letter to me, one student wrote, Now I know why I call myself "Gentlemen"—

That's because I want you to live like a gentleman

December 2011, my last day in North Korea - the day Kim Jong Il's death was announced, their world fell apart.

I had to leave the country without even being able to say goodbye

But I think they realized how lonely I was.

Towards the end of my stay, one student said to me, "Professor, I never thought you were different from us.

Even if the environment is different, you and we are the same

I want you to know that I believe we are the same."

If I could write to my students right now -- which I certainly can't -- I would say to them, "Dear gentlemen, it's been a little over three years since I last saw you.

Now you are 22, some of you are 23.

In the last class, I asked everyone if they had any wishes.

In the months we spent together, the only wish you had ever expressed - the only wish you had for me - was that I speak to you in Korean.

Even if it's just once

My job was to teach English, so I should have known that wasn't allowed.

But then I understood the desire to share the bond of mother tongue.

I called you "Gentlemen," but I don't know if being a gentleman is a good thing in Kim Jong-un's cold North Korea.

I don't want you to lead a revolution, and I don't want other young people to do it.

The world might casually recommend something like "North Korea Spring," or even expect it, but I don't want you to take any risks, because there's always someone watching over you.

I don't want to imagine that there's something wrong with you

If I've brought you something new by getting close to you, you better forget about me

Better live a long and safe life as a soldier of the great leader.

You asked me before if you thought Pyongyang was beautiful, but I couldn't tell you what I was thinking at the time.

I know why you asked

I know it's important to you that I, as a teacher and as someone who has seen the world forbidden to you, declare that this city is the most beautiful.

Because that answer makes life a little more tolerable for you, and yet I don't think your capital is beautiful.

It's not because it's monotonous and full of concrete, but because of what it stands for: the monsters that prey on a country whose citizens are soldiers and slaves.

there's only darkness

But it's your hometown, so I can't bring myself to hate you.

Dear young gentlemen, instead, one day please make this city beautiful with your own hands.

thank you

(applause)

When I was a child, I loved playing hide-and-seek

One day, I thought that if I climbed a tree, I would never be found, but then I fell off the tree and broke my arm.

I started first grade with a cast wrapped around my torso.

After six weeks, the cast came off, but I couldn't straighten my elbow, so I had to undergo physical therapy to bend and straighten my elbow, 100 times a day, every single day.

I didn't do much because I was bored and in pain, so it took me six extra weeks to get better.

Years later, my mom had four shoulders, pain in her shoulders, and tight muscles.

My mother, who was supposed to be a superwoman, suddenly needed help getting dressed and cutting food.

She went to physical therapy every week, but like me, she didn't do most of her rehab at home, so it took her five months to get better.

The physical therapy that my mother and I needed was a series of repetitive movements that would restore the motor function lost in an accident or injury.

Initially, a physiotherapist works with the patient, but then it's up to the patient to continue exercising at home.

But for patients, physiotherapy can be tedious, frustrating, confusing, and slow to deliver results.

Unfortunately, 70 percent of patients do not rehabilitate at home.

So most patients don't exercise, so it takes them a lot longer to get better.

Physiotherapists all say that special exercises can reduce recovery time, but patients are not motivated.

So I, a software geek, and three friends thought, "Wouldn't it be interesting if patients could recover while having fun?"

MIRA is a personal computer software platform that uses this Kinect device and motion capture cameras to turn traditional exercise into a video game.

My physiotherapist pre-made a treatment plan just for me.

See what it looks like

The task of the first game is to make the bees fly up and down to collect pollen in the hive, avoiding other insects.

By extending and bending your elbows, you control the bees, just like when you were seven years old when you took the cast off.

When designing the game, we first talk to the physical therapist to understand what movements the patient needs.

So we create video games to give patients simple, motivating goals.

The software is highly customizable, and physiotherapists can create their own exercise routines.

Using this software, my physiotherapist recorded me abducting my shoulder, one of the movements that my mom with four shoulders should have practiced.

On the left side of the screen, you can follow the physiotherapist's movements, and on the right side, you can see yourself performing the recommended movements.

I feel like I'm working hard and feeling more confident because I'm working side by side with my physical therapist, and I'm doing what she thinks is best for me.

This gives us a wider range of applications, allowing us to create any exercise that a physical therapist thinks is best.

It's an auction house game about avoiding falls, designed to build muscle strength and balance.

Standing and sitting are necessary for rehabilitation, so stand and price what you want to buy Stand and price what you want to buy.

(Laughter) In two days, my grandmother will be 82. Half of all people over the age of 80 fall at least once a year and can suffer a serious injury, such as a hip injury.

Weak muscles and poor balance are the number one causes of falls, and exercise to improve them can help older people like my grandmother live longer, safer, and more independent lives.

After completing the planned menu, MIRA briefly tells me how much I've improved in this session.

I introduced three games for children, for adults, and for the elderly.

These are used for orthopedic and neurological patients, but soon we'll have them for children with autism, and we'll introduce them to mental health and speech therapy.

Physiotherapists can go back to my profile and see the data they've collected during exercise.

You can see how much I've moved, how many points I have, how fast I've moved my joints, and so on.

All of this a physiotherapist can use in my treatment.

I'm very happy that it's now being used in over a dozen medical institutions in Europe and the United States, and we're working on a home version.

I want physiotherapists to prescribe this digital treatment so that patients can play and recover at home.

If my mother and I needed physical therapy and we had these tools, we could have gone much better and recovered much faster.

thank you

(Applause) (Moderator) Tell me what Cosmin Hardware is.

What would you like? What is the cost?

COSMIN: I showed you the Microsoft Surface Pro 3, but all you need is a computer and a $120 Kinect.

(Moderator) I see Kinect is used in Xbox 3D games, right?

(Cosmin) That's right. I don't need an Xbox, but I do need a camera.

(Moderator) So you can solve the problem for less than a thousand dollars.

(Cosmin) Yes, you can get it for $400.

(Moderator) So you're conducting a clinical trial at a medical institution?

(Cosmin) yes

CA: So if the clinical trial goes well, you can create a home version, so that you can exercise from a distance, and a physiotherapist at a medical institution can see what I'm doing and so on.

(Cosmin) That's right. (Moderator) That's good. Thank you. (Cosmin) Thank you.

(applause)

(Chris Anderson) I'm going to ask you to tell us about your life using the photographs you've brought to us.

I would like to start here

Now who is this?

(Martine Rothblatt) My oldest son, Eli, and I.

was about 5 years old

It was taken in Nigeria, right after I took the bar exam in Washington, D.C.

CA: But it doesn't look like much to Martin.

(Martine) This is me, the original gender male I was born and raised with.

Before the change from man to woman to Martin to Martin.

So you grew up as Martin Rothblatt.

That's right

About a year after this picture was taken, you married a lovely woman.

Was it love at first sight? What happened?

It was love at first sight

I met Vina at a disco in Los Angeles, and after that, we started living together.

So I signed up for the dance

She said she felt the same way about me.

I was a single father and she was a single mother

They showed each other pictures of their children, and now they've been happily married for over 30 years.

(Applause) At the time, you were a successful entrepreneur doing satellite work.

You had two successful companies, and then you started to set about how you could use satellites to revolutionize radio.

please tell me about that

Yes, I've always been obsessed with space engineering. Satellites are to me like the canoes that our ancestors first plowed through the water.

For me, navigating the ocean of the sky was really exciting. When I developed a different form of satellite communication system, I mainly launched larger and more powerful satellites, and as a result, I was able to have smaller receiving antennas. That's the Sirius XM of today

Oh, how many of you joined Sirius?

(Applause) Thank you for your monthly payments.

(Laughter) You defied all expectations at the time, and you've succeeded.

It was a huge commercial success, but shortly after this, in the early 1990s, there was a big change in your life, and you became Martin.

(Martine) That's right. (Chris) How did that happen?

I consulted with Bina and our four wonderful children, and had discussions with each of them. I always felt that my soul was female, but I thought that if I said it, people would laugh at me.

Everyone in the family reacted differently to this.

Bina said, "I love your soul. It doesn't matter if you look like Martin or Martin. I love your soul."

My son said, "Will you still be my father when I become a woman?"

I said, "Oh, I'll always be your father." And I'm still his father.

My youngest daughter reacted like a bright five-year-old.

My daughter used to tell everyone, "I love Daddy and she loves me."

My daughter had no problem with mixing genders.

A few years later, you published this book, "Sexual Apartheid."

what was your theme in this book

My theme for this book is that there are seven billion people in the world, and in fact seven billion unique ways of expressing their sexuality.

A person may have male or female reproductive organs, but reproductive organs do not determine gender or gender identity.

It's just a matter of bodily structure, it's just a reproductive organ. If society didn't force us to be male or female the way South Africa forced its people to be black or white, we would be able to choose the sex we wanted.

We've learned from anthropology that race is a fiction, even though racism is quite real, and we're learning this now from cultural studies that gender distinctions between men and women are a pile of fiction.

The reality is that there is a fluidity to gender, a crossover of a whole sense shift from male to female.

So you don't always feel like you're 100% female.

Yes, in a sense, yes. I change my gender as often as I change my hairstyle.

(Laughter) Okay, so this is your beautiful daughter, Genesis.

It seems that something terrible has happened

Well, she couldn't walk up the stairs of her house to her bedroom. After several months in the hospital, she was diagnosed with pulmonary hypertension, a rare, almost incurable, fatal disease.

How did you react?

Yes, we first tried to see as many good doctors as possible.

We ended up at the National Children's Medical Center in Washington, D.C.

The pediatric cardiologist told us, "I'm going to refer her to a specialist for a lung transplant, but don't expect anything, especially when it comes to children, because the number of lungs available for transplant is very low."

Doctors told me that people with this disease would die. If you've seen the movie "Lorenzo's Oil," you know that the main character tumbles down the stairs, crying and bemoaning the fate of his son.

But you don't accept it as a limit

You started trying to find out if you could somehow find a cure.

That's right. She spent a few weeks in the intensive care unit. Vina and I teamed up. When one of us stayed in the hospital, the other looked after the other children. When I was in the hospital, Vina was sleeping. I went to the hospital library.

I read every article I could find about the disease.

I didn't take any biology in college, so I had to read everything from biology textbooks to college-level biology textbooks, and then I read all over medical books and journal articles, and I finally knew that it might be possible for someone to find a cure.

So we set up a non-profit foundation

Provided and solicited grants for medical research

I'm now an expert on this condition, and the doctor said, "Martine, we really appreciate the money you've given us, but we don't have time to find a cure to help your daughter.

But there is a drug, developed by Burroughs Wellcome, which may be able to stop the progression of this disease.

It's just been acquired, and the company has decided not to make drugs for rare or rare diseases, and it might be possible to use its expertise in satellite communications to develop a drug for pulmonary hypertension."

So how the hell did you get this drug?

I went to GlaxoWellcome, after being rejected three times and having the door slammed in front of me.

I weakened their resistance, and by the way, they didn't think the drug had any chance of working, and they were trying to tell me, "You're just wasting your time.

I feel sorry for your daughter."

But in the end, they agreed to give us the worldwide rights to this drug in a deal that would pay them $25,000 and 10 percent of the proceeds.

You've done a really great job of bringing this drug to market by basically paying up front what it costs to make the economy work.

Yes, Chris, but it didn't actually turn into a drug. After writing a check for $25,000, I said, "Where's the Genesis drug?"

They said, "Martine, there's no drugs for Genesis, this is.

It's just an experiment on rats."

They gave me what looked like a little plastic ziplock bag with a very small amount of powder inside.

"Don't let anyone take it," they said, and they gave me a piece of paper with a patent on it, and from there we had to figure out how to make this drug.

An eminent chemist at one of America's top universities declared that the patent could never be made into a drug.

Even if it were a drug, it would never be able to reach the lesion, because it has a half-life of only 45 minutes.

But a year or two later, you brought a medicine that worked against genesis, didn't you? But a year or two later, you brought a medicine that worked against genesis.

Chris, Amazingly, just by giving Genesis a glimpse of hope Chris, Amazingly, by giving Genesis a glimpse of hope, that little bit of dust that was thought to be utterly worthless is today generating roughly $1.5 billion in revenue a year, not just keeping Genesis and others alive.

(Applause) You did it.

So you took the company public, right?

and made a fortune

By the way, how much did you pay Glaxo in addition to the $25,000?

Well, we pay 10% of $1.5 billion every year, or $150 million. Last year, we paid $100 million.

(Laughter) And I think the best news is this.

Yes, Genesis is such a bright, youthful woman.

Active and healthy, turned 30 this year

Vina and Genesis are coming

The most amazing thing about Genesis is that she's vibrant and capable of doing anything. It's true. If you grew up with people telling you to your face that you had a fatal disease, maybe I'd run away to Tahiti and never see anyone again.

But instead she chose to work at my United Therapeutics.

She said she wants to do everything she can to help others, including providing medicines for rare diseases, and today she's the project leader for our telepresence efforts, where she's digitally connecting and working with the entire company to find a cure for pulmonary hypertension.

But not everyone with this disease is so lucky.

Some people are still facing death, how do you deal with that?

That's right, Chris. More than 3,000 people die each year in the United States alone. Perhaps ten times as many people worldwide continue to die from the disease. Drugs are slowing it down, but not stopping it.

Pulmonary hypertension, pulmonary fibrosis, cystic fibrosis, emphysema, the only cure for COPD, the cause of Leonard Nimoy's death, is a lung transplant.

How can we deal with it?

Just as a massive supply of building parts and machine parts can keep cars and planes and buildings going forever, I'm looking specifically at the possibilities.

So we teamed up with human genome analyst Craig Venter and Peter Diamandis, the founder of the company he founded and XPRIZE, to genetically modify the pig genome so that it would not reject the human body, and the pig organ would not reject the human body, resulting in a massive supply of transplantable organs.

We do this through our company, United Therapeutics.

You really believe that in 10 years the shortage of transplantable lungs will probably be solved by these people?

Absolutely Chris

I think it's as certain as Sirius XM's televised success.

Actually this is not rocket science

It's an easy-to-understand engineering that follows one gene after another.

We're very lucky to be born in this era, because the ordered genome is doing what it's supposed to do, and the talented people in synthetic genomics can focus on the pig genome, finding the problematic genes and fixing them.

Surprisingly, it's not just limited to the body.

(Applause) Not just the immutable body that you're interested in right now.

It's also about the unchanging spirit.

I think this graph shows something very important.

What does it mean?

And according to this graph and Ray Kurzwell, the rate of progress in computer processing, hardware, firmware and software today, as we've seen in presentations so far, continues to progress along this upward curve, and we're going to see information technology in the 2020s that processes information and the world around us at the speed of the human mind.

You're actually preparing for that world by believing that things are possible, like actually taking the information content of our brains and somehow storing them forever?

Can you tell me what it is like?

Well, Chris, what we're trying to do is have people create a mind file -- a collection of their traits, their personality, their memories, their emotions, their beliefs, their attitudes, their values ​​-- all the information that's flooding Google, Amazon, Facebook today -- all the information that's flooding in today -- and building out of all that information, and within a few decades, the software will even create consciousness, into the mind file, out of the flood of information in the mind file. I want to be in a situation where I can reawaken my consciousness.

It's not like you're doing it on a whim

It's a serious effort. Who is this?

It's my beloved companion Veena's robot.

We call it Vina 48

Programmed at Hansen Robotech in Texas.

With one of her helpers, she's on the centerfold page of National Geographic magazine, spending hundreds of hours surfing the web to capture Vina's character and personality.

She's kind of like a two-year-old, but she also says things that surprise everyone. That seems to be best expressed by New York Times Pulitzer Prize-winning reporter Emmy Harmon. Emmy's answers are often disappointing, but sometimes she's as compelling as the opinions of the interviewee.

So what you're thinking here is that this clone of Veena could live in some way forever, or that future improved clones will.

Yes, it's true for everyone, not just Bina.

It costs virtually nothing to store our mind files on Facebook, Instagram, etc.

I think social media is one of the most amazing inventions of our time. As apps become available, we can ask things on our smartphones, and we're getting smarter.

Martin, so the point is, in any normal conversation, and this may sound absurd, what you've been doing in the background of your life, some things we've heard this week, the facts our minds construct are not certain.

Well, I don't think there's really anything that comes out of me.

If so, maybe I'm the messenger of a little activity being undertaken by big companies in China, Japan, America, Europe.

Tens of millions of people are working to write code that represents more facets of human consciousness. You don't have to be a genius to bring all these common ideas together to ultimately create human consciousness.

There's a lot to be done in this life. If we can have a likeness of ourselves -- our own digital avatars -- and if they can read to us, shop for us, and be our best friends, then I believe that mind clones of ourselves, digital versions of ourselves, will eventually be our best friends.

Every day I always say, "I love you now more than I did 30 years ago."

So for us, thanks to the possibility of mind cloning and regenerated bodies, our relationship will last forever, Chris.

I believe we never get tired of each other and never will.

(Chris) Bina is here, right? (Martine) Yes, I'm here.

How about you show up - do you have a mic?

Will you come up to the Vina stage? I have one question

everyone would love to meet you

(Applause) Thank you.

Come here with Martin

When you two got married, someone told you that in a few years, you'd be married to a woman, and in a few years, you'd be a robot. (Laughter) -- How did that happen? How are you feeling?

Bena Rothblatt: It was a really exciting adventure. I never thought about it at the time, but I started making goals, I set those goals, and I did it.

Martin told me something really wonderful over Skype the other day Martin told me something really wonderful over Skype the other day That's that he wants to live for hundreds of years as a mind file. He wants to live for hundreds of years as a mind file.

That's right, we want to keep living together

We want to refrigerate the human body and wake up together.

You see, as far as I can tell, this is not only one of the most amazing stories of life I've ever heard, but it's also one of the most amazing love stories.

It's an honor to be on stage with you at TED.

thank you very much

thank you

(applause)

I grew up in Orlando, Florida

my father was an aerospace engineer

I'm a child of the Apollo program

My family used to watch the launch from our backyard and go out to Cape Canaveral.

I was, of course, inspired by space and everything else, but more than anything else, I was drawn to the genius of engineering.

And what you're seeing behind me is this wonderful photograph taken from the International Space Station, and it shows a rare part of our planet that's rarely seen, little studied, little explored.

This place is called the stratosphere

As it rises above the surface, it gets colder and colder until it reaches the stratosphere, where something strange happens.

The temperature drops slowly, then it starts to rise again, and then it warms up until it reaches about 0 degrees Celsius, where you can probably survive without protection, and then it cools down again at the top of the stratosphere.

It's one of the hardest places on earth to get to.

If you've ever had a visitor, it's an astronaut, and they're probably being launched many times faster than the speed of sound, they're flying past you, and they're coming back to Earth in a ball of fire on their way back.

But what I want to know is, do we stay in the stratosphere?

Is it possible to experience the stratosphere?

Is there something you can't find out?

I did some research on my favorite search engine for a while, maybe a year, and timidly called.

Through a friend's referral, I contacted Taber McCallum of Paragon Space Development and asked him, can we build a system that goes into the stratosphere? and

he replied that he could

And it took me about three years to complete it.

And on October 24th of last year, I put on this suit and went up from the ground in a balloon to a height of 40 kilometers -- who counted?

(Laughter) We came back to earth at 1,300 meters per hour.

It's a descent of 4 minutes 27 seconds.

I opened my parachute and landed at an altitude of 3km.

(Applause) Yes, it's all about science and engineering, but what was really cool about this experience was that Taber said that he thought we could build a suit for the stratosphere, but that he would rather come to the office tomorrow and talk to some of the core members of the group that would actually build the suit.

So what I thought was important was their analogy to scuba diving.

Scuba diving requires a self-contained system.

bring everything you need

i need a scuba tank

I need a wetsuit

Secure your vision

Scuba takes this into the stratosphere with these systems.

This is the result after three years

We've got a great suit made by ILC Dover.

ILC Dover is the company that made the Apollo spacesuits and many spacewalk suits.

I've never sold a suit before, it's been exclusively for government agencies, but they sold it to me, and I'm very grateful to them.

There's a parachute here, just for safety.

Everyone on the team knew that I had a wife and two children, only 10 and 15 years old -- I had to come home safe and sound.

So I have a backup parachute, and if I don't do anything, the backup parachute will automatically open.

The suit itself protects me from the cold

There is a temperature protection function in this place on the front

warm water covers my body

and two oxygen tanks

Even if there's a tiny hole in my suit, it's unlikely to happen, but this system protects me from space cyclones.

The best thing about this system is its weight and sophistication.

This system weighs about 200 kilograms, but compared to the equipment that went into the stratosphere recently, they used capsules.

The capsule can hold a complex system, but it weighs about 1,400 kilograms. To lift that weight to an altitude of 40 kilometers, which is where I wanted to go, would require a 140,000 cubic meter balloon.

Mine weighs only 200 kilograms, so the balloon is one-fifth the size, which makes the launch system much simpler than a system that would require a large balloon.

Now let's go to Roswell, New Mexico on October 24th.

The team is waiting for you in the middle of the night

and this suit

This is the front loader I used I would like to stream a video of the actual launch

Roswell is a great place to launch a balloon, but it's also a great place to land with a parachute, because you'll be landing more than 100 kilometers from the launch site.

A helium track can be seen in the background

it's pitch black

Prepared in about an hour and a half

I am wearing a suit

It took me about an hour to put this on.

Astronauts travel in air-conditioned vans, and I'm a front loader.

(Laughter) Look at the top, and you can see the balloon there.

put helium here

Dave got in touch with the Federal Aviation Administration to secure 20km of space.

now it's our turn

(Laughter) That's me waving my left hand.

There's a reason you wave your left hand, because if you do it with your right hand, it means an emergency.

(Laughter) Using my right hand was banned by the team.

It's like a really beautiful Google Earth turned upside down.

(Laughter) It took me two hours and seven minutes to ascend, but I've never seen two hours and seven minutes so peaceful.

I tried to relax

I was trying to slow my heart rate down to conserve oxygen.

You can see the ground in the background, but it still looks big here, and you can see me rising.

It's interesting here, I'm above the airport, maybe 15 kilometers high, but soon I'm riding the stratospheric winds at over 200 kilometers per hour.

Our flight director tells us that we've achieved the highest balloon altitude record, and we're 1.2 kilometers from release.

looks like this

The pitch-black universe and the spherical earth I can see the planet that looks like it's about to break at my feet

In my heart, I reviewed how to respond in an emergency

I wanted to be prepared even if something went wrong

The most important thing here is to have a completely stable descent after release.

(Video) This is the control tower, are you ready?

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Alan: I saw the balloon fully inflated.

I'll show you this slowing parachute later, because it's very important.

Here the balloon passes again

It reaches almost the speed of sound here.

I don't know if it's the speed of sound.

(Video) Control Tower: We lost data

Alan: We've descended quite a bit. The parachute should open here.

I was so relieved when the parachute came out here.

I thought I was the only one relieved, but so was the control tower.

When the parachute opened, the really good thing was that my best friend Brickies

He jumped out of another plane and landed next to me.

he's a supporter of the descent

And that's where I landed, but I'd rather call it a collision.

(Laughter) I hate to admit it, but I've had worse landings.

(Laughter) (Applause) (Video) Man: Are you okay?

Alan: Hey guys!

Hooray

(Laughter) I want to tell you something that I didn't get to show you in the video.

You stabilize yourself with something called a deceleration parachute.

I'll show you one

If you've ever skydived in tandem, I'm sure you've used it.

The problem here is that at release, the gravity is zero.

So it can easily get wrapped around your body.

You'll find yourself getting tangled and spinning, delaying the opening of the deceleration parachute, and if that happens when you're descending at 1,300 kilometers per hour, the parachute itself will be destroyed, rendering it useless.

The guys at United Parachute Technologies came up with a solution.

shaped like a pipe

This pipe is stiff enough to pull out a deceleration parachute to protect it and keep it from tangling people.

This can prevent serious problems

None of this would have been possible without this amazing team

It took us three years, centered around about 20 people, and everyone was competent.

The most amazing thing about this project is that I had the opportunity to work with some of the best experts in meteorology, ballooning, parachute technology, environmental systems, altitude medicine.

It's an engineer's dream to work with you.

I also want to thank my friends at Google, who not only helped me in my endeavors, but covered the work.

But most of all I want to thank my family

thx

(Applause) I explained the safety of the technology many times, but no one listened.

It was unbearable for my family, but the reason my wife put up with me was that after every 250 tests, I came home in good spirits, and I couldn't bring myself to interfere with that.

Now let me tell you one last thing

I was in the car with my 15-year-old daughter, Kaitlyn, when she had an idea, "Dad, I had an idea."

When I heard that, I was like, "Caitlin, that's impossible."

My daughter looked at me and said, "But you've succeeded. How can you say it's impossible?"

I laughed and admitted, "It's certainly not impossible. It's just very difficult."

And then she continued, "Caitlin -- it's not impossible, it's not hard, I just don't know how."

thank you

(applause)

Today I'm going to talk to you about a serious alien search.

It's not a green alien coming in a glowing UFO I wish there was one

I'm looking for planets orbiting distant stars.

Every star in the night sky is a star

If our sun, which is a fixed star, has planets such as Mercury, Venus, Earth, and Mars, there should be planets on other fixed stars, and they actually do.

Over the last 20 years, astronomers have discovered thousands of extrasolar planets (exoplanets) Over the last 20 years, astronomers have discovered thousands of extrasolar planets (exoplanets)

The night sky is full of exoplanets

Statistically speaking, every star must have at least one planet.

In this way, in the search for planets, and in the future, in the search for planets like Earth, we will be able to turn to the grand and mysterious questions that humans have been asking for centuries.

why are we here

Why does this universe exist?

how the earth was born and how it evolved

How did life originate and spread?

I also think about this kind of thing over and over again. Are we “lonely” beings?

Are there other life forms?

what kind of creatures are they?

We've been asking this question for thousands of years, at least since the days of the ancient Greek philosophers.

But I think humanity is on the verge of solving this mystery.

For the first time in human history, we're within reach of an answer.

When I think about whether there is other life in this universe, I am reminded that the sun is just one of many stars.

This is a picture of a galaxy, the Milky Way we live in is just like this galaxy.

A galaxy is a collection of stars that are held together by gravity.

The sun is just one of the hundreds of billions of stars out there, and the Milky Way galaxy is just one of over 100 billion galaxies out there.

You can do the math to find out how many small planets there are out there.

So the universe is full of stars and planets, so it's only natural that there's other life forms somewhere in the universe.

But biologists get mad at me for saying this, because there's still no evidence that extraterrestrial life exists.

This is an image of our galaxy as seen from the outside, and if you zoom in toward the sun, you can see the true distribution of stars.

The brightest are the stars that are known to have exoplanets.

this is just the tip of the iceberg

And in this animation, when we get closer to our solar system,

You can see the planets, and the spacecraft and other things are orbiting the sun.

Let's take a look at the night sky from the west coast of North America. This is what the spring night sky looks like.

Constellations are also overlaid, and again there are many stars with planets.

There's a special corner in this sky full of planets

The Kepler Space Telescope has been observing this region in detail for many years.

Let's take a closer look at a hot exoplanet

This star is called Kepler-186f

In a planetary system with five planets orbiting

Actually, we don't know much about these planets.

We only know the size and orbit

But the Kepler-186f in this one is special.

It's in a region at a moderate distance from the star, so it might be just the right temperature for life to exist.

This is an image of this planet, and this is what the planet looks like up close.

Astronomers have a romantic image of sitting in a remote mountaintop observatory looking through a large telescope at a star-filled night sky.

But the reality is that I'm sitting in front of a computer just like you, collecting data from emails and databases.

Today, I'd like to talk about exoplanet exploration from a different angle than the low-key data, data analysis, and complex computer modeling.

This is a travel guide poster "Kepler 186f: ""The grass next door is red"" Planet"

Kepler-186f orbits a red star, so if this planet had photosynthetic plants, it might look red because of its different pigments.

"HD 40307g - Experience the Mighty Gravity of Super Earth"

This planet has many times the mass of Earth, and its surface gravity is stronger.

"Relax on Kepler-16b A planet with friends in the shadows"

(Laughter) We've also discovered about a dozen planets orbiting two stars, and there will be more.

If you could go to a planet like that, you'd see two sunsets a day and two shadows.

There's some truth in science fiction too.

It's Tatooine from Star Wars

Let me introduce you to another interesting planet.

This is Kepler-10b, a very hot planet.

The distance to the star is less than 1/50th of the distance from Earth to the Sun.

In fact, it's too hot to go to a planet like this, and it melts long before you get there.

The surface should be hot enough to melt rocks, and there should be lakes of lava.

GJ 1214 (Gliese Jareis 1214)

This planet is known to have a fairly low density because of its weight and size.

relatively warm planet

We don't have much other information, but it could be a water planet, like an enlarged frozen moon revolving around Jupiter, and more than half its mass might be water.

If that's the case, then there's a thick layer of water vapor, and underneath that is the ocean.

Underneath that is not rock, but some kind of high-pressure ice, "phase IX ice" or something like that.

There are so many planets in the universe like this, and the diversity is astounding, but what we're looking for are the Goldilock planets.

Not too big, not too small, not too hot, not too cold, it's just the right planet for life.

But to do that, we need to look at the planet's atmosphere, because the atmosphere acts as a trap that traps heat, creating a greenhouse effect.

We're going to need a way to look at this greenhouse gas.

There are mistakes in sci-fi too

In "Star Trek," the Enterprise travels at super speed to other planets in the far reaches of space, and Mr. Spock analyzes their atmospheres to see if the planets are habitable and if other life exists.

But the truth is that you can study the atmospheres of other planets without flying at warp speed, which is not to deter budding engineers from developing warp devices.

But the planet's atmosphere can be observed here from Earth's orbit.

This is a photo from the Hubble Space Telescope, taken from the space shuttle Atlantis, which completed its last manned mission.

In fact, a new camera was fitted at this time to study the atmosphere of an exoplanet.

So far, we've observed the atmospheres of dozens of exoplanets, six of which we've been able to probe in detail.

But these aren't small planets the size of Earth.

It's a bigger, easier to observe, hotter planet.

As of yet, we don't have the technology to observe small exoplanets.

But I'd like to show you how to study the atmospheres of exoplanets.

imagine a rainbow

If you zoom in on this rainbow, you can see that there are dark lines here and there.

This is the sun. Let's try to separate the white light from the sun. Instead of water droplets like the rainbow, we'll use a spectroscope.

Then you'll see this dark vertical line

Some lines are narrow, some are thick, some have blurry edges.

Astronomers have used this method to observe celestial bodies for over a hundred years.

Each atom and each molecule has a unique pattern of lines, like a fingerprint.

We are looking at this to study the atmosphere of an exoplanet.

I started studying exoplanet atmospheres more than 20 years ago, and a lot of people said to me, "You can't do that.

If you can't make observations, why do you do that kind of research? ”

But now, I'm happy to say that atmospheric research is advancing, and I think it's a new specialty.

So what kind of gases will we be looking at when we can observe planets and planets like Earth in the future?

Our planet has oxygen, which makes up 20% of the atmosphere.

a fair amount of oxygen

But without plants and photosynthetic life on Earth, oxygen levels in the atmosphere would be close to zero.

Because there is life, there is oxygen.

So we can look at the atmospheres of other planets and look for gases that wouldn't exist without life.

But which molecule should we look for?

As I said earlier, there is a great variety of exoplanets.

Diversity won't change by the time we find planets like Earth.

So I'm also working on this research because I have an idea.

When it comes to ideas, I get strange emails almost every day, with people sending me crazy, crazy ideas about how gravity works and cosmology.

If you come up with something strange, please don't send it to me.

(Laughter) I had a crazy idea.

Who should an MIT professor consult at a time like this?

I emailed the Nobel Prize winners in Physiology or Medicine, and they said, "Let's listen."

I took a couple of my biochemistry buddies with me to discuss this crazy idea.

This is the hypothesis that life makes all these little molecules, all kinds of molecules.

Every molecule that I can think of as a non-chemist.

Carbon dioxide, carbon monoxide, hydrogen molecules, nitrogen molecules, methane, methyl chloride, various gases.

There are other reasons for its existence, but even ozone is a product of life.

When I consulted on this, the idea was quickly shot down.

An improbable example was pointed out

It was a second thought from the beginning, but I think I've found something that might be of value in other areas.

And if we go back to exoplanets, life makes so many different types of gas, and there are so many of them.

So what I'm currently studying is the relationship between which types of exoplanets and which gases are indicative of the presence of life.

In the future, if we find gas on an exoplanet, we don't know what it came from: intelligent aliens, trees, swamps, or simple single-celled organisms.

Computer models, biochemical research, etc., are going very well.

But there is a big wall, it's the "means"

how to find a planet

There are many ways to find planets, and there are several types.

But what I'm looking at is something that will allow us to discover a lot more Earth-like planets in the future.

There is a chance to catch the signal of life

For the last two years, I've been leading the "Starshade" project, driving important steps forward.

A starshade is a specially shaped screen that you can fly into space and block the light from the stars so you can see the planets directly through a telescope.

It's two team members and me, pictured with a piece of Starshade.

Overall, it's shaped like a large flower, and this is a prototype of its petals.

The plan is to launch the starshade and the telescope together to open the stored petals in space.

A central truss opens to snap the petals in place.

Precision is the key to production. Petals are manufactured in microns, and unfolding requires precision in millimeters.

Also, the device would have to be moved tens of thousands of kilometers from the telescope.

tens of meters in diameter

The goal is to be able to block starlight and observe the planets directly with a very high degree of precision.

This shape is very important because it prevents the diffraction of light.

This is a project that I actually worked on, and it was really hard.

It's not even a video. This picture is a test space for the second generation Starshade deployment.

The central truss we're using here is taken from a large deployable radio satellite antenna.

Why would you put all this effort into predicting what gases might be in space, build a very complex space telescope, send it out into space, and what would you find?

If all goes well, we'll be able to see images of an Earth-like exoplanet.

This faint blue dot is the earth

This is a picture of the Earth taken by Voyager 1 from about six billion kilometers away.

Red light is simply light reflected in the camera

And what's really amazing about this is that if intelligent aliens were to live on planets orbiting nearby stars, and they could build complex space telescopes like we're planning, all we'd see would be this blue dot, the tip of a needle.

So sometimes I stop and think about the difficulty of my research and the audacity of my ambitions, and it's nothing compared to the vastness of the universe.

But for the rest of my life, I plan to search for other planets.

And I absolutely believe that the next generation of space telescopes will be able to search for and reveal other Earths in the next generation.

By splitting starlight to see what the atmosphere looks like, and even greenhouse gases, we can estimate surface temperatures and see if life exists.

but there is still

In the process of searching for other Earth-like planets, we're creating new maps of nearby stars and planets orbiting them, some of which may even be habitable.

I think the day will come when our descendants will be able to travel beyond our solar system hundreds of years from now.

You might think that they were the generation that looked back and found an Earth-like planet.

thank you

(Applause) (Jun Cohen) Thank you for your question, I'm Fred Jansen, the head of the Rosetta Mission.

Fred: Halfway through, you mentioned that we don't yet have the technology to observe the spectra of planets like Earth outside our solar system.

When will this be possible and what will it take?

What we are looking forward to is said to be the next generation Hubble Telescope.

It's the James Webb Space Telescope. It's going to launch in 2018. We'll use it to study the subtle changes in starlight that occur as a planet passes in front of it.

(Jun) Sara, let me ask you one more general question.

What struck me was that there were some people who were critical of previous work. When I first started studying exoplanets, there were people in the scientific community who strongly doubted that they existed.

how did you get over it?

CA: I think scientists should be skeptical because their job is to listen to other people's ideas and decide if they make sense.

But scientists are also adventurers, as you'll see in this session.

He's very interesting and stubborn and has the will to push forward no matter what anyone says.The will to push forward no matter what anyone says.

(Jun) That's nice Thank you Sarah

(applause)

I've learned my most important life lessons from drug dealers and thugs and prostitutes, and I've had my most profound theological conversations not in halls of sacred seminaries, but on street corners at 1 a.m. on Fridays.

I'm a seminary-educated Baptist pastor, and I've been in the church for over 20 years, so you might think I'm a little weird, but it's true.

I'm a policing and crime reduction, and I'm a policing and crime reduction, and I've seen a 79 percent drop in violent crime in big cities in eight years.

But I didn't want to be someone else's way of reducing crime.

I was 25 years old when I was entrusted with my first church.

If you were to ask me about my dream back then, I would have answered that I wanted to become a pastor of a large church.

I wanted a church with 15,000 or 20,000 believers.

I wanted to be a pastor on TV

I wanted a lot of prayer clothes

(Laughter) I also wanted to gather long-distance followers.

I wanted everything

(Laughter) After a year as a pastor, the membership had grown to about 20.

The great church was far away

But if you ask me about my sincere dreams

I wanted to be a great pastor, to be there for people in every aspect of their lives, to explain the meaning of everyday life, and to represent my jurisdiction in the African-American tradition.

Meanwhile, something was happening in my city, in metropolitan areas, and in most of America's major cities, and the murder rate was beginning to skyrocket.

Young people kill each other over seemingly trivial things, like shooting a student after school after bumping into them in a high school hallway.

At the worst possible moment, he shoots you for standing on a dangerous street corner wearing a shirt in a color you shouldn't wear.

I had to do something

The atmosphere in the city was beginning to change.

When I go to public housing -- and it's just a short walk from my church -- it's like a ghost town when you walk in, because parents don't let their kids play outside, even in the summer, because of the violence.

If you listen to your neighborhood at night, and if you're not used to it, it might sound like fireworks, but you'll hear gunshots.

I hear gunshots almost every night, when I'm cooking dinner, when I'm reading to my kids before bed, when I'm watching TV.

And when you go to a hospital emergency room, you see young black and Latino men who have been shot and lie dying on stretchers.

I have performed many funerals, but none of them are for elderly people who have lived a long life and can afford to say goodbye.

We performed funerals for 18- and 17- and 16-year-olds, and it was very difficult to stand in churches and funeral parlors and say something that resonated with us.

At a time when my colleagues were building tall and magnificent cathedrals, buying suburban real estate, and relocating gatherings to create "the city of God," the urban fabric was crushing under the weight of this violence.

So I stayed because I thought someone had to do it, and I thought about the mission I'd been doing.

I started preaching denouncing community violence.

I started by organizing services in my church, trying to attract children who might simply stand by and be at risk of delinquency.

I tried changing my preaching style.

Everyone knows rap, right?

Is it rap?

I gave a sermon on rap once

I failed, but I did it anyway.

I remember a young man coming up to me after the sermon.

He waited until everyone was gone, and he said, "Pastor, are you going to rap and preach?"

I was told "Don't do it again"

(Laughter) And yet, I preached and created these projects, and wondered if my colleagues had done the same thing and the results would have been different.

The violence was unmanageable, and people were shot and killed who had no direct connection to it: people trying to buy a pack of cigarettes at a convenience store, people sitting at a bus stop waiting for a bus, children playing in the corner of a park, oblivious to the violence that happened.

Things were out of control and I didn't know what to do, but something happened that changed everything for me.

A child named Jessie Mickey is walking with her friend Rigoberto Carrion to the public housing beyond my church.

He met and killed a group of Dorchester thugs.

Jesse fled the scene of his mortal wounds in the direction of my church, but died 100 or 150 meters away.

Running into the church wouldn't have changed anything, because the lights were out and nobody was there.

I took it as a divine revelation

When I caught the thug, I found out that he was the same age as me, but the gap between us was huge.

It was as if we were living in two completely different worlds.

I thought about this deeply, and researched what had happened, and suddenly I realized a contradiction within me, a contradiction in which, in my sermons, I condemned violence and talked about rebuilding communities, but suddenly I realized that there was a class of people who were not included in my definition of community.

So the thing is, if I really wanted my own jurisdiction, I had to reach out and embrace people who were outside my definition.

We don't just create programs that attract those who are bystanders of violence, but we reach out and embrace those who are involved in violence -- gangsters and drug dealers.

As soon as I realized that, a question popped up in my head.

"Why me?"

I thought it might be a police matter.

That's what the police are for, right?

But as soon as I had a question, I found an answer, because I'm the one who can't sleep at night when I think about violence.

Because I'm the one who thinks someone needs to do something, and I realized that someone was me.

How does exercise begin?

It's not like, from the beginning, there's a lot of people gathering in a big rally and marching with banners.

Only a few people at first, maybe just one person

That's how it started out, when I decided to demystify the culture of violence involving young people, and I started volunteering in high school.

After two weeks of volunteering, I realized that the young man I was looking for hadn't gone to high school.

I started walking around the area, and you don't need to be a genius to know that they don't go out during the day.

So I started walking the streets late at night, going to the parks where they were and building the relationships I needed.

The Boston tragedy united the clergy, and some of us, myself included, realized that we needed to get out of the four-walled church and go see the young people, not bring them to the church.

So we decided to walk together, in one of the most dangerous places in town, where we would meet on Fridays and Saturdays at 10:00 p.m. and walk until 2:00 or 3:00 a.m.

When we first started walking, we thought we were the exception.

even a drug dealer

even drug customers

Because they're not even the police.

it was probably very weird

After a while, we started conversing with young people, and what we realized was that they were looking at us as we walked, and they were looking at us for two things: First, were we there consistent in our attitudes? Second, we weren't here to take advantage of the young people.

Because it seemed that the people who claimed to "restore safe streets" were always in the company of TV cameras and reporters, and they were using the youth of the street to boost their own prestige.

That's why he saw that we didn't have anyone with us, so he started talking to us.

And we had an amazing attitude for pastors.

Instead of preaching, I decided to listen.

clap your hands

(Laughter) (Applause) It eats into my time. (Laughter) But it was great.

I said to them, "We don't know what the area looks like after 9:00 p.m. - 9:00 p.m. to 5:00 a.m., but you know.

You guys are the night time zone experts.

so tell us

so that we can see what we cannot see

Please help me understand what I don't understand."

Young people were happy to do it, and we're learning about life on the street. It's very different from 11 o'clock news coverage, and it's very different from popular media and social media coverage.

As I talked to young people, my prejudice against them faded away.

One of the biggest prejudices is that these kids are cold, cruel, and love violence.

What we saw was the exact opposite.

Most of the young people on the streets are trying to live well there.

What we also learned was that the streets were filled with some of the most intelligent, creative, proud, smart young people we'd ever met, and they were fighting there.

Some young people call it survival, but I think it's overcoming.

So we asked them, "What do you think the church could do to improve this situation?" "What do you think the church could do to improve this situation?"

We made a plan through conversations with young people.

We stopped looking at young people as a problem and started seeing them as partners, resources and allies in the local violence reduction movement.

Imagine making a plan, a pastor and a drug dealer sitting together to figure out how the church can help the whole community.

Boston miracle united people

we had other collaborators

there is a law enforcement official

there was a police officer

But not all cops. Some thought, "I can just send you to jail." But there were also cops who thought it was an honor to work with their communities.

The probation officers, the judges, the judiciary, because, as we've come to realize, no amount of prosecution, no amount of jail time, will solve the problem.

Twenty years ago, I started a faith-based organization to solve this problem.

I retired four years ago and started working in a total of 19 cities in the United States, and what I found was that in those cities, there were always people who were community leaders, people who kept their heads down, worked hard, never brought their egos in, understood that collective power was greater than the sum of their individual strengths, and found a way to come together and work with the young people on the street. is to create a system of

In America, my proud young people are tackling the problem of structural reform and building a better society.

On the one hand, there's a political ploy to counter black-on-black violence by police force and abuse of duty.

This is just a fictional story

because everything is linked

Given decades of broken housing policies, poor education systems, long-term unemployment in the community, precarious working conditions, and inadequate health care services, it's no wonder that throwing drugs and guns in duffel bags into such an environment would result in a culture of violence like this.

As a result, the state's response has been to increase the number of police officers and to enforce crackdowns in high-risk areas.

It's all linked together. One of the great things we've done is show the value of working together, communities, police, businesses, and city governments to reduce violence.

We must respect the values ​​of our communities

I believe we can put an end to the era of urban violence.

I believe it can be done, and people are working on it right now.

I need your help

People are exhausted in the community People are exhausted in the community

I need your support and assistance

when i go back to my city

find those people

"Are you having trouble?" "I'll help you."

find the people they are there

And enable them to partner with police, businesses, and city officials around the goal of reducing violence. Empower communities.

In the Republic of Burundi, there is an old saying, and it's true.

God bless you all

(applause)

If you pass someone like me on the street, you

Do you think it's a mother, a refugee, or an oppressed person?

Or it could be a cardiologist, a barista, a local politician.

You stare at me from top to bottom and you wonder how hot it is, and you wonder if your husband is forcing you to wear this outfit.

What if your scarf looked like this?

I can walk down the street in exactly the same outfit, and what people think of me and how they treat me depends on how I wrap this piece of cloth.

This is not a clichéd confession about the hijab. For Muslim women, it doesn't matter which piece of cloth they choose or whether they wear it.This is yours.

It has to do with seeing things beyond prejudice.

What if, after passing each other, you find out, unexpectedly, that I'm a car racing engineer, I design my own cars, and I have a race team in college, and that's true, actually.

What if I told you that I trained as a boxer for five years, and that's true.

Were you surprised?

Why?

Ladies and gentlemen, after all, what we associate with surprise and action is the product of unconscious and implicit prejudices.

The result is an absurdly toxic and especially influential lack of diversity in the work environment.

Say hello to the Australian government

(Applause) Let me start by stating that unconscious bias is different from unconscious discrimination.

Everyone has hidden sexism, racism, and ageism and is waiting for these to come out.

i'm not saying

we all have prejudices

We all see the world around us through that filter.

I'm not blaming anyone, prejudice is not a sin

Rather, it must be confirmed, acknowledged and mitigated.

Prejudice is against race, against gender

May be for class, education, disability

We all have prejudices against things that are different from us – things that are different from our social norms.

The point is, if we want to live in a world where the environment in which we were born doesn't affect our future, and where equal opportunity is ubiquitous, each of us needs to make sure that our unconscious biases don't affect our lives.

There's a very famous experiment that demonstrates unconscious bias, and it's about gender in the 1970s and '80s.

At that time, orchestras were mostly made up of men, and only 5% of them were women.

The reason, apparently, was that men seemed to play better in a different way than women.

But in 1952, the Boston Symphony Orchestra began experimenting.

I started doing blind auditions.

Unlike in-person auditions, you have to perform behind the screen.

The funny thing was that nothing happened immediately, until the auditionees were told to take off their shoes before entering the room.

Until then, the clack of high heels echoed across the hard wooden floors, keeping women out.

That didn't happen this time, because that audition increased the chances of women qualifying by 50 percent, and the chances of women qualifying increased by 50 percent.

Women are almost three times more likely to be in orchestras.

What can we learn from this?

Unfortunately, it wasn't that men were better at playing instruments, it was just that they had this assumption.

Prejudice was what determined the final outcome.

I point out and acknowledge that prejudice exists here.

everyone is

Let's take an example

A son and his father were in a terrible car accident.

The impact killed his father, and his son was taken to hospital with serious injuries.

The surgeon saw my son when he arrived and said, "I can't operate on you."

Why?

"Because this is my son"

What's going on?

Ladies and gentlemen, the surgeon was his mother.

Raise your hand -- yes -- if you first thought this surgeon was a man, please raise your hand.

There is evidence that unconscious bias exists, but all we have to do is acknowledge that it exists and find ways to work around it so that we can find a solution.

Now, one of the interesting things about unconscious bias is the gender ratio.

This is a topic that is often brought up

One of these criticisms is the idea of ​​competence.

"I don't want to be picked because I'm a woman. I want to be picked because I have the ability. I'm the best fit for the job."

This is pretty common among the female engineers I work with.

yeah i know i was too

But if the merit-based mindset is correct, why is it that in a 2012 Yale experiment, two identical résumés were sent for an engineering post at a research lab?

Unconscious bias is here, but all we have to do is know how to ignore it.

It's interesting, because there's a study about why this is true, and they call it the "merit paradox."

Because in organizations -- and this is kind of ironic -- even when they publicly said they were prioritizing competence in their recruiting efforts, they tended to hire more men and pay men more, because competence is clearly a masculine trait.

but please wait a moment

I'm sure you all know me well enough to understand my current situation.

Can you imagine my workplace?

Can you imagine me looking like this and saying this? "This is how you do it, guys."

I'm honored to have you imagine

(Applause) Because, folks, this is my day job.

I really like it because it's fun

In fact, in places like Malaysia, Muslim women dressed like this are not even talked about.

there are so many

but it's interesting

I remember saying to one of the guys, "Hey, I want to learn how to surf."

He said, "Yasmin, I don't know how to surf while hiding my body. I don't even know a women's beach."

The man came up with a brilliant idea, "You run the Youth Without Borders organization.

Why don't you start with a swimsuit for Muslim women?

Why don't you name it Youth Without Boardshorts? ”

(Laughter) I said, "Thank you."

I remember someone saying, "You should try all kinds of yogurt, because that's the only culture in this area."

But the problem is, in a way, that's true, because there's a significant diversity gap in our work environment, especially in the workplaces where we're influential.

Well, in 2010, the Australian National University did an experiment, where they sent 4,000 identical resumes to new graduate jobs.

To get as many interviews as there were Anglo-Saxon names, a Chinese would have had to send 68 percent more applications.

If you're Middle Eastern -- Abdel Majid -- you have to send 64 percent more, and if you're Italian and you're very lucky, you only have to send 12 percent more.

Places like Silicon Valley don't do so well.

Google publishes diversity in the workplace: 61% white, 30% Asian, 9% black and Hispanic, and so on.

Other tech companies are no different. They're aware of the situation, but they're less clear about what they're doing.

The bottom line is that money doesn't flow from the poor to the rich.

A study by Greene Park, a senior British executive, found that more than half of the top 100 listed companies in the UK had no non-white board-level leaders, whether they were executives or not.

Two out of three companies don't have executives from minority backgrounds.

And even in those positions, most of the minorities are non-executive directors.

their influence is not great

I've said a lot of bad things

Are you thinking, "What the hell is wrong with me? What should I do?"

Well, luckily, I recognized that there was a problem.

It's the lack of opportunity due to unconscious bias.

Some of you may be thinking, "I'm white, what does that have to do with me?"

let me provide a solution

As I've said before, we live in a world of idealism.

If we want to create a world where the environment we're born into doesn't matter, we all have to play a part in the solution.

Interestingly enough, the author of the resume experiment described a solution.

What the women whose résumés passed had in common was that they also had great mentors.

Mentor, you know, it's an old-fashioned word.

There is another issue here

Each of you should try mentoring someone different.

think about it

Everyone wants to be a mentor to someone close to them, someone who, like us, has gone through a similar experience.

When I see this kind of quarrelsome Muslim woman, I say, "What's wrong? Let's talk."

Everywhere there's someone who goes to the same school and plays the same sport, and there's a great opportunity to help them.

But it becomes very difficult to make connections with people who have nothing to share their experiences with.

Mentoring someone from a different background than you, mentoring someone with an experience different from yours, whatever their background, is opening doors to people who can't even make it down the hallway.

Because the world isn't fair, folks.

People aren't born with an equal chance

I was born in Khartoum, one of the poorest cities in the world.

I'm a woman of color, I was born into a Muslim family that everyone is very suspicious of, but there's nothing I can do about it.

But I also believe that I was born with privilege.

I had great parents, I was educated, and I had the privilege of moving to Australia.

But I also had an amazing mentor who opened doors that I never could have imagined.

One mentor said to me, "Your story is interesting.

Write your story and share it with everyone."

Another mentor said, "You don't look Australian at all, but let's do it anyway."

That's why I'm here today

I'm not the only one

There are many people in my community who have been rescued by mentors.

With the help of a mentor, a young Muslim man in Sydney started the Bankstown Poetry Slam, which is now a large one.

He was able to change the lives of many other young people.

One woman in Brisbane, an Afghan refugee, came to Australia with barely any English, and her mentor helped her become a doctor, and she won the 2008 Young Queenslander Award.

she is the center of attention

This time it won't go smoothly

this is me

But I was the one wearing the work clothes, and at the beginning of the lecture I was wearing the abaya.

If I was dressed differently, would you decide to mentor me?

Because we are the same person inside

We must ignore our own unconscious biases and mentor those at the other end of our spectrum. Structural change takes time, and I don't have the patience for that.

So if we want to make a difference, to create a world where we all have the same opportunities, we have to make choices that open doors for people.

You may think that diversity is not about us, but we are all part of this system, and we can all solve it.

If you don't know where to find someone different, go somewhere you wouldn't normally go

If you're teaching private high school students, go to your local public high school, or stop by your local refugee education center.

try working at the company

Take the new graduates who feel totally out of place -- because it's me -- and open the door to them. We're not the victims.

Ladies and gentlemen, our community has a problem of lack of opportunities, especially due to unconscious bias.

But each and every one of us has the potential to change that.

There are many challenges given to us today, but if you can think of just one piece of it just a little bit differently, diversity can be magical.

I'd like to encourage you to get past your first perception, because it's probably wrong.

Thank you

(applause)

The FBI is responsible for more terrorist plots in the United States than any other organization.

Al-Qaeda, al-Shabaab, more than the Islamic State (IS), or even all of them combined.

This is far from the image of the FBI.

FBI agents have the image of shooting bad guys like John Dillinger and arresting corrupt politicians.

But since 9/11, the FBI's interest in gangs and rogue lawmakers has waned.

Terrorists have become new targets and we're focused on tracking them down.

The FBI spends $3.3 billion a year on domestic counterterrorism operations.

On the other hand, traditional crimes like organized crime, financial fraud and corruption only cost us a total of $2.6 billion.

Over the years, I've researched the record of terrorist prosecutions in the United States, and I've come to the conclusion that the FBI is better at making terrorists than arresting them.

14 years after 9/11, there were about six real terrorist attacks in the United States.

These include the 2013 Boston Marathon bombings and attempted terrorist attacks, such as Faisal Shahzad's attempt to deliver a car bomb to Times Square.

But the FBI has been vocal about thwarting dozens of terrorist plots over the last 14 years.

Altogether, the FBI has arrested more than 175 people so far in its heavy-handed counterterrorism investigations using decoys.

These investigations are largely informant-led, providing the means, the opportunity, and sometimes the very idea, to make the mentally ill and the poorest people "terrorists."

After the 9/11 terrorist attacks, the mission given to the FBI was to never allow it again.

And that meant never allowing an attack on the American mainland.

Investigators were ordered to find the terrorists before they attacked.

That's why we've recruited more than 15,000 informant organizations across the country, desperately searching for people who might be at risk.

Informants receive $100,000 or more for each report they make to the FBI.

Well, informants are mostly criminals and scammers, but the FBI pays them hundreds of thousands of dollars to spy on them all over the country, mostly in Muslim-American neighborhoods.

People like Abu Khalid Abdullatif and Wali Mujahid have been arrested by informants.

both of them are mentally ill

Abdullatif has a history of attempting suicide by inhaling gasoline.

Mujahid had schizoaffective disorder and had difficulty distinguishing between reality and delusion.

In 2012, the FBI arrested the two men on suspicion of conspiring to attack an Army recruiting office outside Seattle, using weapons that, of course, were provided by the FBI.

An FBI informant, Robert Childs, has a criminal record of rape and child molestation, and was paid $90,000 for the case.

this is no exception

In 2009, a fugitive informant from Pakistan accused of murder led four men in a plot to blow up a synagogue in the Bronx.

The main defendant, James Cromity, was a poor Walmart employee with a history of mental illness.

This informant offered James $250,000 to join the program.

There are still many cases

My article on the news site The Intercept was about a counter-terrorism undercover operation in Tampa involving a young man named Sami Ozumakashi, who lives near Tampa, Florida.

Ozmakashi also had schizoaffective disorder

He was also penniless and had no ties to international terrorist organizations.

Nevertheless, an FBI informant got him a job, gave him money, introduced him to an undercover agent disguised as a terrorist, and lured him into a plot to blow up an Irish bar.

But what's interesting is that the undercover agent who led it -- this one with the blurred face -- came back to his field office in Tampa with the recording device still on.

Behind closed doors, FBI agents told us the operation was a farce.

A federal judge wouldn't want this conversation to go public.

So the judge sealed the transcript of the recording and issued a non-disclosure order to prevent people like me from doing this.

In a closed room, he took command - the commander of the investigation team, who called the self-proclaimed terrorist "a retarded pauper."

They called Sami's terrorist ambitions a silly delusional scheme.

But that doesn't stop the FBI

I gave Sami Ozumakashi whatever he asked for.

We gave him a car bomb, an AK-47 automatic rifle, helped him make a so-called martyrdom video, and even paid for a taxi so he could go where the investigators wanted him to go.

During a sting operation, the commander told the agents he wanted a Hollywood ending.

and it actually happened

Sami Ozumakashi was arrested, convicted, and sentenced to 40 years in prison for trying to deliver what he thought was a car bomb.

Sami Ozumakashi is not alone

He was one of more than 175 people called "terrorists" and the FBI prepared a Hollywood ending for them.

Government officials call this the "war on terror."

But it's really just a farce -- a national security farce, where mentally ill people like Sami Ozumakashi are unknowingly being cast in a carefully choreographed show, courtesy of the FBI.

thank you

(Applause) (Tom Riley) That's a pretty strong accusation, and a pretty strong criticism.

How do you back this up?

(Trevor Aaronson) I started my research in 2010 with a grant from the UC Berkeley investigative journalism program, and my research assistant and I put together a database of all terrorism-related indictments for the first decade after 9/11.

We then used court records to find out whether the defendant had any connection to international terrorist organizations, whether the informant was used, whether the informant provided the means and opportunity to act as an undercover agent.

I submitted the results to the FBI and asked them to check the database.

I was going to ask them to point it out if there was something wrong, and they would check it, but they never challenged the investigation.

After that, I used this data in magazine articles, in my book, and in appearances on CBS and NPR, again giving them the opportunity to argue that the findings were wrong.

But no one ever told me there was a problem with the survey results.

This data has since been used by Human Rights Watch and other similar undercover reports.

The FBI has never really responded to accusations that it's just using stings like this to frame mental patients as terrorists and catch them without arresting the terrorists.

TM: The Intercept is a new investigative journalism website co-founded by Glenn Greenwald.

About your article Then tell me why you chose it

Trevor: "The Intercept" was a logical place to put it out. What I'm leveraging in my article is a transcript of conversations inside the FBI that were unpublished by a federal judge, provided to me by a source.

And places like "The Intercept" were created so that journalists, even when dealing with sensitive issues like this, are protected and able to publish their work.

My article for The Intercept, published today, provides a more detailed account of how Sami Ozumakashi ended up in an FBI sting operation.

This time around, they only talked about things like how they called Sami "retarded."

But the case was much more complicated, and the FBI went to great lengths to give Sami money and use it to buy weapons from undercover agents.

When he was brought to trial, the central piece of evidence was that he paid for three weapons, but what this transcript shows is how the FBI engineered what was essentially a mentally ill, bankrupt man to get the money to buy the weapons and then indict him for conspiracy.

(Tom) Tell me one last thing.

It's been less than 10 days, and the FBI has arrested a suspected ISIS member in Brooklyn on suspicion of trying to travel to Syria. Or is it a similar case?

TREVER: So far, all we know is the court records, but from what I've seen, I think it's a similar case.

These types of sting operations have different characteristics.

It used to be like al Qaeda, now it's like IS.

In the previous case, it's worth noting that the three indicted men started planning to travel to Syria only after they got involved with an FBI informant, who actually helped them prepare the travel documents.

In this case, there's a rather funny twist: one defendant's mother hid her passport when she learned that her son was interested in traveling to Syria.

So even if he did show up at the airport, I'm not sure if he could have left.

There may be, and the government needs to monitor whether there is any intent to subvert domestically, but in this case, given the evidence so far.

It seems that the FBI is what got them thinking about going to Syria when they weren't planning on going to Syria in the first place.

Now, I've been taking pictures for quite some time, and by normal thinking, pictures like this should be a piece of cake.

I was visiting the Daasanach tribe in southern Ethiopia.

I have a large family and very beautiful trees, and I'm taking these pictures with this very large, bulky, very awkward large format camera.

Anyone know 4x5 or 10x8 film? set this up and mount it on a tripod

I met this family, talked to them, and had a great time.

they kind of know what i'm doing

You thought I was kind of weird, well that's fine

For me, the most important thing is beauty, and it needs light.

So I set it up so that the light shines from my left hand side, and in communicating with the Daasanach people, balance is important. We're a family of 30 people of all ages.

From babies to grandparents, I had them climb a tree and wait until the light was in a good position, and there was only one film left.

As I carefully set my position, light began to shine there.I want it to shine beautifully in golden color.

I want the light on the horizon to illuminate the people here I want to illuminate their hidden beauty

Here it is, here it is.

Wait I need the light Wait! ”

They start screaming, and one man turns around and screams, and the whole tree collapses -- not the tree, but the people in the tree.

Everyone ran around screaming and returned to the village. I stood there in the dust with my tripod in front of me.

Even if you have film in your hand, you lose the light and you can't take a picture.

where did they go I do not understand

It took me a week. It took me a week to take the pictures I'm showing here today. Let me tell you why. (Applause) It's so simple.

can you tell me about you ”

And it turns out that those crying and screaming were a romance.

I have a teenage child, so I understand

It was about a boyfriend, so the girl at the top kissed another boy and got into a fight.

For me, this was an incredible lesson, because in order to fulfill my desire to photograph these people with dignity and respect, you have to understand them in order to get them to come to your shoot.

Don't just go, don't just shake hands

Don't just say, "I'm Jimmy Photographer."

I needed to know every single one of them, who was dating who and who they could kiss.

Finally, a week later, exhausted, I got down on my knees and said, 'Can you go back to that tree?

I have to take a picture."

They all came back, I got them to climb the tree again

I made sure I put the girls in the right place This girl hit the other one over there

They were looking at each other, and when they saw it later, they were staring at each other with angry eyes. Now the tree and everything is ready.

I need something to catch my eye. A white goat in the middle! ”

So I swapped the goat with the goat that was around.

But I was wrong again. Look to the left. Another boy walked out in anger because he didn't pick his goat.

Sounds like I should have talked to the goats as well as the Daasanach.

But anyway, besides the effort put into that picture and the story I just told you, there are, as you might imagine, hundreds of other fantastical stories about hundreds of people around the world.

About four years ago, I started my journey.

I'm a very romantic and idealist, so maybe I'm a little naive in a way.

But I truly believe that there are beautiful people on earth.

It's very simple and it's not a big deal

I wanted them to gather for the shoot.

I wanted to photograph them in a way that they had never seen before.

So I chose about 35 different tribes and indigenous cultures, so I chose about 35 different tribes and indigenous cultures.

I chose it purely on the basis of beauty, more on that later.

I'm not an anthropologist, nor do I study the subject academically, but I'm very passionate about it. I choose the most beautiful people who live in the most beautiful environments on the planet.

About a year ago, I published my first photo book, and something extraordinary happened.

It was a strange experience, all over the world, all over the place, saying, "Who are these people? How many are there?"

where did you meet them Is it real? would be fake

Tell me, if you tell me, hey! "Too many questions, and honestly I don't even know the answer.

I really didn't know, but I kind of understood, yes, they're beautiful, they're the reaction I expected, but the barrage of questions I couldn't answer.

But it's really funny, about a year ago someone said, "You were invited to give a TED Talk."

I said, "Ted? Who's Ted? I've never met you.

He said, "No, it's a TED Talk."

"Are you going to talk to him or are you going to be on stage with him?"

Then he said, "No, TED is the name of the group, you know that."

I said, "I've been going around the tribe for the last five years.

You don't know Ted, do introduce him."

And in the end, he said, "I'm going to do a TED Talk."

So I looked it up, looks interesting! very!

That's how I came to TEDGlobal.

my heart throbs even more

But here we have to teach people a lesson, a lesson that I've learned in my travels around the world and spending time with people in this tribe.

A lesson... sure, what did I learn? good question

There are three, there are three lessons that must be learned, and they must be tremendously profound.

(Laughter) So I thought, three lessons, okay, I'm going to think about it.

(Applause) So I thought long and hard about it, and two days ago I stood on this stage, rehearsed, got a card, a clicker in my hand, put a picture on the screen, and started presenting three lessons I'd been thinking about, and it was like a very strange withdrawal experience.

I kind of stand there and I look at myself and I'm like, 'Hey Jimmy, this is a bunch of bullshit.

All the people sitting here have more to say, and they've heard a lot of life lessons.

Who are you to tell them your teachings?

How are you? Guiding them, arguing about things, what would they think? ”

And I was a little bit -- actually, secretly, a setback.

I tripped on that scene, and this kid who looks like that kid came walking out of the tree with his goat.

And I just thought and thought and thought and thought, and I thought I should be able to talk about the very, very basic things.

It's a drastic change of direction

The only person I know here is me

I'm still exploring myself. This is the journey of a lifetime. You may not have all the answers. But I've learned some amazing things on this journey.

I would like to share what I have learned with you

Why and how I took these photos, as I said at the beginning, is purely my personal hobby, so I'll leave it up to you to interpret what these lessons mean to me or to you.

I used to travel all the time when I was a kid

A wonderful wanderer, and this was actually very exciting.

As I traveled around the world, I felt like I was being pushed at a tremendous rate to become a person named Jimmy.

I was pushed out into the world and I was running away My wife teases me sometimes, "You look a bit like Forrest Gump."

So I kept running, and when I got to where I wanted to go, I stood there and looked around and thought, where am I? where is the place for me

who am i Where are you from? ― I didn't understand

I hope there aren't too many psychologists among you.

Maybe one of the purposes of this journey is to try to find my place.

As I traveled, it's okay, just because I made it to the tribe, I didn't paint my body yellow and run around in my spear and loincloth.

What I found were people who had their place. They were inspiring. They were outstanding people. Let me introduce you to some of my heroes.

they are huri

Huli are the most beautiful people on earth Huri are the most beautiful people on earth

A proud tribe of the highlands of Papua New Guinea.

There aren't too many left. They're called "wigmen."

This image says it all

I spent weeks and months there, talking to them, getting to know them, and I asked them to come to the shoot, and I said, "You have something that glows, something that many of you have never seen.

Please let me take a picture in this wonderful nature."

really like this

this is the true form

why are they proud? Why are you like this? And why am I literally "breaking in" to take these pictures and show them to you?

because of their wonderful rituals

The Huri ritual is this: when they're teenagers, they shave off their head to become an adult, and then they shave every day of their lives.

This is their Huri creation.

Yes, that's why it's called "The Wigman."

It's a wig that you're wearing on your head

all made of his own hair

And we'll decorate that wig with bird of paradise feathers Don't worry, we've got plenty of birds

They spend the rest of their lives rebuilding this hat. It's used for this one hat, and they spend their entire lives collecting these scarabs to make hats.

So the Huri were exciting because they had a place.

Maybe I should find a ritual that's important to me, and go back in time and desperately find my true place.

A very important part of this project was how to photograph these extraordinary people.

Basically it's beauty. I think beauty is important.

We spend our lives on beauty Beautiful places Beautiful things Beautiful people

this is very important

All my life I've analyzed how I look.

Do I look beautiful?

Does it matter if I'm beautiful or not? Or is it purely a matter of my aesthetics?

And so I set off on my journey, and my conclusions were very narrow.

Wouldn't it be better to go around the world photographing - excuse me - 25-30 year old women Is beauty only for the moment?

Is it irrelevant before and after?

That thought was until a trip, and that trip was so intense that it still gives me chills when I think about it.

I went to a place. Have you ever heard of Chukotka?

Chukotka, in theory, still exists on Earth if you can get there.

It's 13 hours by plane from Moscow.

First we got to Moscow and from there it's been 13 hours non-stop.

it's the only way to get there

This is it. Can you see the runway?

When you get to Chukotka, the people there are the Chukchi.

Now, the Chukchi are the last indigenous Inuit of Siberia. I had heard of them, but had hardly seen a picture of them.

It's okay, I can meet you." So I continued my journey.

It took us a month to cross the ice, and when we got there, we met them, but we weren't allowed to photograph them.

They say, "You can't take a picture of us, wait

Wait till you get to know us and understand us better

You must wait until you understand how we relate."

And after so many weeks, I found something to admire.

they don't judge people at all

From the young and middle-aged to the elderly, watch over each other

need each other

Children have to chew on meat all day long, because adults don't have a single tooth. At the same time, children take the elderly to the bathroom because they're already weak.

They love and respect each other They really taught me what beauty is

(Applause) Now, could you all mingle with each other for a moment?

It will be very important in the final stages of my talk.

If you have someone on either side of you, please take a good look at them and give them a compliment. This is very important.

It doesn't matter if it's your nose, or your hair, or your aura, but look at each other and compliment each other.

It's short, I'm pressed for time...

don't forget

OK Thank you Thank you

Please take that compliment seriously.I will use it later.

Finally, and this is very profound, just two weeks ago, I returned to the Himba tribe.

The Himba people live in northern Namibia, along the border with Angola, and I've been there a few times. This time, I went to show them this book of mine.

Respected What do you think? correct? Am I wrong? ”

I wanted to have this debate, and it was already very emotional. One night, we were sitting around a campfire.

Wasn't it here before?

It's a big defensive fence like this that surrounds a village." They looked at me and said, "Oh, the chief is dead."

I see, the Chief has died, so I looked up at the stars again and looked at the bonfire.

How in the world does the chief's death have anything to do with the fence?

"When the chief dies

Break down the fence first, okay? then reflect on him

Then build a new fence and honor him."

I burst into tears. I had just lost my father. It was before I embarked on this journey. I wasn't grateful to him.

These people have taught me that I am who I am because of my parents, my grandparents, and generations of ancestors.

Until two weeks ago

what does this mean?

I have a picture that I would like to show you.

I was sitting there the other day thinking about the last striking photo I'd show you,

Somebody said, "Nanev's picture will do."

"Well, I don't like it that much," I said.

She continued, "No! That's already a great photo.

you're in his eyes

I said, "What do you mean? That's a picture of Nanev."

"No, I see you in his eyes," she said.

So when I looked at the picture, I saw an image of me in his eyes, and I thought, maybe he has my soul and I'm in his soul.

You're not in his eyes, but there's something very important about these people.

I don't know the final answer, I'm just showing you, but I'm sure you guys know, there should be a hint here.

If you could take a moment to reflect on the beauty and place I spoke about, our ancestry and our roots, would you all please stand up?

(Laughter) No excuses. It's time for lunch. No standing ovation. Don't worry, I'm not trying to elicit compliments.

But a few minutes ago, you all got compliments.

Now stand tall

Can you take a breath-

I don't kneel for two weeks

I don't ask you to bring goats, you don't have camels, do you?

photography is very powerful

Everything thanks to the word photography

I totally get it. It's like a global digital bonfire. I want to share the world with you, because you're one tribe.

The TED tribe, right? But everyone, remember that compliment

Stand tall, breathe in through your nose, and take a picture of everyone, okay?

I want to make a panorama shot. Please give me a moment. Please concentrate.

Take a breath, stand tall, don't laugh, just breathe through your nose...

yes i will

(shutter sound) Thank you

(applause)

Mark Twain summed up in witty terms what I consider to be one of the essential problems of cognitive science.

"Science has a fascinating side

For a very small investment in facts you get such a large return in predictions."

(Laughter) This may be a joke, but he's right on point. There's a fascinating side to science.

inferring the existence of dinosaurs from just a few bones,

inferring the composition of galaxies from spectral lines

From Drosophila melanogaster, we try to explain the mechanisms of genetics, and from images of brain blood flow, and in my case, from the behavior of small children, we try to explain the fundamental mechanisms of human cognition.

Among other things, I've spent the last 10 years in a lab in the MIT Department of Brain and Cognitive Sciences trying to solve a mystery: how do children learn so quickly from so little information?

The reason is that the fascination of science is the same fascination that children have, which is to say, in Twain's words with a slight twist, that children have the ability to make fast, accurate, and rich abstract inferences from small amounts of noisy data.

Let me give you two examples today.

One is the problem of generalization, and the other is the problem of causal thinking.

What I'm going to talk about is what I do in my lab, which is motivated and indebted to a particular area of ​​research.

I am grateful to my teachers, colleagues and collaborators around the world.

Let's start with the generalization problem.

Generalizing from a sample of sampled data is fundamental to science.

In national elections, we interview a small percentage of voters to predict the outcome.

A clinical trial tests a few subjects to see if the treatment works before putting the drug on the market.

But this works only when the sample is randomly drawn from the population.

If the sampling method is biased, for example, if only urban voters are studied, or if only men are included in clinical trials of heart disease treatments, the results may not be generalizable to the wider population.

So for scientists, it's important whether the data is random or not, but what does that have to do with babies?

Babies are always forced to generalize from a small sample.

Watch some rubber ducks and learn that they float, watch some balls and learn that they bounce.

That's how babies make predictions about ducks and balls, and apply those predictions for the rest of their lives.

And the generalizations that babies make to ducks and balls need to be applied to just about anything else: shoes, boats, sealing wax, cabbages, kings.

So does it matter to the baby whether the little piece of evidence he sees is representative of the larger population?

let's find out

The two videos you're going to see are from two conditions in one experiment. Since you're only going to see two, you'll only see two babies, and every baby is different in every way.

These two babies are representative of the population, and the differences you're going to see reflect the normal behavior of the babies in each condition.

In the video, the baby is acting like a baby and it's impossible to make her look any cuter.

But what's fascinating to me -- and what I want you to notice -- is the difference between the two conditions, because the only difference between the two videos is the statistical evidence that babies see.

We showed the baby a box of blue and yellow balls, and my Stanford colleague, Yuwan Guan, who was a graduate student at the time, took out three blue balls in quick succession, and every time he took them out, he made a sound when he squeezed the balls.

this is like a ted talk for a baby

it's the best experience

(Laughter) Now, the point is, it's easy to get three blue balls in a row out of a box that's mostly filled with blue balls.

maybe you can do it without looking

You could call this a random sampling from the population.

And if you could put your hand in the box and pick out a random sounding object, all the balls in the box might make a sound.

So the baby should think that the yellow ball also makes sounds.

But the yellow ball has a weird stick on it, so you can do other things if you want to.

It's okay to tap or hit

Let's see what the baby does

(Yuwan Kwang) Can you see it? (Ball sounds) Did you see that? (ball clap) nice

how about this?

(ball bangs) wow

(Laura Schultz) Isn't it cute? (Laughs) (Yuwan) How about this? (Ball sounds) Clara, I'll give you this one, you can play with it.

(Laughter) (Laura) No words needed.

Now, it's amazing how babies generalize the properties of a blue ball to a yellow ball, and it's amazing how babies learn by imitating us.

On the other hand, what's really interesting is what happens when you show the baby exactly the same thing. There's an invisible compartment in the box, and you're actually taking the ball from there, so the conditions are exactly the same, but now you're taking a sample -- just changing the look of the population.

Now what happens if you show the baby how to pick up three blue balls from a box filled with mostly yellow balls?

It's highly unlikely that you'll randomly pick three blue balls in a row from a box that's mostly yellow.

So it's not just randomly sampled data.

In this case, it shows that Yuwan deliberately took only the blue ball.

Or maybe the blue ball is special.

It may be only blue that rings

what will the baby do

(Yoowan) Can you see it? (ball sounds) Can you see this toy? (Ball sounds) Isn't it nice? (Ball sounds) Now you play with this now play with it

(Laughter) (Laughter) (Laura) Now, you've seen how two 15-month-old babies behave very differently based solely on the observed probabilities.

See the experiment results

The vertical axis represents the percentage of babies who grabbed the ball in each condition. As you can see, data that are representative of the population are much more likely to generalize than data that are clearly biased.

Now, here's an interesting prediction. Now let's say you take a single blue ball out of a box that's mostly yellow.

I don't think you can pull three blue balls out of this box at random in a row, but you might be able to pull one out.

It is a possible story as a specimen

And if you can put your hand in the box and randomly pick out something that makes a sound, maybe everything in the box will make a sound.

In other words, if you take out just one ball, you can expect that babies will grab the ball more often than they did in the previous video, even though they've only seen a small number of examples of the sounds and actions to imitate, and that's exactly what happened.

So in a scene like this, it's just as important for a 15-month-old baby to know that the data was randomly sampled, just as much as it is for scientists to make predictions about the world: what sounds and what doesn't, what to look for, what to ignore...

Now let me give you another example, this time the problem of causal thinking.

This problem stems from the data chaos problem that we all experience, that humans are part of the world.

At first glance, it doesn't seem like a problem, but like most problems, it only becomes a problem when something goes wrong.

For example, this baby-

things aren't going well for him

I want to make my toy ring, but I can't.

watch a few seconds of video

There are two broad possibilities: you're either doing something wrong, or there's something wrong with your toy.

So in the next experiment, we're going to show the baby a little bit of statistical data that supports one hypothesis, and then we'll see if the baby uses that data when deciding what to do.

Here's how it works

Yuwan tries to make the toy ring and succeeds.

Then I try two times, fail both times, and then Yuwan tries again and succeeds. So this shows my relationship with the graduate students in general technology.

But what's important here is that it provides evidence that it's not the toy that's the problem, it's the person.

Some people can make their toys ring and some people can't.

Now, when a baby picks up a toy, it makes a choice.

I have a mom nearby, so I can give her a toy and she can do it for me, but there is another toy on the edge of the cloth, and I can pull the cloth to replace the toy.

let's see what the baby does

(Yuwan) 2 3 Go! (music) (Laura) 1 2 3 Go!

Arthur I'll try again 1 2 3 Go!

(Yuwan) Arthur let me do it again

1 2 3 Go! (music) Look at this, do you remember this?

Toy, put this here, I'll give this to you

play

(Laura) Of course babies love their moms.

If the toy doesn't ring, I give it to my mother as if it were a matter of course.

But the point here is what happens if we change the statistical data slightly?

Now we're going to show you the same sequence of toys chirping and not chirping, but you'll change the distribution of the evidence.

This time, after Yuwan succeeds, he fails, and I do the same.

From this we can see that the user is irrelevant and the toy is broken.

it doesn't always ring

Baby has a choice again

Mom's next door, so she can take over, and there's another toy on the edge of the cloth.

let's see what to do

(Yuwan) 2 3 Go! (music) Let me do it again 1 2 3 go!

hmm

(Laura) Let me do it Clara

1 2 3 Go!

let me do it again

1 2 3 Go! (Music) (Yuwan) Put this here, I'll give this to you

play

(Applause) (Laura) I'll show you the results of the experiment.

The vertical axis shows the distribution of the children's choices in each condition, and you can see that the distribution of choices is based on the data that the babies see.

In the first two years of life, babies, with little statistical data, choose one of two radically different strategies to navigate the world: ask for help or try it for yourself.

I've only shown you two lab experiments, but there are literally hundreds of studies with similar results, and what's really important is that children's ability to extrapolate richly from sparse data is at the root of all cultural learning unique to humans.

Children learn new tools with a few examples.

We learn new causal relationships from a few examples.

We even learn new words, this is American Sign Language.

I'll just say two things

If you've been following my world, the field of neuroscience and cognitive science, over the last few years, you'll notice three big ideas.

One is that we are now in the age of the brain.

In fact, the field of neuroscience continues to make amazing discoveries, such as the identification of functionally specialized regions of the cerebral cortex, the transparency of the mouse brain, and the activation of neurons by light.

The second big idea is that we're living in the age of big data and machine learning, and machine learning is going to change the way we understand everything from social media to epidemiology.

And as machines tackle tasks like scene recognition and natural language processing, we may learn more about human cognition.

And the final big idea is that as we learn more about our brains, and we can take full advantage of big data, it might be a good thing, because humans, if left to their own devices, are prone to errors, to take it easy, to make poor judgments, to make mistakes, to be biased, and to perceive the world all wrong.

I think all of these things are important, and they tell us a lot about what it means to be human.

Today's topic isn't about the brain, it's about the mind. Among other things, it's about the kinds of computations that only the human mind can perform. These computations involve rich, structured knowledge and the ability to learn from little data and evidence from few examples.

The essence of today's story is how we get the world right, starting with babies and traversing the long way to accomplish the feat of culture.

The human mind doesn't just learn from little data.

The mind also creates entirely new ideas.

It is the mind that produces research and discovery, art and literature, poetry and drama, and the mind that cares for the old and the young and the sick.

we even heal those people

In the years to come, we're going to see technological breakthroughs beyond our wildest imagination, but it's a real shame that we won't see anything even close to the computing power of a human child in our lifetimes.

We must not spare investment in the development of these exceptional learners. We must spare no investment in the development of babies and children -- in mothers and fathers -- in the people who care for them and in teachers. We are willing to invest in other extraordinary and elegant technologies and engineering and design, but by doing the same, we should be able to not just dream of a better future, but to paint a blueprint for that future.

thank you

(Applause) (Chris Anderson) Thank you, Laura, I have a question for you.

First of all, this research is out of the ordinary.

Who would have thought of such an experiment? (Laughter) I've watched the experiment twice and still can't believe it's actually going to look like this, while others have demonstrated similar experiments.

baby is a genius

CA: Well, the babies in the lab look pretty good, but remember what babies look like in real life?

first is a baby

At 18 months, they begin to speak, and the first words they speak are not only "ball" and "duck," but also "not" for loss and "that" for unintentional action.

their power is so strong

It should be much more powerful than what you showed me.

children understand the world

By the age of four, you can speak almost anything.

(Applause) (Chris) If I understand you correctly, there's another important point in your argument. Over the last few years, people have been saying how capricious and fallible the human mind is, and that behavioral economics and the theory behind it show that humans are not rational agents.

So the bigger story you're trying to tell is that there's still unappreciated talent, and how great it is.

CA: My favorite quote in the field of psychology is that of social psychologist S. Ashe. According to him, the essence of psychological work is to remove the veil of obviousness from things.

Humans make millions of decisions each day in order to make sense of the world.

people know objects and their properties

Even if I can't see it, even in the dark, I know what it is

You can also walk around the room

I know what other people are thinking, and I can talk to them.

I can move through space, I know about numbers.

I know causality and ethical reasoning.

We do these things so naturally that we don't realize it, but that's how humans see the world.

Chris: I know some of you in the audience will argue that technology is going to accelerate, and that it's impossible in our generation to make computers do the same things that three-year-olds do. But what's clear is that machines still have a lot to learn from children, no matter what happens.

CA: Well, there are machine learning researchers here.

But we shouldn't just dismiss babies and chimpanzees and technology as just practical problems.

Incredibly powerful computers often use very large amounts of data to do extremely sophisticated things.

The human mind, on the other hand, is quite different, and I think the real challenge that remains is the structured, hierarchical nature of human knowledge.

CA: Mr. Schultz, you've given me something to think about. Thank you.

(Laura) Thank you. (Applause)

I think I've talked about these projects before, what it might mean to decipher the human genome and discover some new genes.

We're at a new starting point. We've been digitizing life, but we're entering a whole new era of biology, where we're using that digital information to design and synthesize life.

We are always asking the big questions

I believe that many biologists are trying to understand the question, "What is life?" from various perspectives.

In many ways, we've chopped life down to its smallest components.

We've been going digital for almost 20 years now, and when we sequenced the entire human genome, biology turned from analog to computer-driven digital.

Now we are asking whether it is possible to regenerate life, or create new life, in this digital world.

This is a map of the genome of a tiny organism called Mycoplasma genitalium, which has the smallest genome of any species capable of self-replication in the lab.

We succeeded in removing genes in units of 100 genes out of about 500 genes.

If you look at this metabolic map, it's relatively simpler than the human metabolic map. Believe me, it's still simple, but whether you can remove it individually or not, if you look at all the genes, the chances of producing a living cell are slim.

So we thought the only way to overcome this problem was to actually synthesize the chromosomes so that the building blocks could be changed to ask some of the most basic questions.

So, we first tackled the question, "Is it possible to synthesize chromosomes?"

Is it possible in chemistry to create macromolecules that have never been done before?

If so, is it possible to "wake up" the chromosomes?

Chromosomes are just inert chemicals

Research towards the digitization of our lives has progressed at a rapid pace.

Our ability to synthesize our genetic code has been accelerating steadily, though not so quickly, and recent achievements are on an exponential curve.

We started this research 15 years ago.

In fact, we had to go through a number of steps, including a bioethical review, before we could do the first experiment.

Our experiments show that it's very difficult to synthesize DNA.

There are tens of thousands of devices in the world that synthesize small DNA fragments of about 30 to 50 bases, but DNA synthesis is degenerate, so the longer the synthesized DNA fragments, the more error-laden fragments are produced.

So we had to develop a whole new way of combining these little pieces and correcting all the errors.

This is our first attempt to artificially synthesize a genome based on the digital information of the PhiX174 genome.

This is a small virus that kills bacteria

We designed a DNA fragment and, through an error correction process, succeeded in synthesizing a DNA molecule of approximately 5000 bases.

The most exciting part was when we injected this inert chemical molecule into a bacterium, which spontaneously read its genetic code and produced virus particles.

The virus particles were then released outside the cell, reentered the cell, and then killed the E. coli.

I spoke with people in the oil industry recently, and when I said that they all understood this model very well --

(Laughter) They were laughing more than most of you. This is exactly the kind of situation where software can build its own hardware in biological systems.

But we wanted to build something bigger. We wanted to build an entire bacterial chromosome, which is the equivalent of 580,000 letters of the genetic code.

Chromosome design is critically important, and in order to start designing from digital information on a computer, that information must be very precise.

When we first sequenced this genome in 1995, the standard accuracy was one error per 10,000 bases.

When we re-sequenced it, we actually found a 30-base error, and if we had used the original sequence, the artificial chromosome wouldn't have worked.

Part of the design is that the 50-base sequences overlap with other 50-base sequences to form smaller subunits.

We added a unique element to this

I added a "watermark"

So here's the thing: the genetic code is four letters: A, C, G, and T.

Three of those letter combinations correspond to about 20 amino acids, each of which is designated by a one-letter symbol.

This allows us to write words and sentences (as amino acid sequences) using the genetic code.

The first thing we did was embed our name

Some people seem disappointed that they didn't embed the poem

We designed these pieces to be enzymatically digested, and there are enzymes that fix and stitch these pieces together.

In this way, we started with fragments that were between 5,000 and 7,000 bases long, then spliced ​​them together into fragments that were 24,000 bases long, and based on this set, we made fragments that were up to 72,000 bases long.

At each step, we made a lot of fragments so that we could sequence them, because we're trying to build a synthetic process that's error-free, as you can see.

We aim to reach a level where this process can be automated.

This looks like a basketball playoff

In this way, when we enter the stage of synthesizing huge fragments of 100,000 bases or more, they cannot easily be synthesized in E. coli.We turned our attention to other mechanisms because the latest methods in molecular biology did not work.

Organisms have a mechanism called homologous recombination that connects and repairs their own DNA.

Here's an example: there's an organism called Deinococcus radiodurans that can withstand three million rads of radiation.

If you look at the upper half of the figure, you can see that the chromosomes are shattered.

After 12 to 24 hours, the chromosomes are repaired as they were before.

Many species have this ability

They can survive completely dry conditions, they can survive in a vacuum.

I am convinced that life exists in outer space and can move around and find new aquatic environments.

In fact, NASA shows a lot of things like this

Here's an actual micrograph of the molecule that we synthesized using these processes. We took advantage of the yeast mechanism to introduce correctly designed pieces of chromosomes into the cell, and the yeast automatically puts them together.

This is an optical micrograph, not an electron micrograph.

Molecules so large that they can be seen with an optical microscope.

These pictures were taken in about 6 seconds

This is a paper we recently published

It's made up of over 580,000 bases of genetic code, the largest defined molecule ever created by man.

Molecular weight is over 300 million

If you print it with no spaces and a font size of 10, just printing this genetic code takes 142 pages.

So how do we get this chromosome to start?

It's very easy with viruses.It's much more complicated when you're dealing with bacteria.

For eukaryotes, like us, it's easy, you take the nucleus out of the cell and put in another nucleus, which you know, using cloning techniques.

In the case of bacteria and archaea, the chromosomes are integrated inside the cell, but recently we have shown that the chromosomes within a cell can be completely transplanted into another cell and made functional.

We started by purifying the chromosome of a single microbial species. Roughly speaking, the recipient and the recipient are as different species as humans and mice. Then we added a few new genes to make this chromosome identifiable, and then enzymatically digested it to remove all the proteins.

This new chromosome was successfully implanted inside the cell.

Actually, we thought that it was only possible to reach this stage, but we decided to work on the further process.

What you're looking at is the main mechanism of evolution itself.

We've discovered many species that have incorporated a second or third chromosome into their cells from other species, rapidly acquiring thousands of new traits.

Those of you who think of evolution as single genes changing one by one, are missing a large part of biology.

There are enzymes called restriction enzymes that cut DNA.

The existing chromosomes in the cell didn't have the restriction enzyme gene, but the extra chromosome in the cell did.

The restriction enzyme gene was expressed, recognized the existing chromosome as foreign, and cleaved it, so in the end, only the newly introduced chromosome was present in the cell.

The blue color is due to the genes we added.

And in a very short time, the original species lost all its characteristics and was reborn into an entirely new species with the chromosomes we introduced, the new software, so to speak.

All the proteins have changed, the cell membrane has changed, and when we sequenced the genes, they were the exact chromosomes that were transplanted.

It may sound like genomic alchemy, but by transposing DNA as software, we can dramatically change the properties of cells.

This is not the creation of life, as I said earlier, it's a study built on 3.5 billion years of evolution.

And we will soon be using this digital design to trigger a new type of Cambrian explosion with massive speciation.

why study this stuff

In terms of needs, I think this study is very clear why.

Population is projected to grow from 6.5 billion to 9 billion over the next 40 years

Take myself for example, I was born in 1946.

There are three times as many people on the planet today as there are people born before 1946, and in 40 years there will be four times as many.

For 6.5 billion people, it is difficult to provide everyone with safe water, medicine and fuel.

With 9 billion people, it will be even more difficult.

We consume 5 billion tons of coal, we consume over 30 billion barrels of oil, which is equivalent to 100 million barrels of consumption per day.

And when you think about the biological or other processes that might resolve this situation, it's going to be a tremendous challenge.

And, of course, those substances emit carbon dioxide into the atmosphere.

We currently have about 20 million gene databases with discoveries from all over the world, which I consider to be the building blocks for the future.

Look at the diversity that comes from just a handful of building blocks in the electronics industry

We are limited primarily by our biological reality and our own imagination.

We now have a research method called "combinatorial genomics" that uses rapid synthesis of DNA.

We now have the ability to build giant robots that synthesize a million chromosomes a day.

To manipulate 20 million different genes, to optimize the octane production process, to create drugs and new vaccines, a small research team can do more molecular experiments than the last 20 years of science.

There are many design choices available, from improving viability, to producing chemicals and fuels, to producing vaccines, and much more.

This is a screen shot of the biological design software that we're developing, which allows you to work on the design of species on the computer, sitting in your chair.

We don't know what the species will actually look like, but we do know for sure what the genetic code for that species looks like.

We are now interested in 4th generation fuels

We all know that these days, purifying ethanol from corn is a very inefficient experiment.

I think we'll soon see second and third generation fuels such as octane, which is a fuel with higher added value than sugar, and butanol.

On the other hand, what we think is an effective biological approach that doesn't increase the cost of producing food and limit its supply is to use carbon dioxide as a feedstock.

We believe we can announce a fourth generation fuel in 18 months.

One way is to use sunlight and carbon dioxide.

(Applause) Our findings open up a wide variety of other techniques.

This is the species we published in 1996

They live in waters that are nearly 2.4 kilometers deep, with temperatures approaching boiling water.

This species uses carbon dioxide and molecular hydrogen as an energy source to produce methane.

We're continuing to explore whether it's possible to easily bring together the carbon dioxide we collect, turn them into fuel, and repeat the process.

We believe that in a short period of time we will be able to increase the number of answers to the question, "What is life?"

As you all know, we have a modest goal of replacing the entire petrochemical industry. (Laughter) (Applause) Well, if we can't do it at TED, where can we?

And we're also using the same technology to develop methods for the immediate production of vaccines.

Influenza epidemics are still fresh in our minds this year, but we're always one year behind in getting an effective vaccine ready, and we're short on budget.

I think this can be changed by preparing combination vaccines in advance.

The future will look like this: Synthetic bacteria, synthetic archaea, and eventually synthetic eukaryotes will drive evolution forward and create a new evolutionary tree.

The goal of improving humans is a long way off, but our goal is to keep humanity alive until the day it happens. Thank you.

(applause)

Do you remember the time when your hormone balance was disturbed and you became moody?

You've got pimples on your skin, your body parts have gotten weirdly big and you've grown so fast, and at the same time, people expected you to grow up to match your new body.

So you're a teenager?

These same changes occur when a woman becomes pregnant.

Emotional instability in teenagers is known to be normal, so why don't we think about pregnancy in the same way?

There are whole textbooks about the growth curve of puberty and adolescence, but we don't have a single word for the transition to motherhood.

we need that word

I'm a psychiatrist who works with pregnant and postpartum women.

It goes something like this: A woman calls me, she's just had a baby, and she's worried.

She says, "I'm not good at parenting and I don't enjoy it.

Do I have postnatal depression? ”

I'll check for symptoms of postpartum depression, and obviously she's not in a condition to be diagnosed with depression, so I'll tell her so.

but she doesn't feel safe

"It's crazy to feel this way," she continues.

So I say, "How did you expect it to feel?"

“I thought being a mother would make me feel fulfilled and happy,” she said.

I know what to do instinctively

I always thought I would put the baby first."

This is an unrealistic expectation of what the transition to motherhood looks like.

it's not just her

I got calls from hundreds of women with similar questions, all wondering if something was wrong with them because they weren't quite what they should have been.

I didn't know how to help them, because telling them you weren't sick didn't make them feel better.

I wanted to find a way to normalize this transition to explain that being uncomfortable and being sick are not necessarily the same thing.

So I started learning more about the psychology of motherhood.

But in reality, there wasn't much information in medical textbooks, because doctors usually only write about illness.

So I decided to study anthropology

It took me two years, but I finally found a useful framework for this kind of dialogue in a 1973, now out-of-print paper by Dana Rafael: Matrescence.

It's no coincidence that matrescence sounds similar to adolescence.

Both are periods when physical changes and hormonal changes dramatically change the way a person feels and adapts to the world.

And like adolescence, matrescence isn't a disease, but it doesn't exist in medical terms, and because doctors aren't educating people about it, it's been confused with postpartum depression, which can lead to more serious conditions.

I've been working in the anthropological literature, and I've been talking to patients about matrescence, and I'm using a concept called "push and pull."

The "pull" part is like this

Human babies are unusually dependent on others.

Unlike other animals, our babies can't walk, they can't feed themselves, and it's very hard to take care of them.

Evolution and the hormone oxytocin helped us.

It's released when a baby is born or during physical contact, so this hormone rises even if you don't have a baby.

Oxytocin helps the human mother's brain focus on one thing, attracting attention and making the baby the center of her world.

But at the same time, her mind is pushed aside because she knows there are other elements to her identity: her relationships with other people, her work, her hobbies, her mental life, her intellectual life, and of course, her physical needs: sleep, food, exercise, sex, and even going to the bathroom, alone -- (Laughter), if possible.

This is the emotional tug of war in Matrescence.

This is the struggle of the women who called me.

This is why they suspected the disease

If women understood the natural process of matrescence, if they knew that most people find it hard to live between this push and pull, if they knew that conflicting feelings are normal and not something to be ashamed of in these situations, I think they would feel less alone, feel less stigmatized, and even lower rates of postpartum depression.

I would love to study it someday

I believe in the power of dialogue therapy. If we are to change the way our culture views the transition to motherhood, women need to talk to each other, not just me.

So moms, talk about your matrescence with other moms, with your friends, if you have a partner, talk to them, they too can better support you by understanding their own transition.

But it's not just about protecting your relationships.

By leaving a part of your identity separate, you give your children room to develop their own.

When a baby is born, a mother is also born.

Matrescence is a big change, but it's also a tough time, and that's what makes us human.

thank you

(applause)

(music) (singing) A teenager's wedding The adults are celebrating

Pierre certainly loves that Mademoiselle

Oh, and now young Monsieur and Madame rang the oath bells

This is life, the grown-ups say You never know what's in life

Really

In a new two-room house, I arranged cheap furniture from a catalog

The refrigerator is full of retort pouches and ginger ale

Ah, but Pierre still found a job and was doing well with little pay.

This is life, the grown-ups say You never know what's in life

Really

They bought a modified sports car, a cherry red 1953 model.

We drove to New Orleans to celebrate our wedding anniversary.

Oh, that's where Pierre got married to the lovely Mademoiselle.

This is life, the grown-ups say You never know what's in life

I really don't know

to anyone and to you

Me too

what is there

I don't know life is like that

(Applause and cheers) Thank you.

I recently had the incredible opportunity to unearth a treasure trove of songs released by Chess Records, a Chicago-based label that dominated America in the '50s and '60s, and whose music spread all over the world.

Tonight I'm singing, in honor of the sound of chess, entitled "Playing Chess," a song from my latest album.

They were the pioneers of rock 'n' roll and soul R&B.

(Applause) (Music) (Singing) Over the mountains and across the seas There's a girl waiting for me I'm waiting

me

(music) Across the river Beyond every cloud Overcoming the gale that blows

Over the mountain, that girl is waiting

(music) Tell the sand Tell every blade of grass Tell the wind to let my love go

Across the mountain, that girl is waiting for me

Tell the distant moon in the sky

Tell the birds that fly by your side, after crossing many mountains...

my love is waiting for me

Oh, every night when the stars shine in the dark Oh, how strange it is to be so tightly closed

Across the mountain that girl is waiting for me

Tell the distant moon in the sky

Tell the birds that fly by my side Over the mountains My beloved is waiting for me

Every night when the stars shine in the dark, how mysterious it is, locked up so tightly

There's a girl waiting for me over the mountains

that girl is waiting for me

oh wait for me

I know I know

oh you know that

yeah i know oh...

(applause and cheers)

Almost 20 years have passed since 9/11

It's time for us to understand our current situation and stop and think.

It's time to ask ourselves: Has the world really become a safer place because of the myths and policies that have spread in the wake of this tragic event?

Has our Western society become stronger because of it?

I've devoted my life to the study of security and defense, but now, more than ever, I believe that we need to radically rethink the way we think and act about security, and especially about international security.

International security is about what we do and how we prepare to prevent and better deal with external threats, and how we protect our citizens.

The key to both of these is that we focus on protecting our citizens, both our own citizens and the citizens of countries that are deploying forces in the name of security.

Now, this way of thinking runs counter to the prevailing wisdom of the last 20 years about what safety is and how to get it.

Over the past 20 years, in Europe and in the United States, we've come to accept security as something to debate, with a zero-sum mentality that the only way to get more security is to sacrifice our values ​​and rights. Security or human rights? Security or freedom or development?

this is a false dichotomy

it's not that simple

We have to recognize that security and human rights are intrinsically related rather than competing values.

After all, the most basic human right is the right to live free from violence, and the nation's greatest responsibility is to ensure this right for its citizens.

Conversely, when you think about communities around the world in war and conflict, it is the lack of security and violence that prevents the full freedom and development of citizens.

In order to live a normal life and enjoy their human rights, they need the same basic security that we do.

so we have to change

We must recognize that sustainable security is built on a foundation of human rights, built on the promotion and respect of human rights.

And over the past 20 years, we've believed that the best way to ensure our own security is to defeat our enemies, and that we must rely exclusively on military force to do so.

But this goes against my work, my research, and what I've seen in the field.

From my point of view, establishing sustainable security has less to do with overpowering the enemy or winning over him on the battlefield than it has more to do with protecting victims and ensuring stability.

So the military alone is simply not enough.

So we need to put the never-ending war on terror on hold and replace it with a security plan based on the principle of "protect the citizen." It doesn't matter where the citizen is from, what country's passport they hold, or where they live, whether it's Vancouver, New York, Kabul, Mosul, Aleppo, Douma.

What we do know about sustainable security is that if our efforts abroad are focused on protecting local citizens and ensuring a dignified civic life free from violence, we have a better chance of achieving long-term security at home.

For example, we all think that defeating ISIS is the achievement of security.

of course it is

But rebuilding destroyed homes, restoring order, establishing representative democracies is just as important, not only for the safety of Iraqi and Syrian citizens, but also for our own safety and the stability of the world.

What's more fundamental is that the dangers of ISIS are not just the number of weapons they have, but the number of children they are depriving of education and brainwashing.

this is for safety

From a security standpoint, the long-term consequences of millions of Syrian children growing up out of school and knowing nothing but war are a far more dangerous threat to stability than the full arsenal of ISIS combined, and we should spend as much time and energy on this as we do on military counterattacks against ISIS.

Security policy over the last 20 years has been short-term.

The focus was only on that moment

The relationship between what we do today in the name of security and the long-term consequences of those choices has been neglected.

Because of the choices and policies we've made since 9/11, we're probably less secure in the long run.

For sustainable, citizen-focused security, we need to think about what will happen in the long term.

For example, using drones to target enemies in distant countries is a tool.

It could be a way to confirm or reduce the threat of an imminent attack on America.

But what about the long-term effects?

When civilians are killed, when communities are targeted, it creates a vicious cycle of war, conflict, trauma and radicalization, which is at the heart of so many security challenges we face today.

This doesn't lead to long-term safety.

We need civilian security -- sustainable, citizen-focused security -- and we need it now.

We need to encourage thought and research on this concept and put it into action.

we live in a dangerous world

There are many threats to peace and many conflicts.

Like the days after 9/11, we have been forced to think about international security.

We must learn the lessons of the last 20 years.

For security to work properly, we need to think long-term.

We must focus on protecting our citizens.

And we must recognize and respect the fact that sustainable security rests on the foundation of human rights.

Otherwise, in the name of safety, we risk making the world a far more dangerous and unstable place than it is today.

Thank you

(applause)

What I want to share with you today is a discovery that surprised me, especially what makes a successful business, and the factors that most influence the success of a new business.

I think the new corporate organization is the ideal way to make the world a better place.

If we bring people together, give them the right equity incentives, and organize new businesses, we can unlock human potential in ways that have never been possible before.

Incredible feats can be achieved

So if new corporate organizations are so great, why do so many of them fail?

that's what i wanted to know

I wanted to find out what was most important for starting a new business.

I wanted to systematically look for reasons for failure, and I wanted to avoid the intuitions and false assumptions that come from observing many companies over the years.

The reason I wanted to know the essentials of starting a business is that I've been doing business since I was 12, selling candy at bus stops in middle school, building solar energy devices in high school, and loudspeakers in college.

When I graduated college, I started a software company.

And 20 years ago, I started Idealab, and over the last 20 years, I've launched over 100 companies, with many successes and big failures.

we learned a lot from our mistakes

So I tried to look at what factors most influence a company's success or failure.

I focused on 5 factors

First is the idea

I used to think that ideas were everything

I named my company The Idealab because I believe in that "I made it" moment when an idea comes to me.

But over time, I've come to think that the team, the organization, the adaptability may be more important than the idea.

I don't think I'd end up quoting Mike Tyson on the TED stage, but he said, "Until you get punched in the face, everyone has a plan."

A team's ability to execute owes much to its ability to adapt to being punched in the face by a customer

Customers are the ultimate reality

So I've come to believe that maybe the most important element is the team.

Then I started looking at the business model.

Does the company have a clear way to monetize its customers?

It began to take the top spot in my thoughts on what was most important to success.

Next is fundraising

Companies sometimes receive generous funding

Maybe this is the most important thing?

Last but not least is the timing

Maybe we're too ahead of our time and the world isn't ready?

For example, maybe we need to be a little ahead of the times and educate the world?

Best time?

Or is it too late and there are already too many competitors?

So we carefully analyzed a large number of companies based on these five factors.

I looked at all 100 Idealab companies and 100 others, trying to come to a scientific conclusion.

First, Idealab's Top 5 companies -- Citysearch, CarsDirect, GoTo, NetZero, Tickets.com -- are all billion dollar successes.

The bottom five companies - Z.com, Insider Pages, MyLife Desktop Factory and Peoplelink - did not succeed despite our high expectations.

So, to rank all the attributes, I scored these companies on five factors.

And we did Airbnb, Instagram, Uber, Youtube, LinkedIn, and other big successful companies that aren't Idealabs.

And failures were Webvan, Kozmo, Pets.com Flooz and Friendster

Some of the companies in the bottom group were well-capitalized and had business models, but failed.

So I tried to figure out which factors had the greatest impact on the success or failure of all these companies, and the conclusions I found surprised me.

The time has come for the highest

Timing explains 42% of the difference between success and failure

Second was team and management, and ideas, idea differentiation, idea uniqueness came in third.

This isn't the end result, and I'm not saying ideas aren't important, but I was very surprised that ideas weren't the best.

Great timing is more important than ideas

It made sense for me that the bottom two were the business model and funding.

I think the reason the business model is less important is that you can start without a business model and add it later as the customer demands.

Similarly, financing is very easy, even if you're short on cash at the beginning, and when your business is gaining momentum -- especially in this day and age -- it's very easy to get a lot of cash.

Now let me give you an individual case.

Airbnb and others are examples of explosive success that we all know.

This company is famously overlooked by smart investors, because they thought, "No one rents out an empty room in their house."

Of course I later found out I was wrong.

But one of the reasons we've been successful is not because we have a good business model, or a good idea, or a good operation, it's the timing.

This company was founded during the depths of the recession, and maybe someone who needed extra income was able to overcome the barrier of "no one rents out an empty room in their house."

Same with Uber

Uber is a great company, a great business model, a great management

Because it was the perfect time to bring drivers into the business.

It's very important that drivers wanted extra income.

An early success story: Citysearch was founded when the demand for web pages began.

GoTo.com, which we introduced at TED in 1998, was looking for a low-cost transportation option for businesses.

I thought it was a great idea, but it turns out that timing was actually more important.

Here are some examples of failures

When I started online entertainment company Z.com

We were stoked, because we had a lot of money, a great business model, and we had signed some big-name Hollywood talent.

Broadband penetration was too low in 1999-2000

Watching videos online was difficult, you had to compress and decompress the data in your own browser, and Z.com eventually went bankrupt in 2003.

But just two years later, when Adobe Flash solved the data compression and decompression problem and broadband penetration exceeded 50 percent in the United States, the time was ripe for YouTube.

It was a good idea, and the timing was perfect.

Actually, when YouTube started, it didn't have a business model.

I didn't even know if it would become something

But it was the perfect time

In short, my conclusion is that management is absolutely essential.

Ideas are important too.

timing is more important

And the best way to determine timing is to really determine if your customers are ready to use the product you're putting out there.

And no matter what the outcome, take it seriously without being negative, because if there's something you like, you want to put it out there, but you have to be serious about the timing factor.

As I said earlier, I believe that new businesses will change the world and make it a better place.

I hope that the small pieces of wisdom I've shared today will increase the success rate of your businesses, even if just a little, and help bring out wonderful things to the world that wouldn't otherwise have been born.

thank you for listening

(applause)

(Piano performance) (Piano performance) (Applause) (Applause)

In the classic '80s movie "The Blues Brothers," John Belushi comes to Chicago for the first time by visiting Dan Aykroyd's apartment.

The cramped, cramped room is just one meter away from the side is a railroad track.

As soon as John sits on Dan's bed, the train rushes through and shakes everything in the room.

When John asked, "Does that train run often?"

Dan replied, "Always, you'll get over it."

As soon as that happens, something falls off the wall

It reminds me of Dan's story.

We humans get used to everyday events very quickly.

As a product designer, my job is to look at these daily events, feel them, and seize opportunities to improve them.

For example this fruit

there is a small sticker

This sticker didn't exist when I was a kid.

Then one day someone had the idea to put this on fruit.

Because it makes it easier to pay at the supermarket checkout.

That's amazing.

But a new problem arises here.

Before you come home and find yourself hungry and find delicious ripe fruit on the counter, you would have eaten it right away.

Now I have to look for this little sticker first.

While trying to peel it off with my fingernails, I crushed the flesh too.

You can see this rolled sticker again

I can't get it off my finger even if I shake it

(Laughter) It pisses me off.

But something interesting happens there.

I'm sure at first you would think

eat fruit and that's all

i'm angry i'm frustrated

But by the 10th time, it doesn't get so frustrating, and it just starts peeling off the stickers.

By the 100th time, at least for me, I won't feel anything.

Simply pick up the fruit, peel it off with your fingernails, and brush it away from your fingers.

I wonder why?

Why do you get used to everyday events?

because the human brain is finite

So the brain codes everyday events into habits to make room for learning something new.

This is a process called habituation, and it's one of the most basic ways humans learn.

Well habituation is not a bad thing

Let's remember driving lessons

was impressive to me

Grab the steering wheel at 10 o'clock and 2 o'clock and watch everything around you, cars, traffic lights, pedestrians, etc.

It's a nerve-wracking experience

I was so nervous that I couldn't talk to anyone in the car, or even listen to music.

But even here something interesting happens.

As the weeks go by, it gets easier and easier to drive.

It's a habit

When that happens, it becomes fun

I can also talk to my friends and listen to music.

So there's a reason the brain makes things habitual.

If we don't make it a habit, we'll always have an eye for every detail.

You'll be exhausted, and you won't have time to learn anything new.

But sometimes it's not good to get used to it.

It's not good if you don't notice the problems around you due to habituation.

Furthermore, the problem is serious if it cannot be solved because it is not noticed.

comedians know that

All of Jerry Seinfeld's stories come from the little things he notices, the blunders we do every now and then that we don't even remember.

I have a story about when he went to visit a friend, trying to freshen up in the shower.

When I reach for the handle and move it a little, a ridiculous amount of hot water spurts out.

If you rush back, this time it will be ridiculously cold

Even just a shower is like this

We all know it, but none of us remember it.

But Jerry was different.

But for designers, innovators, entrepreneurs, it's your job to not only be aware of these events, but to go further and solve them.

This is a person named Mary Anderson.

She was traveling in New York in 1902.

It was a cold, wet, snowy day and she was on a warm tram.

On the way, she noticed the driver opening the window, trying to clear the snow off the window and get a better view.

But as soon as he opened the window, the cool, damp air rushed into the car, and all the passengers were sick.

Now, at this point, most of the passengers probably had no choice but to think, "No way, the only way to clean the windows is to open them."

That's right."

But Mary was different

She thought, ``If the driver could wipe the windshield from the inside of the car, they could continue to drive safely and the passengers would stay warm.''

The next minute, she pulled out her sketchbook and began drawing what would become the world's first windshield wiper.

Now, as a product designer, I try to follow people like her and try to let go of my assumptions in order to see the world as it really is.

Because it's easy to solve problems that everyone notices.

Because it's hard to solve problems that everyone misses.

Some say that some people are born with it, others are not. Mary Anderson was also gifted with the ability to see the truth.

in my case it wasn't

I just had a reason to do it

During my years at Apple, Steve Jobs asked me to come to work every day and look at our products through the eyes of a customer -- a new customer -- fear or frustration or even euphoria about the immediate availability of new technology.

By telling us to stay newbies and asking us to always pay attention to detail, he hoped that new customers would be able to use the product faster, easier and more smoothly.

Especially the earliest iPods remind me of that.

Back in the '90s, I was a gadget geek, too, and I would always rush to the stores for the latest gadgets.

Take your time to get to the store, pay for it, and when you get home, open the package.

And there's this little sticker that says, "Charge before use."

What!

can't believe it!

It took me so long to buy this product, but now it says "charge before use"?

It felt like an eternity to hold back in front of the brand new item I longed for.

you did something

But hey, back then, almost every product was the same.

All products with built-in rechargeable batteries had to be charged before use

It was Jobs who realized this, and he said, "We're going to make sure this doesn't happen with our products."

what happened

A typical product with an internal hard drive is run in the factory for half an hour to make sure it's still working years after the customer bought it.

I did something instead

I decided to run the product for more than two hours.

Reason?

First of all, we can improve the quality of our products in the first place, which makes them easier to inspect and better for our customers.

But more importantly, it meant that the product was fully charged and ready to use right out of the box.

That elated customer was able to start using it right away.

It's wonderful, it's very effective, and it's been very well received.

Now, most products powered by rechargeable batteries come fully charged out of the box, even products without hard disks.

The little things that we realized and solved back then are now being done by everyone.

"Charging before use" is no longer possible.

Why do I say this?

Because it's important not just to look at the obvious problems, but to look at the invisible problems, and I think that goes for everything we do, not just product design.

In fact, the world around us is full of invisible problems that we can solve.

In order to do that, we must first find them and feel them.

Now, with some hesitation, let's move on to some neuroscience and psychological tips.

There are a lot of experts in the TED community who are more knowledgeable than I am.

But I'm going to share with you a trick that everyone can do to resist habituation.

The first is to broaden your horizons

When you're working on a problem, there are mountains of factors behind that problem.

There are times when it takes a huge amount of time to solve the problem.

Sometimes, when you take a step back and look more broadly, you realize there's room for change.

Summarize the cause of the problem and the solution

maybe we can get rid of them in a whole new way

Take the thermostat as an example

When it was launched in the 1900s, it was quite simple to use.

Just raise or lower the set temperature

anyone could understand

But in the 1970s, when the energy crisis arose, customer concerns turned to saving energy.

then that means

Thermostat designers also added new features.

I stopped raising and lowering the set temperature and started to operate it with a program.

Can be set to reach a set temperature at a set time

I think it's good

All thermostats began to adopt that specification.

But then it turned out that no one was saving energy.

why?

because humans could not predict the future.

After all, no one can know in advance how the temperature will fluctuate from season to season, from year to year, on a week-to-week basis.

That's why nobody was able to save money.

The designers revisited, specifically revisited program functionality.

We made the setting screen easier to understand and revised the instruction manual.

But years later, still no one has saved any money, because no one can predict the future.

what about us?

So instead of being programmed, we used machine learning, so we decided to only record when we turned the temperature up and down, so we knew when we woke up in the morning and it was just the right temperature, or when we went out.

Then what

It worked

I didn't need a program to save energy.

so whatever you do

If we take a step back and look at the problem as a whole, we might be able to remove individual things or group them together to make the whole process much simpler.

That's what it means to broaden your horizons.

The second tip is to "look closer"

one of my best teachers was my grandfather

You taught me everything in the world

It's about how things are made, how they should be repaired, and the tools and techniques needed to do it.

One of my grandfather's stories was about screws, and it was about the importance of using screws correctly.

There are many types of screws, wood screws, metal screws, anchored screws, for concrete, the list goes on and on.

Our job is to make it easy for anyone to install products by themselves without special skills.

to do so

I remembered my grandfather's story about screws, and we all thought, "How many types of screws should we put in the product box?

2, 3, 4, 5 types? ”

There are many different types of walls.

After much thought, I decided that the best choice was to include two or three types of screws in the box.

The problem seemed to be resolved

it wasn't

We shipped the product, but the people who received it did not respond well.

what happened there

As soon as I knew it wasn't working, I immediately went back to design.

And then they developed a special, purpose-built screw, and the investors were in awe.

"How long are you going to spend time on one small screw?"

They say, "Increase sales through sales."

I replied, "It will grow, depending on the screw."

I actually did

With these little custom screws, there was only one screw in the box, and it was easy to attach to the product, and it was easy to attach to the wall.

So it's also important to look at the little things that no one else notices and think, "Is this really important, or is this just a habit?

If so, maybe we can stop."

The final tip: think younger

Every day, I bear the brunt of three children's ridiculous questions.

The question is, for example, Why don't cars fly? And

Why are shoe laces instead of Velcro?

Sometimes sharp questions pop up

The other day, I asked a child who came by my side, "Take a look at the mailbox."

He looked at me and said confusedly, "Why didn't the mailbox look for itself and tell me?"

Their questions are endless, and sometimes the right answer is never found.

When that happens, we say, "Well, that's how it is."

Adults get accustomed to something by being exposed to it frequently.

Children don't live that long, so they don't get used to it.

So when I'm faced with a problem, I try to solve it on the spot, and as a result, sometimes I come up with a better way, and that's actually a pretty good way.

So, a really important tip to remember is to have young people on your team, even if they're young at heart.

Because if you have a young mind there, there's room for everyone on the team to think young.

Picasso said, "A child is an artist from the beginning.

The question is whether you can remain an artist when you grow up."

We should have seen the world more clearly when we first saw it, before life of habit began.

The challenge for us is to get back there, to feel the frustration, to pay attention to the little things, to keep a wider perspective, but to look more short-sighted, to try to think younger, to always remain a novice.

it's not easy

After all, it pushes aside the most basic means by which we understand the world.

But if you can do that, you should be able to do something really amazing.

For me, it's about designing better products.

I'm sure you can do something else that's powerful.

The challenge for us is to wake up every morning and say, "I need to experience the world more deeply."

If you do that, maybe you really, maybe you can get rid of that annoying sticker

thank you

(applause)

About 10 years ago there was a tough time

i decided to go to therapy

One day, after a few months of going there, my therapist asked me, "Who raised you until you were three years old?"

Even though I thought it was strange, I answered, "It's my parents."

And she says, "I don't think so."

She seemed to be joking around, but I could tell she was serious.

When I first started going to her, I was trying to be the funniest person in the group.

I used to tell jokes all the time, but she immediately seemed to understand what she was saying.

(Laughter) It was terrible.

I finally got serious and asked my parents, Who really raised me until I was three years old?

And to my surprise, they said my first adoptive parents were distant relatives.

He was the one I used to call Obachan

I remember her very clearly, and I felt like I had spent my life with her well past the age of three.

Her long, thick hair wrapped around me like a curtain when she held me in her arms, how I followed her around with her gentle voice with a Southern Thai accent, followed her to the bathroom, followed her shopping.

I loved her, but as a child, I was overdoing it. At that time, I still didn't understand that love can also lead to a breakup.

But my most vivid and most memorable memory of Obachan is also one of the first memories of my life.

I remember her being beaten and beaten by my family.

I remember yelling, "Stop, stop!"

I cried so much that eventually she started beating me on the other side of the door.

It got more intense and eventually she ran away.

As an adult, I learned that when she was brought over from Thailand, she was only 19 and had come to the United States on a tourist visa to babysit me.

Reluctantly, after working in Illinois for a while, she returned to Thailand, and then I met her again at a political rally in Bangkok.

After following her around like I did when I was little, I agreed to say goodbye and promised to call her.

but i didn't call

Because even though I can tell you what she meant to me, that maybe the best part of myself was made possible by her, my guilt, my shame, my anger at what she went through to babysit me, and the words "I'm sorry" are less than a drop in the ocean, because I feared I'd cry forever when I said them.

because she saved me

i didn't save her

I've been a journalist researching and writing about human trafficking for more than eight years now, but it's only recently that I've begun to bring up this personal experience.

It seemed to me that the heavy discontinuity between her and her was just symbolic of the general understanding of human trafficking.

Human trafficking is far more pervasive, complex and familiar than we think.

I've interviewed hundreds of victims, law enforcement agencies, and NGOs in prisons, brothels, and elsewhere.

The results of that human trafficking interview were hugely disappointing.

We didn't even get the issue right.

When you hear the word "human trafficking," most people don't think of people like my Obachan.

You can imagine young girls and women being violently forced into prostitution by ruthless pimps.

It's really tragic and it's actually happening.

But what makes me angry is more than just the reality of what's happening.

Because of my profession, I'm very careful about the language that binds us together. Especially when it comes to articles that involve cruelty, violence, and obscenity, I read that as a reporting attitude that "looks straight at her scars."

Articles like this make us believe that human trafficking is a crime committed by a bad man against an innocent woman.

But it's mostly one-sided

It undermines the societal conditions that we are accused of on our part: problems of structural inequality, of poverty, of immigration barriers.

While we tend to assume that human trafficking is just forced prostitution, in reality, human trafficking is embedded in our daily lives.

Let me explain with an example

Forced prostitution accounts for 22% of human trafficking

10% are state-organized forced labor

But the remaining 68 percent work in sectors that are essential to our daily lives, such as manufacturing and services, as well as in fields such as farming, domestic work, and construction.

i.e. food, care and shelter.

And for some reason, the people who do these most important jobs are currently the lowest paid and most overworked people in the world.

Human trafficking is the use of force and deception or coercion to force others to work.

It's not only found in cotton fields and coltan mines, but also in car washes in Norway and England.

It's been discovered at U.S. military bases in Iraq and Afghanistan.

It has also been found in the fisheries industry in Thailand.

Thailand has become the world's number one shrimp exporter.

But the reality is, what happened behind the cheap and massive amount of shrimp?

Thai military accused of selling immigrants from Brunei and Cambodia to fishing boats

People forced to work on fishing boats were dumped into the sea when they got the wrong job or got sick, even when they appealed for better conditions.

The fish caught by those vessels is used to grow shrimp, which are then sold by four of the world's biggest retailers: Costco, Tesco, Walmart and Carrefour.

On a smaller scale, human trafficking is even more common and happening in the most unimaginable places.

Traffickers get young people to drive ice cream trucks or sing in male choir tours.

It's been discovered at a well-known New Jersey hair salon.

The meticulousness in this case was eye-opening.

They found young families from Ghana and Togo and told them, "Your daughter will get a good education in America."

Then the broker found another U.S. permanent resident winner and said, "Let's help you get out of the country."

"Take a plane ticket and pay for it

Now all you have to do is take this girl with you, and tell her that she's your sister or your fiancée."

Once in New Jersey, the girl was taken away and forced to work 14 hours a day for five years every day.

This case made the traffickers a whopping four million dollars.

this is a serious problem

What have we done about it?

relied primarily on the criminal justice system

But the problem is that most victims of human trafficking are poor and vulnerable.

immigrants, people of color, people of color

Sometimes forced into the sex industry

For these people, the criminal justice system is often the problem rather than the solution.

We've been doing research, and we've traveled to so many countries, from Bangladesh to the United States, and we've found that between 20 and 60 percent of those who are forced into the sex industry have been raped or beaten by the police in the past year.

People in the sex industry, including victims of human trafficking, routinely have multiple convictions for prostitution.

Such a criminal record poses a major obstacle to a person's desire to escape from poverty, violence and prostitution.

Outside of the sex industry, standing up to demand better treatment is risking deportation.

During my interviews, I often saw that employers had no problem with legally threatening and trying to banish trafficking victims to go on strike.

Even if a worker manages to escape, that means they run the risk of becoming one of many undocumented workers and subject to arrest by capricious inspections.

The law is supposed to find victims and prosecute traffickers.

Today, of the estimated 21 million victims worldwide, fewer than 50,000 have been recognized.

It's kind of like the ratio of the population of the world to the population of Los Angeles.

In 2013, there were about 5,700 convictions, but fewer than 500 related to worker trafficking.

68% of all trafficking is labor trafficking, yet less than 10% of convictions.

One expert said that where demand and greed meet, human trafficking occurs.

I would like to add another element

Human trafficking occurs where workers are deprived of protection and denied their right to organize.

Human trafficking never happens out of nowhere

It happens in a work environment designed to be bad.

Some of you may be thinking this, but I'm talking about poor countries and conflict zones, and I'm talking about America.

Let me explain how

I did a lengthy investigation into a human trafficking ring called Global Horizon, which involved hundreds of Thai farmers.

They were sent all over the United States, to pineapple plantations in Hawaii, apple orchards in Washington, anywhere they needed a hand.

It was a promise of solid farming for three years.

with a certain amount of risk in mind

I sold the land, sold my wife's jewelry and stuff, and paid thousands of dollars to register with this company, Global Horizon.

But once they came to America, their passports were confiscated.

some were beaten or held at gunpoint

The labor was so harsh that he sometimes passed out in the fields.

This incident was a big shock to me

After I got home, I was wandering around the grocery store, and I stopped at the fresh food counter.

It reminded me of the sumptuous meals that the victims of Global Horizon would serve to me every time I interviewed them.

At the end of one meal, I got a beautiful strawberry with the stem still on it, and as they handed it to me, they said, "In America, you eat strawberries like this when you're with someone special, right?

It would taste better if you knew who picked it for you."

A few weeks later, I realized that I didn't know who I was standing in this grocery store to thank for their abundance, and I didn't even know what their circumstances were.

So as a journalist, I started looking into agriculture.

We found a distinct shortage of labor inspectors for the sheer number of farms.

We also found that there are many layers of verbal denial between growers, wholesalers, processors, and others.

Global Horizon victims were brought to the United States as part of a short-term labor program.

Short-term work programs put workers' legal status solely in the hands of their employers, and deny them the right to organize.

I want you to note that this farming organization and short-term work program that I'm talking about is not trafficking at all at this time.

These are undeniably legally recognized.

But aren't these also soils for exploitation?

And all this was hidden from me until I tried to understand.

I'm not alone in finding these problems.

eBay founder Pierre Omidyar is also one of the world's leading anti-trafficking philanthropists.

Global Horizon revealed that even he had unwittingly invested nearly $100 billion in pineapple fields on plantations with the worst working conditions.

When this was discovered, he and his wife were so shocked and horrified that they decided to put an end to the matter by writing a byline article in a newspaper saying, "It's our responsibility to try to know as much as possible about the labor and supply links in the products we support."

I wholeheartedly agree with the opinion

What would happen if each of us made the decision not to buy from a company that seemed to be ignoring the exploitation of the labor-supply nexus?

Avoid similar laws

Or what if all CEOs try to tell those businesses that they don't want them anymore?

What if we could abolish recruitment fees for migrant workers?

What if we allowed temporary workers the right to organize without fear of deportation?

The decision will be transmitted around the world.

It's like buying fair trade peaches to get the satisfaction of being free from guilt.

not at all

This is a decision to change a broken system, a system that we have voluntarily and unwittingly availed ourselves of for too long.

We often recount the abuses of trafficking victims.

they were at odds with my experience

Through our dialogue with them over the years, we have learned that we are worse than our worst days.

I've learned that it's more important than any experience I've ever lived.

especially for victims of human trafficking

They were the most resourceful, bubbly, responsible people in the community.

These are the people you can rely on in a high-stakes situation.

They'll say, "I'm selling this ring because it will give you a better future."

they are the bearers of hope

They don't need savings

What they need is unity, because they're part of the most powerful movement for social justice today.

When former nannies and maids took action to march with their families and those of their employers, it brought us an international treaty on the rights of domestic workers.

Nepalese women who were forced into the sex industry by trafficking gangs also banded together to create the world's first anti-trafficking organization, where victims of trafficking are in charge and staff.

This Indian shipbuilder was trafficked into Hurricane Katrina recovery.

Despite threats of deportation, he escaped from his confined workplace and marched from New Orleans to Washington, D.C., against labor exploitation.

Together, they also launched a national organization of foreign workers, through which they are working with Walmart and Hershey factories to reduce exploitation and persecution in their supply chains through other workers.

And despite the Justice Department's refusal to file a case, a group of plaintiffs won the first of a dozen civil lawsuits, winning $14 million in compensation for the plaintiffs this past February.

They may be fighting, so to speak, for people they have yet to see, for other workers, or for us, the whole world.

it's time for us to do the same

Now is the time for us to show through our decisions how we should be as people and as a society. That what we used to think of as prosperity is no longer prosperity as long as it's on other people's pain.

I was reluctant to share my obachan story here.

Before I got to TED and walked on this stage, only a handful of people knew about this story, because, just like a journalist, I'm also interested in other people's stories, and not in spreading the word, much less in telling my own story.

We have not yet reached a decision on which to report this matter.

There are a mountain of document requests to submit, and there are still people to interview and their mothers.

I still don't know what happened to her after that and how she lives now.

This story I told you is rambling and unfinished.

It's also the mess we're in right now, especially when it comes to human trafficking.

we are all involved

But that's why we're all clues to the solution.

It's our job, it's our story to tell, to find out what we can do to bring about a more just world.

So let me tell you what we should have done from the beginning

I want to share this story with you.

thank you very much

(applause)

I have a confession to make. I'm an archaeologist and curator of a museum, and I do seemingly contradictory things.

I collect things for museums, but I also put things back in their place.

I love museums because they're social and educational, but what I'm most drawn to is the magic of objects: million-year-old hatchets, totem poles, Impressionist paintings, all of which take us beyond our imagination.

In the museum, in silence and wonder, we stop and ponder and look at the empire of man-made objects.

No wonder museums in the United States alone receive more than 850 million visitors each year.

But in recent years, museums have become battlefields.

No one in any part of the world wants to see their culture in a faraway institution outside their control.

We want our cultural heritage to be returned and put back in its place.

Greece is demanding the return of the Parthenon sculptures, a group of classical sculptures housed in the British Museum.

Egypt wants Germany to return ancient artifacts

New Zealand's Maori demand the return of tattooed ancestral heads in museums around the world

But these demands pale in comparison to those of Native Americans.

Museums in the United States have already returned over a million artifacts and over 50,000 Native American remains.

Let me use the example of "God of War" to explain what's wrong.

This is a wooden sculpture made by the Zuni people of New Mexico.

In the 1880s, anthropologists began collecting them as evidence of American Indian religion.

Recognized for their aesthetic value, they have come to be regarded as the forerunners of the modern art movement, which foreshadows the simple sculptures of Picasso and Paul Klee.

In a sense, with the God of War, the museum did exactly what it was supposed to do.

It introduced an unknown art form to the world and made it recognized.

On the other hand, on the other hand, museums have committed the great sin of cultural violence.

For the Zuni, the "God of War" is not a work of art, not even an object.

Existence

Each year, for the Zuni, priests ritually carve new "war gods"—Ahayudas—and perform lengthy rituals to bring them to life.

Ahayuda lives in a sacred temple to protect the Zuni tribe and to keep the universe in harmony.

No one can own or sell the "God of War"

belongs only to the earth

So the Zuni want the "god of war" to come back from the museum so that he can return to his temple home and fulfill his spiritual purpose.

What should managers do

I believe the "God of War" should be returned.

this might be a surprising answer

Because this conclusion contradicts the words of the world's most famous archaeologist, "It should be in a museum."

(Laughter) It's a line that Indiana Jones said not only for the facilitator of the film, but also to emphasize the real social value of museums.

It's not that I came to my current way of thinking easily.

I grew up in Tucson, Arizona, and fell in love with the Sonoran Desert's past.

Amazingly, 12,000 years of history were just waiting to be discovered under a mundane city mall.

When I was 16, I started taking archeology classes and I started excavating.

My high school teacher even helped me build an animal bone lab.

But in college, I learned that my career had a dark past.

Since the 1860s, Native American remains have become scientific tools, collected in the thousands to prove new theories of social and racial hierarchies.

Native American bodies were looted from graveyards and even taken straight from the battlefield.

When archaeologists stumbled upon a white grave, they often immediately reburied the remains, but placed the remains of the Native Americans on museum shelves as specimens.

War, land grabbing, boarding schools (assimilation policies), and laws banning religion made anthropologists, who believed indigenous peoples on the verge of extinction, collect religious objects.

You could call it racism or colonialism, but it doesn't matter what you call it, compared to the fact that throughout the 20th century, the rights and culture of Native Americans were being deprived.

After years of Native American protests, in 1990, the U.S. government finally passed legislation through Congress that would allow Native Americans to retrieve cultural and religious items and remains from museums.

Many archaeologists were dismayed

It may be difficult for scientists to fully understand how a piece of wood becomes a living god, how spirits surround bones.

And scientists knew that modern science, especially in the field of DNA, could capture the past vividly.

Anthropologist Frank Norwick declared, "We are doing important work that will benefit all of humanity.

I won't return anything, no matter who it is."

As a college student, it was all a mystery that I couldn't understand.

Why do Native Americans want their cultural heritage back from the places that preserve it?

How can a scientist devote his life to the study of dead Indians while ignoring the living Native Americans?

I graduated, but I wasn't sure what to do next, so I went on a trip.

One day, I visited the cell where Nelson Mandela was held on Robben Island, South Africa.

I suddenly realized

Here was the man who helped his country bridge deep social divisions for reconciliation, albeit imperfectly.

I'm not Mandela, but I asked myself, "Can I plant a seed of hope in the ruins of my past?"

In 2007, I was hired by the Denver Museum of Nature and Science as its curator.

My team came together on the idea that, unlike other institutions, we need to be ahead of the curve and face what we've gained through our collection activities.

We started with the remains in the storage room, 100 of them.

Over the months and years, I met with many tribes to discuss how to return the remains.

this is hard work

Discuss who will receive the bodies, how they will be transported with care, where they will be transported.

A Native American leader becomes the underwriter to plan the funeral of an unwillingly exhumed family.

Ten years later, the Denver Museum and its indigenous collaborators have reburied nearly every body they had collected.

we have returned hundreds of religious objects

But I've learned that this battle will never end.

The return of relics has now taken root as a major issue in the museum world.

Hundreds of tribes await their return

There is no limit to the number of museums that house relics.

All of the "gods of war" in public museum inventories in the United States have now been returned, 106 so far, but there are many more in private collections and abroad, outside the reach of American law.

In 2014, I had the opportunity to travel with Octavius ​​Seoutewa, a respected religious leader from the Zuni tribe, to visit five European museums that house the God of War.

At the Berlin Ethnographic Museum, we saw a "god of war" of questionable control.

Overzealous administrators added chicken wings to it.

The necklace was stolen once

At the Quai Branly museum in Paris, officials told us that the "god of war" was now state property and that they were not prepared to give it back.

That "God of War" is no longer for the Zuni, but for the visitors

"All the collections belong to the world," he said.

The British Museum has warned that the Zuni case would set a dangerous precedent for a larger controversy, such as the Parthenon sculptures that Greece is seeking to return.

After visiting five museums, Octavius ​​returned to his family with nothing.

He told me later, "It hurts my heart to see Ahayuda so far away.

they should all be together

It's like being part of a family that doesn't join you for dinner.

Their power will be broken if they are not alone."

I hope that my colleagues in Europe and around the world will understand that "God of War" is not a museum's end, but an opportunity for a new beginning.

When you walk through a museum's exhibition hall, you're probably only looking at about 1% of the total collection.

The rest are in storage

Even after returning 500 artifacts and bones, my museum still has 99.999% of its collection.

I don't have the God of War anymore, but I do have traditional Zuni pottery, jewelry, tools, clothing, and artwork.

And far more important than these items is the relationship we built with Native Americans through our repatriation program.

Now we can ask the Zuni to share their culture with us.

Some time ago, I had the opportunity to visit the returned "God of War."

A temple sits on a hill overlooking the Zuni homeland.

Inside the roofless stone building is a temple, topped with barbed wire to prevent it from being stolen again.

And inside they are Ahayuda, 106 "war gods" surrounded by offerings of turquoise, cornmeal, shells, and even a T-shirt.

A modern gift to an ancient being

And I stood there and got a glimpse of the true purpose of the God of War in the world.

At that moment, it occurred to me that we cannot choose the history we inherit.

It's not the current stewards who plundered the ancient tombs and stole the spiritual goods, but we can take responsibility for correcting the wrongs of the past.

We can help restore dignity, hope and humanity to Native Americans, the voiceless peoples we were once so curious about.

You don't have to fully understand someone else's beliefs to help, all you need is respect.

Museums are places of worship for relics of the past

Now it must also become a place for a living culture.

As I turned to leave the temple, I could feel the warm summer air high above me, an eagle slowly circling in the sky.

I thought of the Zuni people, and the offerings tell me that their culture survived and thrived to death, and I couldn't think of a better place for the God of War.

Thank you

(applause)

November 1, 2002. It was my first day as principal, but it wasn't the first time I'd been to a school in the Philadelphia area.

I graduated from Philadelphia Public Schools and spent 20 years teaching special classes in a low-income bottom school in North Philadelphia, where crime is rampant and poverty is among the worst in America.

As soon as I stepped into my new school, a big fight broke out between the girls.

After rushing the situation under control, I immediately held a rally in the auditorium and introduced myself, and I was the new headmaster.

(Applause) I walked in with an anger inside me, a little nervous -- (Laughter) but anyway, I thought the first thing was important.

I put all my effort into talking about how I should behave as a student, what I should learn in school.

And suddenly, one of the girls in the back of the auditorium stood up and said, "Teacher! Teacher!"

And he said, "Teacher! Teacher!"

With all eyes on her, she said, "How long are we going to call this a school?

This is not school."

In just one sentence, Ashley said it was exactly how I felt, when I was a student at a low-end school in the same area a long time ago, and I never thought I could articulate it.

The school certainly couldn't be called a school.

Fast forward 10 years, in 2012, and I was appointed as principal to my third underperforming school.

Strawberry Mansion High School became the fourth principal in four years.

It was classified as a "constantly dangerous bottom school," with low test scores and high rates of weapons and drugs, assaults and arrests.

As soon as I approached the door of my new school and was about to enter, I realized that the door was locked with a chain, and Ashley's voice came back to me: "Master!

This is not school."

The corridor is dim with poor lighting

Classrooms were piled high with old, broken furniture and desks, as well as thousands of unused study materials.

this wasn't school

Shortly after the semester started, I found the classroom almost empty.

The students were simply frightened. Even as they sat in rows, they were frightened that something might happen.

I was terrified of all kinds of violence and bullying.

this wasn't school

And teachers were so worried about their own safety that they had no expectations of their jobs or of their students, and they were completely unaware that they were complicit in destroying the school culture.

This point was the most troublesome

Yes, Ashley was right, not just at her school.

Too many schools for children living in poverty aren't really schools at all.

but this can be changed

I'll tell you what I did at Strawberry Mansion High School.

Anyone who has worked with me will tell you that I am famous for my slogans.

(Laughter) So today, I've brought you three of the best things you need to change.

The first slogan is "Leaders Lead the Way"

I've always believed that what happens at school or not is up to the principal.

I am the principal and I am expected to lead

I didn't shut myself up in the principal's office, I didn't delegate work, I dealt with anything that was a problem for a child without fear, and I didn't care if they hated me.

No leader can stand alone

So I formed a senior team of fellow believers in children's potential to work together on even the smallest of things, like making sure every child has a safe locker and every locker can be locked.

All bulletin boards in the school were brightly and colorfully decorated with positive messages.

Unlock the front gate of the school

We changed the light bulbs, thoroughly cleaned all the classrooms, put all the textbooks we didn't need in the recycling bin, and threw away a ton of old materials and furniture.

I filled two giant containers in one day.

And, of course, we undertook a radical overhaul of the entire school budget, to reallocate money to hire more teachers and support staff.

The entire school schedule has been redesigned from scratch, with a variety of start and end times Supplementary and advanced classes Extracurricular activities and counseling added throughout the school day

I reviewed the whole plan.

We've been staffing, we've identified where all the supporters and the police are, so we know where they are at all times, and we've been monitoring the school all day, and we've put in place a school-wide code of conduct that's the best idea ever, and it's called "Non-negotiable."

It was a behavioral system that encouraged positive behavior at all times.

Is it the result?

Strawberry Mansion High School was always dropped from the list of all-time-dangerous schools in my first year on the job.

leaders make the impossible possible

The second slogan is "So what? What happened to that?"

(Laughter) (Applause) After looking at the data and talking to the staff, there are a number of reasons why Strawberry Mansion High has always been the underperforming school.

Only 68% of students attend school regularly. 100% of students live in poverty, only 1% have both parents, many children have incarcerated parents or are single parents, 39% of students require assistance, and according to state data, 6% of students are good at math and only 10% are fluent in the language.

He explained to me the whole story about how terrible the situation was with the children, and I looked at them and said, "So what? What happened?

What do you do next? ”

(Applause) Getting rid of those "whys" became my most important responsibility.

By solving these "reasons" one by one, we paved the way for building an environment in which students can devote themselves to teaching and learning while acquiring the skills necessary for professional educators.

After a lot of observations, I realized that with so many talented kids out there, teachers know what to teach, but they don't know how to teach.

So we focused on teaching in small classes to meet the individual needs of every student in the class.

result?

A year later, according to state data, our test scores improved 171 percent in math and 107 percent in English.

(Applause) We have a very long road ahead of us, but now we're approaching every obstacle with the attitude of, "So what? What happened to that?"

Thus comes my third slogan

(Laughter) "On days when no one says they love you, I will."

Students have problems -- social, emotional, financial -- things you never imagined.

It can be a parent's own problem, or it can be a personal problem.

If you ask me what keeps Strawberry Mansion High School going so well, I have to say it's because I love my students, and because I believe unconditionally in their potential.

When I look at them, I can't help but wonder about their future because I'm one of them.

I also grew up in poverty in North Philadelphia.

I know what it feels like to go to a school that's not really a school.

I know what it means to think about how we can get out of poverty.

But thanks to my wonderful mother, I have acquired the ability to dream despite the poverty that surrounds me.

So -- (applause) -- if we're going to guide our students towards their dreams and their life goals, we have to know who they are.

I have to spend time with them, so I decided to run lunch every day.

(Laughter) I sit in the lunchroom and have a very private conversation with my students.

(Laughter) I often ask them, "Why do you want them to sing so badly?"

(Laughter) And the response is, "Because I like feeling special."

We meet monthly to listen to their concerns and find out what's on their minds.

They ask teachers, "Why do we have to follow the rules?"

"Why are there so many penalties?"

"Why can't I just do what I want?"

(Laughter) The students listen, and I answer each question honestly, and by listening to each other in this way, we can clear up any misunderstandings.

Every hour is education time

My reward, non-negotiable compliance with rules and penalties, my reward is their fervent respect.

I keep saying that it's the only way we can get things done together.

My students are very aware that they have high expectations of me.

Let's not forget -- (Laughter) -- I'm going to repeat the core values: focus, tradition, excellence, integrity and perseverance. I remind myself every day how education can really change our lives.

I end my daily announcements with the same words, "On days when no one says they love you, I always say."

Ashley's words, "Teacher! Teacher! This is not school," have been etched into my mind.

If we're really going to fight poverty and really improve, we have to remember that a real school is when it's going to help children in poverty.

I don't know all the answers, but what is clear is that principals are empowered and responsible for making schools fit for purpose for children in poverty.

What do you do next? ”

And when you teach, never forget that every student is just a child, often threatened only by the world's demands of what you should be. I'll tell you whenever

thank you

(Applause) Thank you, God.

I love the mystical, and I'm fascinated by science's biggest unsolved mysteries, and the reason is probably personal.

The mystery is what we are, and I can't help but be intrigued by this.

The enigma is the relationship between how the brain works and conscious experience, where experience is, for example, the taste of chocolate or the feel of velvet.

this is an old mystery

In 1868, Thomas Huxley wrote, "The emergence of a state of consciousness as a result of stimulation of the nervous system is as inexplicable and glorious as the appearance of the Genie when Aladdin rubs his lamp."

Of course, Huxley understood that brain activity and conscious experience were related, but he didn't know why.

In his time this was a mystery

Since his time, much has been learned about brain activity, but the relationship between brain activity and conscious experience remains a mystery.

why? Why is understanding so slow?

Some experts say this problem is impossible to solve because we humans lack the necessary concepts and intelligence.

Just as it seems impossible for monkeys to solve the problem of quantum mechanics, they think it is impossible for humans to solve this problem.

But I don't think so. I'm more optimistic.

I think we're just making the wrong assumptions.

If we change this, we may be able to unravel this mystery.

I want to talk to you today about what that false assumption is, why it's wrong, and how to fix it.

Let's start by asking the question: do we see reality as it is?

I open my eyes and see a red tomato a meter away.

And that leads me to believe that there's actually a red tomato a meter away.

The next time I close my eyes, my consciousness shifts to a gray world, but is there really a red tomato a meter away?

I think so, am I wrong?

Maybe we're misinterpreting perception?

Humans have misinterpreted reality through perception.

I thought the earth was flat, because that's what it looks like.

Pythagoras found it wrong

Then we thought that the Earth was stationary, that it was at the center of the universe, because that's what it looks like.

Once again, Copernicus and Galileo discovered that we were wrong.

I suspected that Galileo was misinterpreting what we knew.

He wrote, "I think tastes, smells and colors are things in our consciousness.

So if the living thing were to disappear, all these properties would disappear."

that's an amazing claim

Is Galileo correct?

Are we grossly misinterpreting what we experience?

What does modern science say?

Neuroscientists claim that one-third of the cerebral cortex is involved in vision.

When you open your eyes and look around a room, there are billions of neurons and trillions of synapses involved.

This is a bit of a surprise, because we think of vision as nothing more than a camera.

We take objective reality as a photograph.

There's a part of vision that's like a camera. The eyeball has a lens that projects an image behind the eyeball, and there are 130 million photoreceptors there, so the eye is like a 130 million pixel camera.

But this fails to account for the billions of neurons and trillions of synapses involved in vision.

What are neurons for?

Neuroscientists say that we create the shapes, the objects, the colors and the movements that we see in real time.

Like taking a picture of this room, you feel it as it is, but you're actually constructing what you see in your head.

we're not building everything at the same time

Build only what you need at the time

There's a lot of undeniable evidence that we build what we see.

let me show you two examples

In this example, there are some disks, and some of them have been removed, but if you rotate this disk a little bit, you'll suddenly see a three-dimensional cube pop out.

Of course, the screen is flat, so the three-dimensional cube you experienced must be constructed.

In the following example, a bright blue band with very sharp edges would appear to move across a surface with many dots.

In fact, none of the points are moving.

We're just changing the color of the dots from blue to black or from black to blue as we move from frame to frame.

But when you do this quickly, your vision creates an image of a moving bright blue band with sharp edges.

There are many more examples, but I've only given you two examples that show that you're building what you see.

neuroscientists are going further

We claim that we're even reconstructing reality.

In the experience of the "red tomato," it's an experience that can be accurately reconstructed, even if you haven't actually seen the real red tomato.

Now, neuroscientists don't say "construct", they say "reconstruct", right?

The standard theory is based on the theory of evolution.

Our ancestors who could see more accurately had a competitive advantage over individuals who could see less accurately, so they passed on more of their genes to future generations.

We are the descendants of those with more accurate vision, so we can confidently say that our perceptions are usually accurate.

This is what is written in standard textbooks

Here, for example, "From an evolutionary point of view, perception is very accurate and very useful."

The idea behind this concept is that accurate perception evolved through adaptation.

We believe that we have an advantage in the competition for survival.

Is this true?

Is this a correct interpretation of the theory of evolution?

Let's start by looking at some examples in nature.

The Australian jewel beetle is a pitted, glossy brown bug.

females cannot fly

Males can fly and of course seek out attractive females.

Once found, they alight and begin mating.

Let's look at a completely different species, Homo sapiens.

Males of this species use their giant brains to find cold beer.

(Laughter) When I find beer, I drink it up, and sometimes I throw the bottle away.

Then the beer bottle is dented, shiny, and has just the right amount of brown, which attracts the beetle's interest.

Males flock to jars to mate

You lose all interest in real females.

It's a classic example of a man obsessed with a bottle of liquor and leaving a woman alone.

(Laughter) (Applause) This species is nearly extinct.

Australia had to change the bottle design to save this beetle.

(Laughter) Males have successfully searched for females for thousands of years, maybe millions of years.

It seems that I was looking at the reality, but it seems that it was not

Hacking happened due to the mechanism of evolution

The female has a dent and is glossy brown. The bigger the better!

(Laughter) Even crawling over the bottle, the male couldn't spot the mistake.

You might say, jewel beetles are simple creatures, they're not mammals.

Mammals shouldn't fall for tricks like this.

I won't go into too much detail about this, but you can get an idea from this picture.

Luckily, you don't have to raise your hand to guess the answer. Evolution is a mathematically precise theory.

We can test this point by applying the equation of evolution.

We create artificial worlds in which different organisms compete, and we can see what survives and thrives and which sensory systems are more compatible.

The key concept in these equations is fitness.

Think about this steak. What does this have to do with the fitness of the animal?

For lions who are hungry and looking for food, it increases their fitness.

If a hungry lion is looking for a mate, it won't be fit.

In rabbits, steak doesn't increase fitness in any condition, and fitness, of course, depends on reality, but it also depends on the organism, its condition, and its behavior.

Fitness is not tied to raw reality. It's fitness, not raw reality, that plays a central role in the evolutionary equation.

So in my lab, I ran hundreds of thousands of evolutionary game simulations, in which many different worlds were randomly chosen and organisms competed for resources to live on.

Some organisms can see all of reality, some can only see part of reality, and some can't see reality at all and can only adapt.

Who will win?

I don't want to disappoint you, but perception of reality perishes.

In almost all simulations, only the ones that don't see reality at all, and just adapt, drive extinction to organisms that see reality as it is.

At least the direction of evolution isn't towards matching facts with perceptions or achieving accurate perceptions.

Perceiving reality leads to extinction

this is a bit of a surprise

Why would not seeing the world accurately have a survival advantage?

this is counterintuitive

But remember the jewel beetle

Jewel beetles have survived for thousands, if not millions, of years by simple visual tricks.

The equation of evolution tells us that all living things, including humans, follow the same rules as the beetles.

we don't see reality as it is

We perceive reality differently to allow us to survive.

We still need to rely on our intuition

Why is it not beneficial to perceive reality as it is?

Luckily, there's an analogy that's very helpful. Let's take a look at the interface on your computer's desktop.

Think about the blue icon that saves the TED talk you're writing.

The icon is a blue colored rectangle in the lower right corner of the desktop.

Does this mean that the text file stored on my computer is blue, rectangular, and in the lower right corner of my computer?

of course not

People who think that way misunderstand the role of interfaces.

The actual data on the computer is not there

In fact, reality is hidden

You don't have to know all the data about diodes and resistors and software.

If you do that, you'll never be able to write text or edit photos.

I think evolution provides us with an interface that hides our reality and guides our adaptive behavior.

The space and time you perceive now is your desktop

Physical objects are just icons on your desktop.

There are also clear objections

"Hoffman, if that train is approaching at 200 miles an hour and it's just an icon on your desktop, why don't you jump in head-on?"

You'll die with theory, but trains must be more than just icons.

I wouldn't run into a train for the same reason I wouldn't carelessly drag an icon into the trash, and I don't think of an icon as being literally just an icon.

Because I don't want to lose a few weeks' worth of work.

Similarly, evolution has shaped perceptual symbols to sustain our survival.

you should take this seriously

If you see a snake, don't grab it

If you stand on a cliff, don't jump off

It's a mechanism designed to keep us safe, and it shouldn't be taken lightly.

But don't take it literally.

there is a logical flaw

Another objection is that it's not a new idea.

It has long been known that physics tells us that a seemingly solid metal train is actually just tiny particles flying around in a mostly empty space.

it's not a new idea

but not exactly

The blue icon on your desktop isn't a real computer, but if you look at it up close with a decent magnifying glass, you'll see tiny pixels, and that's the reality of the computer.

No - I'm still looking at my desktop here's the point

This microscopic particle still exists in space-time, it's still the world of the user interface.

I'm going to claim something more radical than that physicist.

And finally, there's the counter-argument that, look, everyone can see the train, so no one is "building" the train.

But let's take a look at this example

In this example, everyone can see the cube, but the screen is flat, so the cube you see is what you built.

Everyone sees the cube because each person constructs the cube they see.

The same can be said about trains.

Everyone sees trains because they see trains that they build, and the same is true for all physical objects.

We tend to think of perception as a window into reality as it is.

Evolutionary theory claims that this idea of ​​our perception is incorrect.

Reality is like a three-dimensional desktop, designed to hide the complexities of the real world and act adaptively.

If the space we perceive is the desktop,

Physical objects are just icons on your desktop.

We used to think the earth was flat because that's what it looks like.

Then I thought that the Earth was the stationary center of the universe, because that's what it looks like.

but we were wrong

perception was misunderstood

We believe that space-time and matter are realities as they are.

The theory of evolution once again claims that we are wrong.

We misinterpret our perceptual experience.

There's something that exists that we can't see, but it's not space-time, it's not a physical object.

Denying the spacetime and objects we experience is as difficult as letting a jewel beetle leave a bottle.

I wonder why? because we are blind to what we don't see

But there's one thing better than the jewel beetle, and that's science and technology.

By looking through a telephoto lens, I discovered that the Earth is not the fixed center of reality, and through careful consideration of evolutionary theory, I also learned that the space-time and objects we perceive are not what they really are.

When you perceptually experience what I would describe as a red tomato, it interacts with reality, and reality is something completely different than a red tomato.

Similarly, when you perceptually experience a lion or a steak, it interacts with reality, but reality is not the lion or the steak (as you see it).

You can see the problem here, when you have a perceptual experience with your brain or neurons, you have an interaction with reality, but reality is not constructed by your brain or neurons, it's very different from what your brain and neurons are constructed of.

Reality, whatever it is, is the real entity behind cause and effect in the world, not a construct of the brain or neurons.

The brain and neurons have no causal power

does not trigger our perceptual experiences and behaviors

The images that brains and neurons construct and how they are constructed are species dependent.

What does this mean for solving the mystery of consciousness?

will open up new possibilities

For example, reality may be a complex machine that gives us a perceptual experience.

Personally, I disagree, but it's worth exploring.

Reality may be a vast network in which the sources of consciousness act, seemingly simple yet complex, and bring about individual cognitive experiences.

Actually, it's not as strange an idea as it sounds, it's an area I'm working on.

But here's the crux of the matter: once we set aside our very intuitive -- but erroneous -- assumptions about the nature of reality, new ways of exploring life's greatest mysteries open up.

I believe you'll find reality more fascinating and unexpected than you ever imagined.

Evolution presents a very bold idea. Let's admit that perception is not seeing the truth. It's like having a child.

By the way, even this TED sign was constructed in your head.

thank you very much

(Applause) Chris: If this is you in real life, thank you very much.

I learned a lot

The first thing I was wondering is that some people will be very disappointed to learn that evolution doesn't care about reality.

Donald: My theory isn't going to stop scientific progress.

What I'm claiming is that one theory that what we perceive is reality, and that reality is nearly equal to what we perceive, has turned out to be false.

the theory was wrong

Let's drop this theory

But that doesn't stop us from proposing other theories of what reality is, and the rejection of one theory is progress.

Science will continue to progress, no problem

Chris: So that's why these theories are going to evolve. (Laughter) It's great. Do you think it's possible that evolution could increase our ability to think theoretically?

Donald: That's a very important point.

In the simulations I've presented, especially of perception, perception is designed to mask reality, but that's not the case with logic and mathematics.

I haven't run any simulations to confirm this, but I believe that it will at least show that there is an evolutionary selective pressure on logical and mathematical thinking to understand the truth.

Mathematics and logic are difficult not only for me, but also for us humans.

I don't have enough understanding, but the evolutionary choice at least doesn't degenerate from true mathematics and logic.

Maybe we should look at each cognitive ability in the brain, one by one, and see how each one evolved.

The mechanics of perception wouldn't apply to mathematics or theory.

Chris: Your proposal is like a modern version of Bishop Berkley's interpretation of the world: Consciousness creates things, not the other way around.

Donald: It's a little different than Berklee.

He was a deist. He basically said that reality is God. I don't agree with Berkeley.

My approach, which I call epistemic realism, is very different.

Chris: I'd love to spend some time with this story.

Thank you very much. Donald: Thank you very much. (Applause)

This is a play called "Sell/Buy/Date"

It's my first new work since "Bridge and Tunnel" on Broadway.

Yes, everyone in this classroom, please be sure to turn off all electronic devices before starting.

Yes, you know what I just said? ―

Well done, it's a cell phone announcement.

is not it? Also called mobile phone

Remember, back in the day, people had external electronic devices, yes, something like this. Everyone carried one of these around, and their greatest fear, perhaps, and humiliatingly, was that one of them would go off at an inappropriate moment.

Good? A little bit of trivia from that era

(Laughter) Today's class structure is -- Today we're going to look at the various BERTs recorded during that time period.

It was the year the BERT program started.

This effort is just beginning

Look, you're going to be inhabiting the bodies of many different people, of different ages, and of what you would call "races" or "ethnics" at the time - you studied this in Unit 1, didn't you?

And -- (Laughter) -- along the gender continuum, it's also inhabited by men.

It was very dualistic back then.

(Laughter) And don't forget to read that unit in your textbook, because next week we'll be focusing on gender.

Some of you requested a "medicine book."

People still believe that digestion is easier to remember, but since we're trying to experience what our ancestors did, let's read it with our eyes, okay?

And how many of you are using an "emotional shunt"?

yes please don't use that okay?

It's not easy, is it?

This is essential for learning this part of the subject.

Yes Macy

Well, I get it. If you don't want to-- that's fine. Let's discuss it after class.

okay let's talk about your concerns

Relax and you won't die and be fertilized

OK After class, is that okay?

let's get started

The first target audience is middle-class housewives.

Remember, in these early records, people's personal information was all protected, and that allowed us to talk more freely about this topic, because it was a taboo subject for many people.

OK Well, if that's okay, it's fine

no boy i told you when you were ready

it's so cold

This recording studio looks like a meat storehouse

I wish I had brought something to hang

With all this amazing technology, no heating costs

what is he saying I can't hear you!

I can't hear you through the glass! a little bit!

oh i can hear it when i put this on

can you hear me too

Can you hear me all the time?

yeah it's a little chilly

Yeah, it's to cool the machine, isn't it? It's a new technology, okay?

Yeah, just to confirm, you're recording not only my voice, but also my emotions and memories, right? roger that

yeah bert i read it

"Bio-Empathetic Resonant Technology"

Yeah, so people can touch my experiences and memories, right? OK

no yes ready

I thought you were testing my memory.

I meant to tell you it's late, it's already bad news

no no let's go ahead

Is that your first question?

What do you think about prostitution?

are you inviting me brother

It's an age difference love, isn't it But you're about 20 years old?

18? 18 years old...

Over 18 years ago like there was candy in my wallet

(Laughter) I was teasing you, boy, you can ask me any question.

Prostitution of course... oh sex workers, sex workers

No, in my day we used to call it prostitution, not sex work.

Oh, you call it that because it includes porn, right?

I see

When I was a girl, I didn't even have a name like that

They said toxic magazines and toxic movies.

It's not what you see on the internet now.

I don't mind

My late husband and I were a very romantic couple.

full of kindness, you will understand

As I got older, one day I thought, what if my husband used "man's medicine," but he wasn't interested in that sort of thing, so I thought, why not watch adult movies on the Internet?

just for inspiration, you know

At the time, neither of us were very computer savvy, and when we needed help with the Internet, we usually called our kids and grandchildren, but obviously in this case, we can't do that, so we thought, let me see.

How is it? What

If you search for that keyword, you'll get -- that's right, "Wow!"

You can't imagine what you saw

First I was just trying to find a couple Where normal couples love each other But this one had way too many people doing it at once

I didn't know which part was whose body

I don't understand how you filmed this

But they missed one thing: they were in love

We did a lot of things there, but the love and fun were missing.

It's all too extreme

Like when you're doing a strenuous sport

All I need is patience, and there's no kindness there

Anyway, needless to say, $19.95, no refunds, but my card statement just said "entertainment services."

(Applause) Next target audience, ladies and gentlemen, is a young woman named Bella, a college student interviewed in 2016 in a class called "Introduction to Feminist Porn," which is part of a major in sex work at a college in the Bay Area.

(Laughter) Yeah, can I take a video? This is recording me, isn't it?

This is such an amazing experience and I want to put it on Instagram and Tumblr.

Hi everyone! It's Bella! Well, I'm being interviewed right now! Because of this wonderful Bio-Empathic Resonance technology, it's basically like this, with these electrodes, my hippocampus? We record the composition of neuropeptides from

That data can later be reconstructed as my real memories and experiences, so what I'm feeling right now can be real to other people.

ok good

Uh, hello future BERT people who are experiencing me

This is what it feels like to be a freshman in college. This headache you're having is from a hangover from the Jell-O shots you drank yesterday at the feminist pole dancing party twice a week.

It's called "Don't let Paul complain!" (Laughter) It's Beekman Hall.

For your records, I'm a sex work major, with a minor in social media studies, focused on high profile YouTube stuff.

(Laughter) Yes, of course, I definitely consider myself a feminist.

I'm named after Bella Abzug, a famous historical feminist, and I think it's important to represent sex-positive feminists.

What is Sex Negative?

Well, let me ask you what do you think? What do you think sex negativity is? (Laughter) Yes, because the language we use is very important. If we call it "sex work," it makes it easier to understand that it's work.

But I don't plan on offering sex care services directly myself. What I should do is advocacy.

You're supporting the rights of other women who choose that job voluntarily, if they enjoy it.

Yes, but I'm trying to put myself in a position to better protect the legal freedoms and rights of sex workers.

Well, I mean, I'm planning to become a lawyer.

Yes, everyone. (Laughter) (Applause) So the next two records are also from around 2016.

One of the subjects is an Irish woman who has a particularly notable relationship on this topic, but first, let's listen to a West Indian woman who calls herself a call girl, taped at a sex workers' rights rally and parade.

She was interviewed on the march, wearing almost nothing but her carnival headdress.

okay you can start with me

Yeah, like I said, you can put that wire anywhere, as long as it doesn't get in the way.

yeah no but can you say that again? What's your name - BERT? BERT

Yeah, I told you, I've had one customer with that name before, so it's not the first time for Bert and I.

Oh, I'm sorry, but interviewing me should make you feel that way.

right? can i say

No Justice No Peace! Let's do it without justice!

Did you see the placard? Do you understand? P-I-E-C-E If justice doesn't go through, you're a jerk!

Do you understand what I mean?

Yeah that's what I told you When I first came to this country I did every job I could find

You're a babysitter, you're a housekeeper for all sorts of elderly people, so I thought, if I touched another white man's ass, I'd get more money, you know what I mean?

Shhh! Do you know how hard domestic work is?

Some men are very heavy

I gotta turn it upside down

That's why I let them flip me over, you know?

If you have a sense of humor, you'll know

But it is good? Listen, who doesn't like a part of their job?

I mean, there's a lot I hate about this job But it's not about money I'll tell you As long as this is the best way to make money I'm a 'real Jamaican girl' if that's what they want to call me

No I'm not even from Jamaica That's what they sell me

My family is from Trinidad and the Virgin Islands.

My family don't know what I'm doing, but

My kids know their tuition is paid and they have books and computers This is how I give them a chance

So I don't think my job is easy, and I'm— what did you say, liberating? I don't even think

But it is good? i'm earning

Yes (Applause) Thank you.

Perfect Great Just one more drop... Just a little more... Perfect

What's your name? Peter? Matches? Peter?

Yes, so that's what makes me unique Yes, I ended up going through both First I was in a monastery and then I became a prostitute That's right

(Laughter) So a schoolgirl here in Dublin wrote about me.

"Maureen Fitzroy is a living embodiment of the whore/virgin dichotomy."

right? (laughs) Isn't it better to be hospitalized?

incoherent

probably

Yeah, yeah, but for me, it started with my father when I was a little girl.

I mean, as he said at one point, it was for useless, rotten fools and immoral people like us.

And I didn't do anything for myself

By the time I was 16, I was already having sex with my dad He wanted it to be a little secret between us and I did what he told me Of course he sent me straight to a convent in return

No, this father came to see me at the convent.

Yeah I'll leave you a note Stuffed in the brick hole behind the charity shop So we met

My dad said he was leaving his wife, I believed him until I got pregnant.

I got pregnant, Peter, and I put a note in that spot, but I never heard back from my father after that.

No, I gave him up for adoption so he could have a decent life, and I wasn't allowed to go back to the convent.

No, my sister Virginia gave me five pounds for my trip to Dublin, and that's how I got here.

Amazingly, I fell in love with a much older man, and if he wasn't a drinker, I'd be happy with that, and I married him.

He didn't drink, but he did a little heroin, right?

made me feed two

i was 18

Yeah, it's different from "Pretty Woman", I'll tell you

I don't think that Julia Roberts could have made a movie like that if she had to sleep with a man to make a few pounds.

Well, for your records, my opinion on this legalization is - no.

I don't care what these young girls say

good? The reason I do that is because I'm confused about how to live, okay? now i am 63

I'm still searching for what kind of person I am

good? I couldn't be a wife, a nun, or even a whore.

No one even asked me what I wanted to be

They were just saying, so to legalize it is to say to them, "Do it, you can't live right now."

Yes, four different perspectives. (Applause) Did you hear from four different people?

As one woman said, sex is natural, but the sex industry seems to be mechanized and industrialized.

The second woman thought that sex work was a given, liberating and feminist, though remarkably she didn't seem to want to do it herself.

A third woman was actually a so-called sex worker who didn't approve of it being liberating, but she wanted the right to economic empowerment. A fourth woman spoke not just about prostitution, but about the role of the marginalized woman in general, and those roles were impeding her self-exploration.

Another fact that most people didn't know is that the average age of girls who are drawn into the sex industry is 12 to 13 years old.

And think about how early in that society girls started being exposed to sexualized images of women.

This was a doll called "Barbie", right?

At first, I thought it was an educational tool for anorexia prevention -- (Laughter) -- but in fact, many people thought the doll was a symbol of healthy femininity, and that's why many girls started going on a diet.

do you remember? This is intentional food restriction, which starts to appear by the age of six, and self-definition based on physical attractiveness is happening at the same time, right?

yes?

yeah bradley ok that's a great point

There was a lucrative market in society at the time, where people were tricked into thinking, "If you don't look a certain way, you can't even have sex."

But girls were expected to be particularly "sexy," but on the other hand, they didn't want to be seen as "sloppy."

So this topic carries with it a sense of shame.

yes

Valerie? yeah it's really good

Of course, men had sex, too.

It's really good "That's the man"

(Laughter) (Applause) It's not easy to live in that kind of world, is it?

But it wasn't all bad.

In the early 2000s, most women thought they were entitled, and men generally thought they were making progress on the issue. And then, in reality, most people were aware of issues like human trafficking, for example, but they kept it distinct from more "recreational" adult entertainment.

So, just for a minute, folks -- because we don't have much time -- just a little bit, let's hear from a man of our time on this topic.

This subject was interviewed on the night of her bachelorette party.

Hey, can you be quiet for a second?

I'm talking to Bert right now.

oh that's your name

Is BERT the name of that thing?

No no I'm totally fine I'm almost sober I just want to be helpful

Oh, I believe in everything like this "-movement"

(Laughter) I'm actually wearing Tom's right now.

Ah, Tom's means shoes. For every pair you buy, a child in Africa gets clean water.

oh totally

But what is the question, sorry

Of course I believe in women's rights I'm about to marry a woman

(Laughter) No, but I mean, just being in the parking lot of a strip club doesn't make me kind of sexist.

My fiancée is an absolutely amazing guy A strong little girl No, she's a woman Smart and everything is amazing

Oh she knows where I am She might be in some strip club right now I'm just kidding I think she's with me

Groomsman I asked him to surprise me So he thought it would be funny But it's not a big deal

Oh we all went to business school

Wharton School

(Laughter) Oh hey you guys- yeah but this is my bachelorette party I could spend this parking lot with Anderson Cooper if I didn't mind

oh see you over there

Okay, okay, Anderson, in the first place, don't lump strips and everything else you're talking about, prostitution and everything else.

Look, you keep calling it the "sex business" or whatever, but if a girl wants to be an exotic dancer and she's 18, that's her right.

Oh, I see what you're saying, but the world seems to want to think that all men are just carnivores, so they automatically go into prostitution or something.

Like I made a vow when I got into my fraternity

All the guys I got along with were like me

We were normal, but fraternity had a stupid myth about friendship over woman

But that's not what it means to be friends more than women

It's just a joking way of saying that your friends are important and your top priority.

Oh, but it's also wrong to blame the media.

I mean, if you watch The Hangover 2, it feels like a life instruction manual, I don't know what to say.

But after seeing "The Bourne Identity," you wouldn't drive and jump over a gondola in Venice.

When I was playing GTA at a kid's house—Oh, Grand Theft Auto?

are you stupid? (Laughter) I don't care, but in Grand Theft Auto, if you're that kid, you're walking around the area, and the more cops you kill, the more points and items you get.

Besides, you can find a prostitute and you can be sexually explicit, but you can also kill her and get your money back.

That kid got a perfect score by running over several people with his car over and over again.

I think it was when I was 10

It was really scary

No, I don't think I said anything.

Okay folks, I don't think any of the men here are just random people on the subject.

Thank you, wonderful audience at TED.

See you at Sell/Buy/Date

(applause)

Our emotions affect every aspect of our lives, big and small, from our health to the way we learn, from the way we do business to the way we make decisions.

Emotions also affect how we connect with each other.

So far, we've adapted to this world, but the world we live in now is becoming more and more like this. This is a text message from my daughter last night. It's a world without emotions.

i am working to change that

I want to bring emotion back into the digital experience.

I started down this path 15 years ago-

I was studying computer science in Egypt, and had just passed my PhD at the University of Cambridge.

What I did was quite unusual for a young, newly married Muslim Egyptian wife: with the support of my husband who had to remain in Egypt, I packed my bags and came to England.

Thousands of miles from home in Cambridge, I found myself spending more time with my laptop than I did with other people.

It's very close, but my laptop doesn't understand my feelings.

Even if I was happy, I was stressed, confused, and had a bad day, but it didn't get through, and it made me irritated.

To make matters worse, even when I was talking to my family online, I felt like all my emotions just disappeared into cyberspace.

I felt homesick and lonely and cried at times, but it was the only way I could express my feelings.

(Laughter) Current technology has IQ but no EQ. High IQ, but no emotional intelligence.

So I thought, what if technology could sense emotions?

What if an electronic device could read our emotions and react accordingly, like our emotionally intelligent friends?

These questions led me and my team to develop technology that could read and respond to emotions, and our starting point was the human face.

The human face is one of the most powerful tools that we all use to communicate our social and emotional states, from joy to surprise to empathy to curiosity.

In emotional science, each facial muscle movement is called an action unit.

For example, Action Unit 12 is not the title of a Hollywood movie. It's a lip-pulling movement that's the main component of a smile.

Try it, it will make you smile

Another example is Action Unit 4, which is a move that raises eyebrows.

When you frown your eyebrows, you get unevenness and wrinkles.

It's not something you like, but it's a strong sign of negative emotions.

There are 45 of these action units that combine to represent hundreds of emotions.

It's hard to get a computer to read these facial expressions, because the action units are fast, they're subtle, they're combinable.

For example, a smile and an awkward smirk.

Somewhat similar, but very different in meaning

(Laughter) Smiles are positive, and artificial smiles are often negative.

You can become famous for your smirk

But seriously, it's important that the computer can read the difference between the two facial expressions.

What should I do?

We give our algorithm tens of thousands of examples of genuinely smiling people of all races, ages and genders, and we do the same with smirks.

Then, through deep learning, the algorithm looks for bumps and wrinkles and changes in shape on the face, and learns that smiles have common traits and smirks have nuanced traits.

After that, when you encounter an unknown face, you basically recognize that this face has the characteristics of a smile, and you say, "Oh, okay, that's a smile."

The best way to show how this technology works is to demonstrate it here. Can someone help me, preferably someone with a face?

(Laughter) Let Chroy help you.

Over the last five years, we've gone from being a research project at MIT to being a company, and my team has been trying to make this technology work in the "outside world," so to speak.

We also made it compact so that the core of the emotion engine could be used on a mobile device with a camera, like the iPad.

let's do it

As you can see, the algorithm recognized Chroy's face, represented by the white squares, and it tracks the main parts of the face: the eyebrows, the eyes, the mouth and the nose.

Can you read facial expressions?

try the machine

First, show me your poker face, which is nice. (Laughter) Then there's your smile.

When she smiles, you can see the green bar going up.

It was a big smile

Make a smile to see if the computer can recognize it

I can recognize you even by your smile

I had a hard time with this

A raised eyebrow is a sign of surprise.

A frown is a sign of confusion.

frown perfect

These are all different action units, and there are still many others.

I've only shown you part of it

You can have it read the data points for each emotion, and together they can represent different emotions.

On the right side of the demo - with a look of joy

This is joy, isn't it?

Then give me a look of disgust

Remember when Zayn left One Direction?

(Laughter) My nose also wrinkles.

His emotional valence was pretty negative, so he must have been an avid fan.

Emotional valence is how positive or negative an experience was, and engagement is how strongly you express it.

Imagine Chroy being able to tap into this real-time emotional stream and share it with others.

Thank you very much

(Applause) So far, we've collected 12 billion emotional data points.

The world's largest emotion database

We've gathered from 2.9 million facial videos, people who have agreed to share their emotions, from 75 countries around the world.

this is increasing day by day

It's beyond my imagination that emotions are so personal and can now be quantified on such a scale.

So what have we learned to date?

is gender

The data confirms what you are vaguely aware of.

Women are more expressive than men

Not only do we smile more often, we smile longer, and we can now quantify things that men and women respond differently to.

What about cultural differences? In America, women are 40 percent more expressive than men, but interestingly, in the UK, there's no gender difference.

(Laughter) Age. People over 50 are 25 percent more emotional than younger people.

Women in their 20s smile much more often than men their age, which may be what you need on a date.

The most striking thing about this data is how expressive we are all the time, even when we're sitting alone in front of our electronic devices, and not just when we're watching cat videos on Facebook.

Whether you're writing an email, texting, shopping online, or preparing to file your tax return, you're expressive.

Where is this data now being used?

The study of how we interact with the media -- that is, understanding things like virality and voting behavior -- and it can also be used for empowerment and emotion-based technology.

Understanding Emotions Eyeglasses can help blind people read other people's facial expressions, and they can also help people on the autism spectrum understand emotions, which they struggle with so much.

In education, a learning app could pick up on a student's expression of confusion or boredom and adjust the pace of learning, much like an experienced teacher would in a classroom.

What if your watch could monitor your mood, or if your car could sense how tired you are -- or if your refrigerator could sense your stress and lock itself to prevent you from binge eating?

When I was in Cambridge, what if you could use real-time emotional streams to share your emotions with your family back home in the most natural way, as if you were in the same room?

Five years from now, every electronic device will have an emotional chip, and if you raise your eyebrows at your electronic device, you'll forget the old days when you didn't say, "You didn't like it, did you?"

The biggest challenge was realizing that there were so many uses for this technology that our team couldn't develop it all on its own, so we made the technology available so that other developers could develop their own.

We also recognize the potential risk, the risk of being abused, but personally, after years of work, I believe that the benefits to humanity from highly emotionally intelligent technology far outweigh the risks of abuse.

I would like to invite you to participate in the dialogue.

The more people who know about this technology, the more feedback we can get about how to use it.

As our lives become more digital, we're in a losing battle to forego our electronic gadgets in order to reclaim our emotions.

Instead, what I'm trying to do is bring emotion into technology and make it responsive.

We're trying to reconnect people with the electronics that separated us.

By humanizing technology, we have the perfect opportunity to rethink how we interact with machines.

thank you

(applause)

To start with, I think it's about simplicity, I think it's a good idea to look at TED.

But it's a complex thing that even the best artificial intelligence can't comprehend. I think it's simple and understandable to my dog, but it's probably beside the point.

(Laughter) I think you'll enjoy it.

And if you're like Hans Rosling, this TED talker, you'd think it would be complicated and difficult, but in his case, yesterday, he had a secret weapon.

To be honest, I thought I'd swallow a lot of things today, but I gave up. He did it. It's amazing.

Now, the fairies in Shakespeare's plays exist not only because we are stupid, but because we are easily deceived. In fact, Shakespeare says that we go to the theater to be deceived, and expect to be deceived.

Going to a magic show is also to be deceived

It makes a lot of things fun, but it also makes it harder for us to understand the world we live in and ourselves.

My friend Betty Edwards, author of "Paint on the Right Side of the Brain," showed these two table pictures to her students and said, "The problem with learning to draw is not that you can't move your hands, but that your brain's understanding of images is wrong.

The brain tries to understand images as objects rather than seeing them as they are.

As proof of that, the shape and size of these two tables are exactly the same.

She did it out of cardboard, but I've got a good computer, so I'm going to spin this little one...

I've seen this hundreds of times, and I do it every time I give a talk, and it still doesn't look the same in shape and size, and so do you.

What are the painters doing? measure

measure very carefully

If you measure carefully with an outstretched arm and a straight stick, you'll find that the two are exactly the same size.

In the ancient Jewish scriptures, it says, "We see things as what we are, not what they are."

I'm very curious what happened to the person who saw this through so long ago, if he or she came to the ultimate conclusion with that line of thinking.

If the world isn't what you see it is, and you see yourself there, then what we call reality is a daydream, a kind of hallucination that's going on inside your head. Understanding that we actually live in a daydream has been one of the greatest epistemological barriers in human history.

So what you think is simple and understandable may not actually be so, and what you think is complicated may be simple and understandable.

we have to understand ourselves somehow to overcome our shortcomings

It's like a noisy communication channel

You can't learn how to see unless you're aware that you're blind.

Once you get back to a very humble level, you'll be able to find your way of looking at things.

Especially in the last 400 years, humans invented the "mini-brain," a small accessory to the brain that helps us see the world in a different way.

There are sensory tools, such as telescopes and microscopes, and there are theoretical tools, which are different ways of thinking, and most importantly, the power to change the way we look at things.

I will tell you

A shift in perspective, a change in our perception of what we think we're receiving, has been a force for more progress in the last 400 years than in all previous history combined.

But as far as I know, that's not taught in American high school education.

When we move from simple to complex, it's time to do more.

I would love to do it, but if I do it wrong, the simple things can become complicated, and I'll be doing it for a long, long time.

Yesterday, Murray Gell-Mann talked about "emergence," which you might call "architecture," as a metaphor for taking the same old materials and thinking about how to combine them in ways that are neither obvious nor simple.

In fact, the fractal beauty of nature he was talking about, having similar descriptions on multiple levels, extends down to the elementary particles, which are solitary yet cohesive and moving around violently.

These three points manifest themselves at different levels of seeming complexity in our world.

But how simple?

When I saw Rosling's Gapminder a few years ago, I thought it was the best way I'd ever seen to convey complex ideas in a concise way.

But I also thought it was too simple.

So I did a little bit of digging to see if such a simple description of trends over time would actually fit other lines of research and ideas, and I've found that they dovetail very well together.

Rosling allowed us to simplify the data without dropping important pieces of it.

On the other hand, yesterday's footage of the simulation inside the cell, as a former molecular biologist, I didn't like it at all.

Not because it's not beautiful, but because it misses something that most students fail to understand in molecular biology: how is it possible that two complex shapes could find their perfect match, combine, and catalyze?

What we saw yesterday was that all reactions are by chance, they just come down from the sky and bounce and something happens.

But those molecules are spinning a million times per second, and every two nanoseconds they're twirling around, jerking together, banging into each other.

If you don't have that model in your head, what's going on inside your cells can seem very mysterious and accidental.

Another mistake we make is to confuse mature complexity with an actual understanding of the principles.

In middle school, a 14-year-old student receives an explanation of the Pythagorean theorem like this, which is a very subtle and interesting proof, but it's really not a good way to start learning about mathematics.

It's easier to understand and gives you a sense of mathematics, and it's closer to Pythagoras' own proof. Like this, add three identical triangles, surround quadrilateral C, copy it, and you can move the top two triangles down like this.

Then it seems that something will fit in the two empty parts

bingo! That's all

These are the proofs that you need to learn to understand what they mean when you study mathematics, before you look at the 1,200 or 1,500 proofs of the Pythagorean theorem that have been discovered.

Now let's move on to the children

I have a very unique teacher who teaches kindergarten and grade 1. He's a natural mathematician.

She's like a jazz musician who never studied music, but she does a great job. She has a sense of mathematics.

These are her six-year-old students, and she's letting them make shapes out of shapes.

Everyone chooses a shape they like: a rhombus, a square, a triangle, a trapezoid, and then a larger one of the same shape, a larger one, and so on.

I think you can see that the trapezoid is a little difficult.

In every class, this teacher makes the students do it first like an arts and crafts class, then like a science class.

I made a work of art like this

And then I'm going to have them do a little bit of tedious work while they're watching it, and I thought about it before they taught me, but I'm going to take the time to let them think for themselves.

Students cut out a small piece of cardboard and glue it on.

The ultimate goal is to fill in this table.

What do you notice here?

Lauren, a six-year-old student, noticed that the first had one, the second had three more, for a total of four, the third had five more, for a total of nine, and so on.

She soon realized that the number of shapes she added to the edges was always incremented by two, and she was very confident in how she came up with the numbers.

Lauren knew it was a squared number until about 6. What she didn't know was what 6 times 6 was, and what 7 times 7 was.

this was lauren's method

Gillian Ishijima gathered the students' creations in front of the classroom and laid them out on the floor.

No matter what the shape is, the law to grow is the same

Now, for all of you mathematicians and scientists out there, you'll recognize two sequences of numbers, the first-order difference equation and the second-order difference equation, that a six-year-old devised.

That's surprising

This isn't something you normally try to teach a six-year-old.

So let's see how computers can be used in this way.

First of all, let me show you a little bit of what the kids are doing.

use the software we have in our $100 laptops

I'm going to draw a small car here.

You'll have a small object, you can also see what's inside.

Click here to turn the car

You can create a script just by dragging. Let's run it.

You can also operate your car here

"Bend by 5"

So what happens if we bring this down to zero?

Go straight ahead. This is a surprise discovery for a nine-year-old.

Let's try to do this in the opposite direction

But driving like this isn't satisfying. Children want a steering wheel, so I draw a steering wheel.

We'll call this the "handle"

Here is the "handle direction"

Turning the handle changes this number to negative or positive.

Drag the name part of the number that comes up here and drop it into the script, and now you can use the steering wheel to drive.

this is interesting

You know how much kids struggle with variables, but by learning through examples like this, you'll never forget what a variable is and how to use it in one experiment.

Let's imitate the method of Mr. Ishijima

If you look at this script the speed is always 30

By running this script repeatedly, the car will move.

If you put a small dot each time, the dots are 30 apart, so they are evenly spaced.

What if we apply that 6-year-old sequence? If you increase the speed by 2 each time, the distance traveled will increase accordingly.

What does this tell you?

And we got the illustration of the acceleration that the nine-year-old we're going to see later.

How did they do science?

(Video) Do you think the objects fall to the ground at the same time?

very heavy

Don't get distracted by what other people are doing!

who got the apple?

(Alan: I'm using a stopwatch)

What became? Result is?

(Alan: Stopwatch is not accurate enough)

0.99 seconds

Then write sponge ball...

There's a cannonball and a sponge ball, and they're completely different weights, but if you drop them at the same time, they might fall at the same speed.

Drop it

Aristotle obviously didn't ask his children about this, because he didn't bother to experiment, and neither did St. Thomas Aquinas.

Galileo, an adult who thought like a child, did the first experiment just 400 years ago.

There's about one child in a class of 30 who jumps straight into the main topic like this.

Taking a closer look at this...

We could record the ball drop on video, but it might be hard to tell even if it's frame-by-frame.

So try lining up the frames horizontally or stacking them.

And the students will see this and they'll yell, "Oh, it's accelerating." They'll remember four months ago when they moved the car sideways, and they'll start measuring what the acceleration is.

What we're measuring is the distance from the bottom of one ball to the bottom of the next one-fifth of a second, and it's going to get faster and faster like this.

Students will say, "constant acceleration."

i have already done this

How can I be sure that it actually is?

It's hard to tell just by recreating it in situ, but as you recreate it and compare it to the actual video footage of the experiment, you know that you've got an accurate physical model.

Galileo did this in a very clever way, by rolling a ball over the strings of the lute.

I added a picture of the apple, just to remind you that this is a Newton's apple story, but it's a great story.

I'm going to show you just one thing using a $100 laptop, and I think I can show you that the OLPC (One Laptop per Child) project will work.

Gravitational force increases the speed at a constant rate, so the spacecraft will speed up, right?

It's a game made by children, and if you don't do it right, the spaceships will collide.

But if you defy gravity here, see... Oops!

(laughter) again

look it worked

I'd like to end this talk with two quotes. Marshall McLuhan said, "Children are the message we send to the future." But when you think about it, they are the future we send to the future.

Forget the message. Children are the future. Children in developed countries, emerging countries, and especially developing countries, need wise leaders.

This summer we're going to make 5 million of these $100 laptops, next year maybe 50 million.

But we couldn't create 1,000 new teachers to save lives.

We've been able to create things with technology, but what's missing is something that takes you from a simple chat program to a much deeper level.

I think we need to solve this with a new kind of user interface, which we could build for a hundred million dollars.

It sounds like a lot of money, but how much do you spend in Iraq for 18 minutes? We're spending $8 billion a month, so it's $100 million for nine hours, so it's actually cheap.

And Einstein said, "Things should be as simple as possible, but no simpler than that."

thank you for listening

Blooddock, in western Allegheny County, Pennsylvania, is located about 9 miles from Pittsburgh on the old road along the Monongahela River.

This mill district is home to the Edgar Thompson Works, the first steel mill founded by Andrew Carnegie.

It's the oldest steel mill in the region, in operation since 1875.

I've been shooting for 12 years, combining portraiture, still life, landscape and aerial photography, with the goal of visually archiving and addressing the link between the steel industry and environmental and health issues that affect so much of our families and communities.

Many of the tales of Blooddog are about businessmen and labor unions.

The protagonist of the current story is an urban pioneer who is carving out new frontiers to serve as a billboard for the revival of the Rust Belt region.

The mainstream media won't mention it, but this place is majority black.

Our existence has been hidden, silenced, erased

I grew up at 805 Washington Avenue, near the corner of Eighth Avenue, under the patronage of my grandmother in a fourth-generation matrilineal family.

My grandmother used to be a manager at Goodwill.

mother was a nursing assistant

My mother witnessed steel mill closures and white community development migration.

By the time I reached my generation, local, state, and national levels of investment had withdrawn, infrastructure had crumbled, and the war on drugs had crippled communities.

My grandmother's stepfather was one of the few black pensioners who retired from Carnegie Steel Works.

I worked in the heat, built and dismantled blast furnaces, and cleaned slag.

The history of a place is written in human bodies and landscapes.

For example, in high-traffic areas, exposure to benzine and metal particles increases the risk of cancer and inflammatory diseases.

The rehabilitation program, which had 652 employees and 123 beds, was scaled back.

The Talbot Towers complex was also removed after a housing discrimination lawsuit against Allegheny County.

Since then, there has been a recent reclassification into lighter industry.

This footage from Google Maps and Google Earth shows combustible waste trying to evict the Byrne family.

In 2013, I flew in a helicopter and filmed this forced eviction on camera.

There were countless white parcels lying around, all belonging to a recycler who, according to the company, said they were eco-friendly, recycling tons of tires to protect and improve people's lives.

My job is to unearth hidden histories, from the familiar to the world.

I recently did an exhibition with Isaac Byrne at the Seattle Art Museum, and the purpose of the exhibition is to create a space for him to have a voice.

We will continue to fight historical obliteration and social inequality by replaying our stories.

thank you

(applause)

The first time I uttered my prayer was in a cathedral with stained glass

Kneeling long after the meeting was over Dipping my hands in holy water Crossing my chest My little body sank like question marks all over the wooden pews.

When I begged Jesus to "fix me" and he didn't give me an answer My sins were burnt like sugar on my tongue I made silence my friend in the hope that my mouth would melt away But the shame left a lasting aftertaste

And in retraining me to integrity, my mother shows me the miracle that I can be anything

I decided, "Okay, I'm going to be a boy!" I decided, "Okay, I'm going to be a boy!"

it's cute

With a baseball cap on my head, a toothless smile and scraped knees as cool fashion, I played hide-and-seek with what was left of my ambitions.

of games other children can't play

I was the winner I walked the tightrope between awkward boys and painful girls in the riddles of anatomy, questions that were asked and unanswered But boyhood was no longer cuteness at 12

A sentimental aunt who misses my knees peeking out of my skirt Reminds me that behavior like mine will never bring a 'husband' into a family - I exist for heterosexual marriage and childbearing.

I endured their rapid-fire insults.

Of course I never stepped out of the closet

But school kids forced it open

They called me by a name I'd never heard of "Lesbian" But I was more Ken than Barbie, more a boy than a girl

I hated my body, but I loved it enough to let it be.I treat it like a home.When the house falls apart, I won't move out.I'll try to make myself comfortable in it.I'll make the floors clean enough to invite guests and make the floors strong enough for everyone to stand on.

But my mother fears I'm comparing myself to a vanishing object.

Maya Hall, Lyra Alcorn, and Blake Brookington were ringing in my mother's ears

My mother fears that I will die quietly and become a topic of condolence in the neighborhood.

My mother accused me, "You've turned into a mausoleum, a walking coffin, news headlines are a spectacle of your identity, you're rumored to be Bruce Jenner, and the ruthlessness of living in that body is just a note on the page to be fair."

We're not considered human because we're more ghosts than flesh People fear that my gender expression is a scheme, that they're demons, that they're trying to trap me if they don't want to.

They push me back into the closet and line me up with other skeletons

I'll be the best crowd

How easy is it to lure people into a coffin and mistype a tombstone?

And people will still wonder why there are so many boys who are dying, they're disappearing from high school hallways, quickly becoming social media hot spots, and fearing that run-of-the-mill class debates will become doomsday.

How long will it take before transgender suicide notes are flooded and we realize our bodies are lessons about sin and we learn how to love them

Like God didn't save all these souls and mercy Like my blood wasn't the wine that washed Christ's feet

my prayers are now stuck in my throat

Maybe I'll get better in the end Or maybe I won't care Or maybe God has finally heard my prayers

thank you

(applause)

My story begins in the northern part of the Galapagos Islands, in 50-foot-deep water, with a large shoal of sharks overhead.

For about a week, I was scuba diving with a group of friends.

Diving that day was particularly difficult.

the waves are so rough

I had to keep one arm outstretched while holding the camera set firmly.

I thought it would work

until it happens

It was a very bad situation.

When I pulled my hand back, I saw long, black sea urchin spines penetrating my glove, which meant penetrating my hand.

this is bad

Of course, it's bad to have something going through your hand, but in this case, sea urchins are venomous, and if you've ever been stung by a sea urchin spine, you know that where the spine is, it hurts and becomes very inflamed.

But at that time, even that didn't come to mind

I just couldn't believe my eyes

I couldn't believe that what was in front of me was my hand.

In times of crisis, I have a habit of spawning a little scientist alter ego and speaking with deep analysis.

I had no composure to analyze, my adrenaline brain kicked in, and I just yanked the thorn hard.

I don't remember pulling it out myself.

I just remember thinking, "If there's a thorn here, I can't take off my gloves."

When I took off my gloves, a big black mist came out in front of my eyes.

And then my biologist's brain shows up and starts shivering.

"How could all that poison have entered the wound!"

And then my physicist brain pops up and calmly explains to me, "No, no, it's 15 meters deep, so the light in the red wavelengths is attenuating.

The mist isn't black, that's blood

And there's a group of sharks

What are you going to do now? ”

I wrapped the cummerbund around my waist so tightly around my hand that I just swam away.

"I need to get a little bit of that big blood cloud before I can get through the shark school."

As I face the surface, my warm-blooded mammalian brain goes into total panic and utters rapidly, "Sharks don't eat when they pack. Sharks don't eat when they pack.

It's always been like that, hasn't it?"

didn't eat the shark

It seems that the shark was reading the same textbook as me.

(Laughter) Now, as a result, when I got stabbed by a sea urchin thorn, it took me two days to get to the nearest hospital.

Put your hands in as hot water as you can stand and keep adding boiling water until you feel like you're going insane.

Well, the procedure worked, and after that, the hand itself wasn't working very well for a few weeks, but little by little, it started to work fine.

But even though the rest of the body healed, there was still pain and a lump in one area for weeks.

And what we found was that when we pulled the spines out of the sea urchin, the ends of the spines were stuck in the joints, and the fingers didn't heal.

The orthopedic surgeon said, "You should take it out.

There's no need to rush."

We decided to have a minor surgery a few weeks later on Monday.

And the Friday before that, I broke my pelvis in a horseback riding accident.

(laughs) That's right.

Finger surgery has been postponed.

I had a broken pelvis, so I had to spend six weeks on the couch, and if my friends weren't around, I would have gone crazy.

Every night for weeks, a bunch of my friends would come and it would be like a party.

I had a meal and was entertained

it was a great environment

But that enthusiasm doesn't last long. Eventually, only one friend showed up. During the day, he texted me jokes, and at night, he came to my house and stayed by my side.

When the doctor finally told us that we could do the weight-bearing motion, we loaded the car with the telescope and drove into the mountains to look at Comet Hale-Bopp.

yes we are geeks

and got caught in a landslide

(Laughter) Right? Really? is what I think

yeah i'm kidding

(Laughter) No more disasters, on the contrary.

It's been 21 years since then, and for 19 of those years, I've been married to that lovely, shy man.

We have a wonderful 14-year-old daughter who drew this illustration.

(Cheers and applause) Yay!

A piece of advice from a senior: Nothing seems to make you more attractive than needing a walker on your first date.

In this story, I'm not talking about a hole in your hand, or a shark, or a hand in boiling water, or a broken bone.

this is a love story

It's a love story with a slightly funny ending.

Now that I'm able to move, I decided to readjust the surgery and remove the thorns.

But I didn't need it anymore

Because when you break a bone, your body collects calcium from every bone in your body—even those little sea urchin spines that happen to be stuck in your knuckles.

That's right, part of my pelvis is now made of sea urchins.

(Laughter) So I have a biologist's brain, a physicist's brain, an adrenaline brain, a warm-blooded mammal's brain, and now I have a sea urchin brain.

But don't worry, my family tells me that one of the things they love about me is that I'm not completely human.

(laughs) Thank you very much.

(applause)

I was back in Ohio this summer for a relative's wedding, and while I was there, I had an autograph session for "Frozen."

It wasn't an official Disney event, so it's not the real Anna and Elsa.

These two were doing princess parties as a business.

on your child's 5th birthday

If a princess sings and sprinkles fairy dust, she'll be happy

There's no way to miss the popularity of Frozen, which has become a social phenomenon.

Here's Anna and Elsa at the toy store on Saturday mornings to pick up the kids, and a lot of kids come to buy Disney stuff and have their picture taken with the princesses.

It's like Santa's event ignoring the season

(Laughter) My three-and-a-half-year-old niece, Samantha, was one of those kids.

In consideration of copyrights, the signatures that can be used for posters and coloring books are Anna, not Anna, so children don't mind.

(Laughter) For Samantha and the 200-plus kids in the toy store parking lot, it was Anna and Elsa from the movie.

It was summer that morning, and it was scorching hot in Ohio.

I went there at exactly 10 o'clock when the hall opened, but it was still number 59.

By 11:00, I was called from 21st to 25th. I thought this would be long. For children whose bodies and minds are on the verge of exploding in the heat, no matter how many free face paints and tattoo stickers there are, it doesn't matter.

(Laughter) It wasn't until 12:30 that our number was finally called, and we said, "Hey, 56 to 63, please."

When you enter the venue, you will be greeted by an amazing sight that looks like the snowy landscape of Norway has been turned upside down.

(Laughter) Cardboard-cut snowflakes covered the floor, glitter on every surface, icicles all over the walls.

I put my niece on my shoulders so that I could see her better than behind the mother of number 58 when we were standing in line.

As the line progressed, my niece's excitement only increased. Finally, I was at the front of the line, and in front of me was the 58th girl with her poster unfolding.

Well, to be honest, I was pretty excited too.

(Laughter) I was dizzy with the excessive snow and ice decorations.

(Laughter) So when I got to the front of the line, the exhausted attendant turned to my niece and said, "You're finally next!

come down? Or is it okay to have a photo shoot on your father's shoulder? (Laughter) As for me, I was "frozen" right there.

(Laughter) Quite unexpectedly, I started asking myself: What am I? is the question

Are you Samantha's aunt? Are you a gay rights activist?

A lot of people have seen my last talk about breaking down walls, and here's a perfect example.

But at the same time, there is nothing more important to me than my niece, and a common struggle began: I was torn between the two, and I couldn't choose between the two.

Prioritize yourself as an activist

What if I took my niece off my shoulder and said to the clerk, "I'm her aunt. I'm not her father. Isn't it inconsiderate to judge her gender just by looking at her hair and her piggyback?"

Then prioritize the position of aunt

Why don't you just ignore the staff's words and take pictures without worrying about unnecessary things and just enjoy this moment to the fullest? But if you choose that, you'll leave the store feeling ashamed that you didn't raise your voice.

then who should be

Which one should I take care of Which role should I give priority to?

is it your aunt? Or are you an activist?

there was no time to hesitate

Right now, it is said that there is a lot of polarization going on in the world.

Everything is told in black and white, good and bad "we" and "them"

There are no gray areas or middle ground, only polarities.

Bipolar is when two thoughts or opinions are polar opposites of each other, 180 degrees opposite each other.

It's easy to ask which side you're on.

Completely, from the bottom of my heart, "anti-war, preferring maternal health, anti-death penalty, pro-firearm control law, immigrant-friendly, and pro-labor union"?

Or is it completely, uncompromisingly "pro-war, pro-life, pro-death penalty, believes in the right to bear arms in the U.S. Constitution, anti-immigrant, pro-business"?

All or nothing, enemy or perspective

This is what duality is all about

Bipolarity and absoluteness are a problem because they eliminate our unique personalities and backgrounds, which in turn makes us incompatible with who we are as human beings.

What do you do when you're torn apart into two poles? No matter which one you take, it's different from reality

What is the opposite of "bipolar"?

It's not a perfectly harmonious ideal world that will never come true. I think the opposite of "bipolarity" is "duality."

Duality is about having two sides, but they're not 180 degrees opposite, they're coexisting at the same time.

Impossible?

I know people who do, Catholics who approve of abortion, hijab-wearing feminists, anti-war veterans, and members of the National Rifle Association who support gay marriage.

So do my friends and family, so does the majority of society, so do you and me.

(Applause) Duality is the ability to keep both elements together.

But the question is, can both sustain themselves?

Do you have the guts to make it compatible? is

I work at a restaurant in the city, and I'm a hall clerk.

I became very good friends with the hall assistant.

He was fluent in Spanish, because he's from Mexico.

(Laughter) I got the order wrong.

He didn't speak much English, but his Spanish was much better than mine.

For us, our differences were not barriers, but rather our commonalities brought us together.

We came from very different backgrounds, but we were close.

Originally from Mexico, she went to the United States alone to help her family find comfort.

I was a devout conservative Catholic, a kid who believed in traditional family values ​​and stereotypical gender roles.

(Laughter) Still, I talked about my girlfriend, and I was shown pictures of my family that I left behind in Mexico.

We became friends while talking like that.

One day, in the staff room, when there was an unusually low number of customers, we sat around a small table eating our meals in a hurry, when the newcomer in charge of the kitchen--by the way, he was my friend's cousin--showed off his bravado and masculinity to the best of his ability and sat down.

(Laughter) And I asked my friend in Spanish, "Does Ash have a boyfriend?"

My friend replies in Spanish, "I don't have a boyfriend, I have a girlfriend."

Then the newcomer said, "She?!?"

And my friend put down his fork and looked him in the eye and said, "Yeah, I have a girlfriend, that's all."

The newcomer, who had been smirking arrogantly, suddenly became weary, grabbed his plate, left the room, and went back to work.

my friend never made eye contact with me

I put down the plate and went back to work, it was a very short conversation, just 10 seconds.

The two had a lot in common on paper—language, culture, history, family—and her local circle was her lifeline, but her own ethical standards surpassed it all.

A little later, they were joking in the kitchen in Spanish, and it had nothing to do with me. This is duality.

I'm torn between my own culture and traditions and the fairness of representation towards gays.

I didn't get stuck between family, relatives, and friendships.

I'm glad I didn't have to choose between Christ or Ash.

(Laughter) (Applause) Her own ethical foundation was so strong that she had the guts to stand up for both.

We all have a responsibility to stick to our ethics.

That's what it means to support something, and if you decide to support it, you should actively support it.

I had a family friend who used to call my girlfriend "mistress" all the time.

It's just a "lover"

It's too nasty to express, just like the image of 70's lesbian porn

(Laughter) But he was just trying to be considerate, so he asked.

Some people call me "friends," others call me "friends" or "special friends."

It's still better if you ask me.

I'd rather be called "mistress" than say nothing

People often say things like, "Hey Ash.

I don't care about race, religion, sexuality

I don't look at people like that, and I'm not interested."

But the opposite of homophobia, racism, xenophobia is not love, it's indifference.

Not seeing me as gay is the same as not seeing me

If you're not interested in whether my romantic partner is a man or a woman, you won't understand how I feel.

The feeling of a small victory when you've made it through without letting go of your hand

The tremendous feeling of defeat and disappointment when you let go

If you don't see the conflict unique to homosexuals because you're gay, it's the same as not seeing me as a person.

If you want to be someone who understands, you have to see me as I am

As an individual, as a person who understands, as a human being, it is necessary to have the ability to stand up for both good and bad, easy and difficult.

This ability doesn't come easy, it comes from core strength.

And what if "duality" is just the first step?

What if, through compassion, empathy, and human interaction, we can build both?

If you can do 2, you can do 4, if you can do 4, you can do 8, and if you can do 8, you can do 100.

Human beings are complex and a mass of contradictions.

I have a lot of things at this moment

What can I do to hold a little more in there?

Now back to Ohio

At the front of the line, I put my niece on my shoulder and was called "Dad" by the exhausted attendant.

It's very rude to get the gender wrong, isn't it?

No, it's a problem before that.

You were called something you weren't?

Speaking of my feelings at that time, in an instant, conflicting emotions began to swirl in my heart.

It's a mixture of resentment and humiliation that makes me sweat, and I feel like I'm being watched by everyone in the store, and at the same time, I'm invisible.

I want to explode in anger and start preaching, but I feel like I want to go in if there is a hole.

And to top it all off, I was wearing a tight purple T-shirt that didn't fit the pattern at the time, so the people in the store should have been able to see my breasts, so it's impossible for me to be mistaken for my gender.

(Laughter) But no matter how hard you try to look like the right gender, things like this happen.

And with all my being, I don't want my sister or her, much less my niece, to know that I'm going through something like that.

I'm used to being hurt like this, but I will protect the people I care about no matter what.

But then, when I let my niece off my shoulders and saw my long-awaited niece run up to Anna and Elsa, all those feelings disappeared.

The important thing is my niece's smile

After waiting for two and a half hours, the 30 seconds that finally came around came to an end, and as I was cleaning up, I met the eyes of the staff again, and the staff smiled apologetically and lip-synced, "I'm sorry!"

(Laughs) The clerk's humanity and his honesty in acknowledging his mistakes made me lose my strength in an instant, saying, "It's a common occurrence, but thank you."

In that moment, I realized that I don't have to choose between being an aunt or an activist, I'm both.

It is possible to live in duality, both can stand

In that situation, I was able to stand both, so I realized that I could stand more.

When I saw my niece walk out the front door holding my girlfriend's hand, I asked my sister, "Was it worth it?"

"Sister, what nonsense are you talking about?

You can tell just by looking at his face! It's the best day of her life."

(Laughter) "It was worth the two-and-a-half hour wait in the heat. It paid for the expensive coloring book. I had the same one at home."

(Laughs) "It's worth it for my sister to call me 'Dad'."

(Laughter) In fact, for the first time in my life, I really felt that way.

Thank you to everyone at Boulder

(applause)

William Muir, an evolutionary biologist at Purdue University, studied chickens.

He was interested in productivity, and I'm sure you're also interested, because with chickens, it's easy to measure, just count the eggs.

(Laughter) Muir devised a brilliant experiment to find out what makes chickens more productive.

To live in groups, chickens first chose one normal group and isolated that group for six generations.

Then we created a second flock, and we took the most productive chickens -- let's call them super chickens -- and thus we created an elite flock, and in each generation we selected only the most prolific chickens.

Six generations later What were the results?

The first normal group was doing very well.

All the chickens were plump and full of feathers, and egg production increased dramatically.

As for the second group

All but three were wiped out

Because he killed another chicken by pecking it.

(Laughter) Individually prolific chickens were successful because they stifled the productivity of other chickens.

Now, I've traveled around the world talking about this, and I've talked about this with all sorts of organizations and companies, and people who listened to it immediately recognized the relevance and said to me, "That bunch of super chickens is my company."

(Laughter) Or, "My country."

or "it's my life"

All my life, I've been told to race for the top, get into a good school, get a good job, get to the top.

I've started and run businesses because I enjoy being creative, and working with bright, creative people is a benefit in itself.

Also, I didn't feel motivated to do hierarchies or super chicken superstars.

But for the last 50 years, we've run most organizations, some societies, in a "superchicken way."

We've believed that we can succeed by assembling superstars, by picking the best men, sometimes women, and giving them all the resources and power.

The result, like William Muir's experiment, was animosity, dysfunction and exhaustion.

If the only way the most productive people succeed is to stifle the productivity of others, then we desperately need to find better ways to work and better ways to live.

(Applause) So, what makes one group noticeably more successful and more productive than others?

This is what a team at MIT took up as a research topic.

They recruited hundreds of volunteers and divided them into teams and gave them very difficult tasks.

And what you've come to expect is that there are some teams that perform much better than others.

Nor was the team with the highest sum of all IQs.

Instead, the teams that performed well had three characteristics.

First, they displayed high social sensitivity to each other.

You can measure this with the Eye Reading Test (RMET).

It's widely recognized as a test of empathy, and the teams that scored high on this test performed well on the experiment.

Second, high-performing teams had evenly distributed time, so everyone had a say, and no one was missing work.

And third, the higher performing teams had more women.

(Applause) So is this because women generally score higher on the RMET, so you can double the points for empathy?

Or is it because women bring different perspectives?

I don't really know why, but what struck me about this experiment was that, as we expected, the teams performed differently, but the key to that was social connections.

So how does this play out in the real world?

It's about what happens in relation to people that's so important, because in well-coordinated, sensitive teams, ideas can flow and develop.

No more getting stuck and wasting effort

For example, one of the world's most successful engineering companies, Arup, once received an order to build an equestrian center for the Beijing Olympics.

This facility has to accommodate 2,500 extremely nervous Thoroughbred horses, and the long flight makes them suffer from jet lag and is not in top form.

So the problem the engineers faced was how much excrement would come out.

Engineering school doesn't teach you this -- (Laughter) -- and it's something you never want to fail. Engineers could spend months arguing with veterinarians, researching, and repeating spreadsheets.

Instead, I asked for help, and I found the man who designed the New York Equestrian Club.

The problem was resolved within the day

Arup believes that a culture of mutual help is the key to success.

Let's be honest, mutual aid sounds a little unreliable, but mutual aid is at the heart of any successful team, and mutual aid always trumps individual intelligence.

If you help each other, you don't have to know everything, you just have to work among people who are good at helping each other.

SAP says they can answer any question in 17 minutes or less.

But none of the tech companies I've ever worked for have ever considered it a technology problem, because what drives mutual help is getting to know each other.

It's so obvious that you think it's normal, but it's not.

When I ran my first software company, I almost hit a dead end.

There were a lot of fights, but other than that, nothing really mattered, and over time, it became clear that the best, most creative employees didn't know each other.

I was so focused on my work that I didn't even know the person at the desk next to me.

This was 20 years ago, but now the companies I visit don't allow coffee in the desk, because they want their employees to sit around the coffee machine and have a conversation.

Swedish has a special word for this.

It's called "fika," and it means more than a coffee break.

It has the meaning of recovering together.

A company in Maine, U.S.A., Idex, has an on-site vegetable garden where employees from different departments within the company can work together to get a complete picture of the business.

Have you all gone crazy?

Quite the opposite. When the going gets tough -- and it always gets tough -- especially when it's a very important breakthrough, I've come to realize that what you need is peer support and knowing who to turn to for help.

Ideas come from people, not companies.

And what motivates people is the bond, the loyalty, the trust that they develop among themselves.

It's not just the bricks that matter, it's the mortar that holds them together.

And all this together we call social capital.

Social capital is a relationship of trust that supports each other while being independent

The term comes from a sociologist who has studied communities who have seen a remarkable recovery in times of crisis.

Social capital gives impetus to corporate management, and social capital builds companies that can withstand adversity.

What exactly does that mean?

Time is everything, because social capital grows over time.

So the reason why teams that have worked together longer are better teams is that it takes time to build open, honest, trusting relationships.

time creates value

When Alex Pentland advised a company to take coffee breaks en masse so that employees could talk to each other, it increased profits by $15 million and increased employee satisfaction by 10 percent.

It's a decent return on social capital.

This is not a story of familiarity, nor an excuse for lazy people. People who work this way tend to be somewhat irritable, impatient and very selfish, because that's their contribution.

It's safe for each other to be outspoken, so conflicts often arise.

This is how good ideas become great ideas, and no idea is perfect from the start.

Ideas are born like newborns, disorganized and confused, with endless possibilities.

And only by nurturing it generously, believing and training it, can its potential bloom.

And it's social capital that supports it.

We're not used to talking about talent and creativity in this way.

I'm used to talking about stars

And so I wondered, if we started working this way, wouldn't we be losing stars?

So I went to audition at the Royal Academy of Dramatic Art.

I was amazed by what I saw there, and what the judges were looking for was not individual brilliance.

What was needed was interaction between the actors, because that's where the drama happens.

The producer of the hit album also said, "There are certainly a lot of superstars in music.

But it won't last long,' he said.

It's the outstanding collaborators who can have long careers, because bringing out the best in others is the same as finding the best in yourself.

I also visited companies that are known for their ingenuity and originality, but there were no superstars, because every single person counts.

And I thought, looking back at my own history and the benefits of working with great people, that if I stopped trying to be a super chicken, we could give each other more.

(Laughter) (Applause) Many things will inevitably change when we realize the true value of sociality in the workplace.

Corporate management that makes competition for talent invariably invites conflicts among employees.

From now on, we need to replace competitiveness with social capital.

For decades, we've run people with money, even though there's a huge body of research showing that money ruins social relationships.

What managers need is to guide their employees to encourage each other.

For many years, leaders were thought of as lone heroes who could solve all the toughest problems all by themselves.

We have to redefine leadership. Leadership is about creating the conditions for everyone to come together and think boldly.

we know this works

When the Montreal Protocol called for the total abolition of chlorofluorocarbons (CFCs), it was said that CFCs were the causative agents of the ozone hole, and that their dangers were immeasurable.

CFCs are everywhere, and no one knew if they would find a substitute.

But one team took up the challenge and adopted three principles.

The first is Frank Maslen, who was the head of the engineering department, said, "There are no stars on this team."

everyone needs

The idea is that everyone has a certain point of view.

The second is that we work by a single standard, which is to aim for the best possible.

And third, Maslen told his boss, Jeff Tadhope, not to interfere, because he knew that power would lead to chaos.

So Tadhope didn't do anything?

Instead, as a watchdog, I kept making sure that three principles were followed.

We were the first to solve the problem, ahead of others tackling this conundrum.

And to this day, the Montreal Protocol is the most successful international environmental legislation ever enacted.

Risks have been piling up and piling up today, and expecting a few superhumans to solve them won't solve the problem.

We need everyone, because only when we recognize the worth of everyone can we have the energy, the imagination, the drive necessary to create something extraordinary.

thank you

(applause)

I'm a failure as a woman, I'm a failure as a feminist

I'm a passionate advocate of gender equality, but I feel sorry for all the wonderful feminists out there who simply accept the label "feminist."

Even though I'm a feminist, I'm a bad feminist

I call myself a "bad feminist"

After I wrote those essays and then published "Bad Feminist," people started calling me "that bad feminist."

(Laughter) What was supposed to be a witty provocation with a little self-deprecating joke turned into a social phenomenon.

Let's take a moment to reflect

When I was younger, especially in my teens and twenties, I had preconceived notions of feminists, hairy, angry, man-hating, sex-hating women, as if it was a bad thing.

(Laughter) These days, when I see how women around the world are being treated, I feel angry and express it as a legitimate response.

But when I was younger, I cared about the tone of people's voices, when they thought I was a feminist.

The feminist label was a target of condemnation, and it was a bad word that started with an "F."

They're labeled women who don't follow the rules, they're demanding and they overestimate themselves.

When I didn't want to be that rebel, I realized that I was exactly that woman, and I couldn't imagine being otherwise.

As I've gotten older, I've come to accept myself as a true feminist and feel proud of myself.

It's a no-brainer, women are equal to men

equal wages should be paid for equal work

You have the right to choose and be free from harassment and violence

You have the right to use simple and affordable contraception and reproductive services.

I am in control of my body, apart from legal compulsion and religious doctrine.

You have the right to demand respectful treatment

Additionally

When it comes to women's needs, we also have to think about other characteristics of ourselves that we possess.

we are not only women

We all have different bodies, different ways of expressing our sexuality, beliefs, sexual orientation, social status, abilities, and so many other things.

We need to think about how those differences affect us in the same way that we have things in common.

Without that receptivity, feminism is meaningless.

It's obvious, but I'd like to mention that I'm confused, too.

my behavior is full of contradictions

I also do things that defile feminism

further confess

In the car on the way to work, I turn up the volume to listen to vulgar rap.

(Laughter) Even though the lyrics are disrespectful to women -- the lyrics are trembling with rage -- like the Yin Yan Twins' "Salt Shaker," rap, it's amazing.

(laughs) "Try it with a wet T-shirt.

Bitch, swing your hips until it hurts."

(Laughter) Think about it.

(Laughter) It's really poetic.

I feel ashamed of my music choices

(Laughter) I'm also very much in favor of men's work, which includes all the things I don't like to do -- (Laughter) Like doing all the housework, getting rid of bugs, taking out the trash, tending the lawn, fixing the car, and so on.

I want to be free from all this responsibility.

(laughs) My favorite color is pink.

I like everything from fashion magazines to cute things

The TV show "The Bachelor" is a romantic comedy, a fairy tale, a delusion that makes you believe in a happy ending.

It may seem anti-equal, but

If a woman wants to change her last name to her husband's last name, that's a personal decision, not mine.

If a woman chooses to stay home to raise her children, we can celebrate that choice as well.

The problem isn't whether women choose to be economically precarious, it's how society drives them into financial precariousness.

Let's solve that problem first

(Applause) I am against conventional feminism, the feminism that has ignored or distorted the needs of women of color, working-class women, lesbians and transgender women, that supports heterosexual white women in the middle and upper classes.

If that's good feminism, I'm still a failing feminist.

(Laughter) And I also think, as a feminist, I feel a lot of pressure.

We are prominent feminists

demand to be perfect

And yet, we gleefully kick them down from where we raised them when they didn't live up to our expectations.

That's why I'm confused I'm a kicked out kid I ain't even picked up yet

(Laughter) Too many women avoid being called feminists, especially those who have achieved breakthroughs and business leaders.

They're afraid to say, "I'm a feminist." They're afraid it costs too much to be called that. They're afraid that they won't live up to unrealistic expectations.

For example, singer Beyoncé, who I call The Goddess.

(Laughter) These days, I'm visibly active as a feminist.

At the 2014 MTV Video Music Awards, she sang in front of a three-meter-tall sign that read "Feminist."

It was an eye-opening spectacle, pop stars supporting feminism and telling young men and women that feminists should be celebrated.

As soon as those scenes began to fade from memory, critics debated whether Beyoncé should really be celebrated as a feminist.

I gave it my feminist mark, instead of just taking the words of a woman who made her dreams come true.

(Laughter) (Applause) We demand too much perfection from feminists, because our battle isn't over, because many of our needs are unfulfilled, and we need more.

And so it goes past rational, constructive criticism, analyzes the woman's feminism, and tears it apart until it doesn't make sense.

no need to act like that

Bad feminism — or broader feminism — is the place to start.

What happens next from there?

Recognize your imperfections and take responsibility for them Do what you say and be a little braver

If I listen to sleazy music, it creates a demand, and artists respond to it with glee -- and they make more and more of that kind of music.

The way they depict women in their songs changes when they're faced with a situation where they can't sell their songs unless they change that.

Of course it's difficult

Why do you forgive me just because it's music?

(Laughter) It takes courage to make the right choice, and it's easy to justify a poor choice.

But -- justifying wrong choices prevents women from getting equality -- the equality that we all deserve and I need. It prevents the equality we all deserve and I need.

My nieces are 3 and 4 years old

Beautiful, strong, talented, courageous kids.

I want them to make great strides in a world where they are fairly evaluated.I want their abilities to be evaluated.

Thinking about them makes it easier to make the right choices.

we can all make better choices

You can change the channel to shows like "Game of Thrones" that sport sexual assault.

If you hear a song about women not being worthy, you can pick a different radio station.

If a woman's role in a movie is treated like an ornament, then the money you spend watching that movie can be spent elsewhere.

You can stop watching professional sports if you treat your partner like a punching bag.

(Applause) A man, especially a white, straight man, saying, "No, I won't write for your magazine, I won't participate in your project, I won't work with you, until we have enough women as participants and decision makers."

You can also say, "I can't work with you until your publication or organization embraces diversity."

Those of us who are underrepresented can refuse to participate in projects they're invited to, until more and more people climb through the glass ceiling and are no longer nominally women.

As long as there is no such effort Unless you make such an assertion, the efforts made so far are meaningless

I hope that by taking courage in the small things, we can infiltrate those in power -- editors, film and music producers, company presidents and politicians -- those who can make bigger, bolder choices -- and create lasting and meaningful change.

We can dare to say that our feminism is good, bad, or somewhere in between.

He concluded the book "Bad Feminist" by saying, "I'd rather be a bad feminist than not be a feminist at all."

This word means a lot to me, but the main reason is because of an experience I had in the past, when I lost my voice and my feminist beliefs helped me regain my voice.

It was triggered by an incident

The reason I call it an incident is because I don't forget the pain.

I was assaulted by boys. I was young and didn't know what boys would do to assault girls.

they treat me like nobody

I myself began to feel worthless.

It took my opinion away, and then I stopped thinking my opinion mattered.

Even so, the expression to write remained with me.

I regained myself while writing

As I wrote, I encouraged myself to be strong.

I've also read articles written by women who seem to understand what I'm talking about.

Read the words of women who tell me I'm worth it too

I learned the art of writing like they did, and that's where my voice came from.

I rediscovered my voice, and I realized that my opinions have immense power.

Through writing and feminism, I found that if I had a little bit of courage, other women could see and hear what I had to say, take notice, and tell them that none of us are worthless women.

With one hand holding the power to achieve anything

On the other hand, I'm gripping the reality that I'm just another woman.

I'm a bad feminist, but I'm a woman with a conscience.

you can do the same

I hope you can have a little more courage like I do For when you need that courage

(applause)

A few years ago, my mother had rheumatoid arthritis.

My wrists, knees, and toes were swollen, and I was in excruciating chronic pain.

Need to apply for disability

I even stopped going to mosques

The pain was so intense in the morning that I couldn't even brush my teeth.

I wanted to do something

But what should I do...

i am not a doctor

specializes in medical history

So I started looking into the history of chronic pain.

Along the way, I discovered that the UCLA archives had a complete collection of books on the history of pain.

There I found an incredible story about a man who, like my mother, saved millions of people in pain.

but i don't know him at all

There were no biographies and no Hollywood movies.

The man's name is John J. Bonica.

But at the beginning of this story, he went by the name Johnny Bull Walker.

The time is one summer day in 1941

The circus has come to small town Brookfield, NY.

Large crowds flocked to see the tightrope walkers, the clowns, and, if you were lucky, the Human Cannonball.

One of the audience's favorites was Johnny Bull Walker, the strong man, a brawny thug who would do a trick for a dollar.

One day, a loud roar rang out from the circus speakers.

They said they needed a doctor urgently in the tent of the beast.

It seems that something happened to the Lion Tamer.

At the climax of the show, an accident happened and the head got stuck in the lion's mouth.

He almost choked, and the audience watched in horror as he struggled and passed out.

When the lion finally loosens his bite, the lion-tamer falls to the ground, motionless.

A few minutes later he awoke to find a familiar figure staring at him.

was a bull walker

The strong man saved the lion tamer's life by giving him artificial respiration.

This strong man had a secret: he was actually a third-year medical student.

During the summer, I toured in circuses to pay for my tuition, but I kept it a secret to protect my image.

He wasn't supposed to be a straight good guy because he was a brutal villain.

The secret was not known even to the medical school.

In his words, "Athletes must be stupid."

So in medical school, I never mentioned the circus or wrestling in the evenings and weekends.

He went by ring names like Bull Walker and later Masked Marvel.

I even kept it a secret when I became lightweight world champion that year.

John J. Bonica lived a double life for many years.

He's a professional wrestler and he's a doctor

He's a villain and he's a hero

one inflicted pain, the other treated

And, unbeknownst to him at the time, over the next 50-plus years, he would use his two opposing personalities to create a whole new way of perceiving pain.

This view changed modern medicine so much that, decades later, Time magazine would call him "the father of pain relief."

But that's still a long way off

Bonica graduated from medical school in 1942 and married her sweetheart, Emma, ​​whom she met at a game a few years earlier.

He secretly continued wrestling.

I was a resident at St. Vincent's Hospital in New York, and I didn't get paid.

With a championship belt on, you could go to a place like Madison Square Garden where the admission fee was high, and you could fight top-notch opponents like the blond bear Everett Marshall or three-time world champion Angelo Savoldi.

The fight took a toll on my body, I tore my hip and cracked my ribs.

One night, the terrifying Turk, Terrible Turk, left his cheek scarred like Al Capone with his big toe.

The next morning at work, I had to wear a surgical mask to hide the scar.

Twice I came into the operating room with a bad bruise and blindness in one eye.

The worst part was the crushed, deformed ears.

He said it looked like he had baseballs on either side of his head.

Pain was building up in his life.

Then he attended his wife's birth at his hospital.

My wife was clearly in pain as she pushed.

The obstetrician summoned the resident on duty and instructed him to give him ether to ease his pain.

But this resident was still young, and had only been on the job for three weeks -- his hands were trembling, and he irritated Emma's throat as he administered ether.

Emma was vomiting and her throat was congested, and she was turning pale.

Bonica, who had been watching the entire time, pushed the resident aside, cleared his wife's airway, and saved her and her unborn daughter's life.

At that moment, he decided to dedicate his life to anesthesiology.

He also helped develop epidurals, which were later used for laboring mothers.

But I had to finish my training before I could tackle obstetrics.

Right around D-Day, Bonica came to the Madigan Army Medical Center near Tacoma.

It was one of the nation's largest military hospitals with 7,700 beds.

He was put in charge of all pain management there.

was only 27

While treating a large number of patients, Bonica realized that there were cases that contradicted what she had learned.

Pain used to be thought of as a positive "alarm", the body's way of signaling an injury, such as a broken bone.

But in some cases, such as after a patient had a leg amputated, the patient could complain of pain in the nonexistent leg.

But why is the alarm still going off when the treatment is done?

In other cases, patients felt pain even though there was no evidence of injury.

Bonica went to all the specialists in the hospital: surgeons, neurologists, psychiatrists.

I was trying to get his opinion on his patient.

But that would take too long, so we decided to have the meeting over lunch.

It was like a tag team of specialists dealing with patient pain.

Until then, no one had looked at pain that way.

then he hit the book

I read every medical book I could get my hands on, and whenever I saw the word "pain," I wrote it down carefully.

And out of 14,000 pages, the word "pain" was on 17 and a half pages.

it's only 17 and a half pages

It's the most common and most common concern for patients...

Bonica was astonished. He said, "How on earth did you come to this conclusion?

You didn't write about what was most important to the patient."

Eight years later, Bonica talks about "pain"

I wrote about "pain" and filled in the blank pages.

His book later became known as the "Bible of Pain."

In this book, he proposed new treatment strategies and treatments using nerve block injections.

Based on the discussions at the lunch meeting, we proposed a new facility -- a "pain clinic."

But the real significance of his book is that it was an emotional warning to medicine.

I desperately wanted doctors to take seriously the pain that their patients experience in their lives.

he questioned the core purpose of medicine

He believed that the goal of medicine was not so much to cure the patient as to make the patient feel better.

He worked on it for decades, until it finally took hold in the mid-'70s.

Hundreds of pain clinics sprang up around the world.

But around the same time, an unexpected tragedy struck.

Years of professional wrestling began to show in Bonica's body.

He had been out of the ring for over 20 years, but his 1,500 bouts had left scars all over his body.

In my mid-50s, I had severe osteoarthritis.

Over the next 20 years, I had 22 surgeries, four spinal surgeries, and repeated hip replacements.

I could barely lift my arms and turn my head.

I needed an aluminum crutch to walk.

Friends and former students examined him.

One of them recalled, "He was probably the most nerve-blocking man on the planet."

Bonica used to be a working person, but she started working more, 15 to 18 hours a day.

For him, healing someone's disease was not just a job, it was an act of easing his own pain.

At the time, he told reporters, "If I hadn't been so busy, I would be completely disabled by now."

In the early 1980s, when Bonica was on a business trip to Florida, she had a former student drive her to the Hyde Park area of ​​Tampa.

We pulled up through the palm trees to an old mansion with a huge silver cannon in the garage.

The mansion is owned by the Zacchini family, who are like royalty in American circus circles.

Bonica had seen them decades ago, in silver jumpsuits and goggles, showing off a show they had developed, Human Cannon.

But at that time, like Bonica, I was retired.

People from this generation, including Bonica, are all dead, so we have no way of knowing what conversations they had that day.

but i imagine

The reunion of the strong man and the human cannon, showing each other old and new wounds...

Bonica may have given advice as a doctor.

Or maybe I told them a story that I would later tell in retrospect, how the circus and wrestling era shaped my life.

Bonica saw "pain" up close

felt pain and lived in pain

That's why I couldn't overlook the pain of others

That empathy for others has opened up a whole new field and played a key role in helping medicine come to a better understanding of pain itself.

In the memoir I mentioned earlier, Bonica said that pain is one of the most complex human experiences.

It includes my past life, my current life, my interactions with people, my family.

That's exactly what happened to Bonica.

so was my mother

From a doctor's point of view, my mother might look like a "professional patient" who just spends her days in the hospital waiting room.

sometimes even i think so

But once I realized that Bonica's "pain" was a sign of a fulfilling life, everything in my mother's pain began to cross my mind.

Before she got swollen with arthritis, her fingers were typing on a typewriter in the HR department of the hospital where she worked.

With those fingers, he wrapped samosa for everyone who came to the mosque.

Those fingers cut my hair when I was a kid, wiped my nose and tied my shoelaces.

thank you

(applause)

Just after Christmas last year, 132 children in California contracted measles, either by visiting Disneyland or by being in contact with someone who was there.

The virus flew across the Canadian border and infected more than 100 children in Quebec.

This outbreak was a tragic event because, although measles can be fatal in children with weakened immune systems, it is one of the most easily preventable diseases in the world.

An effective vaccine against this disease has been available for more than half a century, but many of the children involved in the Disneyland outbreak were not vaccinated, because their parents feared something worse than measles: autism.

But wait - the controversial autism and vaccines paper But wait - the controversial autism and vaccines paper was verified and retracted in the British Medical Journal, confirming intentional fraud?

Don't people who are supposed to be scientifically savvy know that the theory that vaccines cause autism is a big lie?

As most of you know, millions of parents around the world continue to fear the risk of autism in their children from vaccines.

I wonder why?

this is the reason

Here's a graph showing how the estimated prevalence of autism increases year over year.

For most of the 20th century, autism was thought to be an incredibly rare condition.

Most psychologists and pediatricians hadn't even heard of autism, and even if they did, they assumed they'd never see a single case in their careers.

For decades, its estimated prevalence has remained stable at just three or four per 10,000 children.

But then in the 1990s, that number began to climb exponentially.

Fundraising groups like Autism Speaks routinely say that autism is an epidemic, as if it were transmitted from another child at Disneyland.

What's happening?

If it's not the vaccine, what is it?

When you ask staff members of the Centers for Disease Control and Prevention in Atlanta that question, they tend to use phrases like "expanding diagnostic criteria" and "easier case detection."

But words like that don't do much to calm the fears of young mothers who worry that their two-year-old won't make eye contact.

If the diagnostic criteria needed to be broadened, why were they so narrow in the first place?

Why was it so difficult to find cases of autism before the 1990s?

Five years ago, I decided to seek answers to these questions.

And it turns out that the cause of this event is not the slow but deliberate progress of science, but rather the fascination of storytelling.

For much of the 20th century, medical professionals told a story about what autism was and how it was discovered, but that story turned out to be wrong, and that mistake continues to have a devastating impact on public health around the world.

Coming up second was a more accurate story of autism, which had been lost and forgotten, lying in the corner of a bookshelf of clinical literature.

This second story tells us all about how we got here and what to do next.

The first story begins with Leo Kanner, a child psychiatrist at Johns Hopkins Hospital.

In 1943, Kanner published a paper in which he described 11 pediatric patients who withdrew into their own shells, ignoring those around them, even their own parents.

Children could have fun for hours on their own, waving their hands in front of their faces, but they would panic over little things, like a favorite toy being moved out of place without their knowledge.

Kanner looked at the patients brought to the clinic and thought that autism was very rare.

In the 1950s, as the world's leading authority on autism, he announced that he had seen fewer than 150 cases of true autism, even with referrals from as far away as South Africa.

Actually, this is not surprising, because Kanner's diagnostic criteria for autism were remarkably selective.

For example, he didn't make this diagnosis in children with epileptic seizures, but we now know that autism and epilepsy are very common.

He boasts that out of 10 children who were referred to him by medical personnel as having autism, he asked nine of them to leave without a diagnosis of autism.

Kanner was a smart guy, but there were quite a few of his theories that weren't useful.

He classified autism as a form of childhood psychosis and attributed it to cold, unloving parents.

He said those kids have been sitting in a frosty refrigerator all their life, so to speak.

But at the same time, Kanner noticed that some of his pediatric patients had special abilities in certain areas, like music, math, memory.

A boy who attended his clinic was able to distinguish between 18 symphonies before he was two years old.

When his mother puts on one of his favorite records, he'll say, "It's Beethoven!"

But Kanner was skeptical of these abilities, arguing that the children were simply parroting back the words of their arrogant parents, desperate for recognition.

As a result, autism has become a source of shame and stigma for families, and two generations of children with autism have been sent to institutions for the betterment of their lives, and have been neglected by the world at large.

Amazingly, it wasn't until the 1970s that researchers began to test Kanner's theory that autism was rare.

Lorna Wing, a cognitive psychologist in London, thought that Kanner's idea of ​​refrigerating children was "absolutely ridiculous," and I heard it from her.

She and her husband, John, were warm and loving people, but their daughter Susie was severely autistic.

Lorna and John knew how difficult it would be to raise a child like Susie in the absence of support services, special education, and other aids that require a diagnosis.

To argue with the National Health Service that children with autism and their families need more help, Lorna and her colleague Judith Gould decided to do something that should have been done 30 years ago.

They looked at the prevalence of autism in the general population.

I walked patiently around the Camberwell suburb of London looking for autistic children in the community.

What their findings revealed was that Kanner's definition was too narrow, and that autism was actually much more diverse.

Some couldn't speak at all, while others could barely talk about the fascination with astrophysics, dinosaurs, and royal genealogy.

In other words, these kids don't fit neatly into boxes -- yes, Judith said -- and they saw a lot more children with autism than Kanner's one-size-fits-all model predicted.

At first, they were at a loss as to how to interpret their data.

Why has no one noticed these children before?

But then Lorna stumbled upon a paper in Germany in 1944, the year after Kanner's paper, that had since been forgotten, buried in wartime memories that no one cares to remember or think about.

Kanner was aware of this competing paper, but deliberately avoided mentioning it in his book.

This 1944 paper was never translated into English, but luckily Lorna's husband, who speaks German, translated it for her.

This paper prepared a new narrative for autism.

The author was a man named Hans Asperger, who ran a combined clinic and boarding school in Vienna in the 1930s.

Asperger's idea of ​​teaching children who learn differently is progressive even by today's standards.

In his clinic, mornings started with gymnastics to music, and then Saturday afternoons they did plays.

Rather than blaming parents for autism, Asperger saw autism as a multigene, lifelong disorder that requires compassionate support and attention throughout life.

Instead of treating the children in his clinic as patients, Asperger's called them "little professors" and asked them to help develop teaching methods that were just right for them.

Importantly, he saw autism as a diverse continuum, with an astonishing range from genius to disability.

He believed that autistic traits were shared by many people and had always existed, and that aspects of this continuum could be found in familiar epithets in pop culture, such as the misanthropic scientist and the "careless doctor."

He even said that a little bit of autism is essential to succeeding in the worlds of science and art.

Lorna and Judith realized that Kanner was wrong, both in thinking that autism was rare, and in thinking that parents caused autism.

Over the next few years, they quietly worked with the American Psychiatric Association to broaden the diagnostic criteria for autism to reflect the diversity of the "autism spectrum."

In the late '80s and early '90s, this change worked, and Kanner's limited model was replaced by a broader, more comprehensive model of Asperger's.

These changes didn't come out of nowhere.

It just so happened that when Lorna and Judith were working like Kuroko in reforming diagnostic criteria, people around the world were seeing adults with autism for the first time.

Before "Rain Man" came out in 1988, only a small circle of experts knew what autism was. But after Dustin Hoffman's unforgettable performance as Raymond Babbitt brought "Rain Man" four Academy Awards, pediatricians, psychologists, teachers and parents around the world knew what autism was.

And coincidentally, around the same time, the first simple laboratory test for diagnosing autism was introduced.

Even if you're no longer connected to that small group of experts, you can have your child examined.

"Rain Man," the change in diagnostic criteria, and the introduction of these tests, created a network effect, a storm of autism awareness.

The number of diagnoses began to skyrocket, just as Lorna and Judith had foreseen and hoped, and people with autism and their families were finally getting the support and services they deserved.

And then came Andrew Wakefield, who blamed vaccines for the surge in diagnoses. It was a simple, powerful, believable and compelling story, but it was just as false as Kanner's claim that autism is rare.

If the Centers for Disease Control and Prevention's current estimates are correct that 1 in 68 American children is on the autism spectrum, people with autism are the largest minority group in the world.

In recent years, people with autism have come together online, and in rejecting the view that autism is a mystery to be solved by the next medical breakthrough, they coined the term "neurodiversity" to celebrate the diversity of human cognition.

One way to understand neural diversity is to think of humans in terms of operating systems.

Just because Windows doesn't work doesn't mean the PC is broken.

From an autistic perspective, the normal human brain is easily distracted, obsessed with socializing, and lacks attention to detail.

Indeed, people with autism struggle to survive in a world that's not for them.

After 70 years, we still haven't caught up with Asperger's. He believed that to "cure" the most disturbing aspects of autism, you need understanding teachers, caring employers, a supportive community, and parents who truly believe in the potential of children.

An autistic man named Zosia Sachs once said, "To keep the ship of humanity straight, we need everyone on board."

As we sail into the unknown future, we need all forms of human intelligence on Earth, and together we can tackle the challenges society faces.

we can't waste a single brain

thank you

(applause)

fluently fluently

fluently fluently fluently fluently fluently

fluently fluently

What is this all about?

of course you don't know

unclear and incomprehensible

But hopefully it was told with enough confidence that it was at least mysterious and compelling.

Clarity or mystery?

Every day, as a graphic designer and also as a New Yorker, I try to find a balance between the two, and this fascinates me.

Let me give you an example

Anyone know what this is?

So what do you know about this?

Thanks to the genius Charles M. Schultz for adding two fine strokes, these seven finely interspersed lines have brought an emotional life to life that has captivated hundreds of millions of fans for half a century.

This is actually a book cover, and I designed the cover for a book about Schultz's work and technique, which is due out this fall, and that's what the cover is all about.

There is no other text or visual information on the cover.The title of the book is "Just what you need."

It represents the choices I make every day in understanding and creating design.

Clarity

The lucid one gets to the point

Straightforward, candid and truthful

Ask yourself [When should I be clear? ] Now, something like this should be very clear whether you can read it or not.

What do you think?

Here's a recent example of urban clarity that I love, because I'm a latecomer and I'm always in a hurry.

When I started seeing numbers like this on the street a few years ago, I was thrilled, because now I knew how many seconds it would take me to cross the street without getting run over by a car.

6 seconds? Then go! (Laughter) So let's look at the shadow versus the clear yang. The shadow is the mystery.

A mystery, by definition, is much more complicated.

Mysteries want to be solved, well-crafted mysteries inevitably want to be solved.

[ When should it be mysterious? ] Germany in World War II really wanted to decipher this, but they couldn't.

This is a recent design I did. I've been working on the cover design for Haruki Murakami's novel for the past 20 years. The young protagonist of this novel has four best friends, but after his first year of college, he's suddenly and unilaterally estranged without any explanation, and he's heartbroken with despair.

All my friends' last names have colors in them

They are called red, blue, white, and black.

Only the main character, Tsukuru Tazaki, has no color in his name, so to speak, "no color".

I created an abstract design that could express that, but there's something much more complex beneath the surface of the story, and there's a lot of message behind this cover.

Here, the four fingers are the four lines of the Tokyo subway, and that's important in the story.

A line without color intersects with each of the other colors, suggesting what he'll do later in the story.

I will face each and every one of my best friends at the time and find out why I was forced to cut off the relationship.

This is a three-dimensional finished product that sits on my desk. My hope is that you will be fascinated by this mysterious design, and you will want to know why the cover looks like this, and you want to read the inside.

[ Visual language ] This one uses a more familiar riddle.

What do you mean?

This is what [makes it look like something else] Visual language is a way of using something familiar to make something else look different.

I wanted to do it this way when I was working on a book of essays by David Sedaris, which was titled at the time [All You Need To Be Beautiful].

not related to any essay in the book

It seems that the author's boyfriend had a dream

(Laughter) Most of the designs I create are based on text, and this is the only text I can use.

Only the mysterious title that doesn't make any sense made me scratch my head.

And sure enough, a little while later, after we had Chinese food for dinner, this popped up on the table, and I said, "Oh, this is it. I'm going to agonize over the idea!"

For example, here "Few people know what can be gained by not thinking about the future"

(Laughter) But this visual language can be applied to Mr. Sedaris's book.

You see this strange thing, and you think it must be fun, because it's about David Sedaris, who you love.

David Rakoff is a great writer ["Fraud" by David Rakoff] and he called his first book "Fraud" because he was asked by a magazine to do something that he couldn't do.

Rakoff was a small, slim city man, but GQ magazine wanted him to go whitewater rafting on the Colorado River to see what would happen.

I felt that I was misrepresenting myself.

So I wanted to make the cover of this book misrepresent the content and make it look like the readers are disagreeing with it.

This idea led me to graffiti

I am fascinated by graffiti

If you live in the city, you've probably seen a lot of graffiti, and there are many different kinds.

Here's a photo of a sidewalk transformer on the Lower East Side, heavily graffitied.

You might look at this and think, "That's nice and urban," or you might think, "You're illegally polluting the public good," but one thing we all agree on is that it's not readable.

don't you no clear message

There's another kind of graffiti that's much more interesting, and I call it proofreading graffiti.

Here's a picture I took in a subway station recently. I see a lot of obscenities and silly things, but I thought this one was funny.

this got my attention

I thought, maybe I could use this for the cover of a book.

When I picked up his book and started reading, I realized that he wasn't who he claimed to be, that he was a phony.

So I grabbed a red magic pen and started writing on the front cover [FRAUD]

The design is complete (laughs). (Laughter) The author and the publisher liked it, and that's how this book came out. It was fun to watch. People reading this book on the subway, people carrying this book around, I thought they were crazy.

(Laughter) James Ellroy is an extraordinary crime writer [Perfidia by James Ellroy] and a good friend of mine that I've worked with for many years.

His best known works are "The Black Dahlia" and "L.A. Confidential."

His latest work is "Betrayal." It's a very mysterious title, and many of you probably know what it means, but I'm sure many of you don't.

The novel is set in 1941 Los Angeles, where a Japanese-American detective investigates a murder.

Then comes the attack on Pearl Harbor, adding racial conflict to his already difficult life.In the blink of an eye, an internment camp for Japanese Americans pops up, tension runs high, and disaster strikes.The hero tries to solve a murder case.

The first thing I thought of was a straight-forward design, adding Los Angeles to the attack on Pearl Harbor, and trying to capture the post-apocalyptic dawn on the city's horizon.

It's like grafting a picture of the attack on Pearl Harbor onto Los Angeles.

The editor-in-chief said, "Well, it's interesting, but we could do better, it should be simple."

So, as I always do, I rethought from the beginning.

I pay attention to what's around me. I work in a skyscraper in Midtown, and every night when I walk out of the office, I press this button, and it opens a big, heavy glass door and takes me on an elevator.

One night, all of a sudden, this looked different.

A big red circle means danger

This symbol was so obvious that it must have been used many times, so I did a Google image search and couldn't find a cover like this one, so I ended up using this design, which was visually interesting and created a tense composition of the rising sun over Los Angeles and the United States.

[ Cum Swallowing: About the Human Digestive System by Mary Roach ] Mary Roach is a wonderful writer who takes an otherwise boring scientific subject and turns it into something very interesting, the opposite of boring.

This book is about the human digestive system.

I thought about the cover of this book.

This is a selfie of me. (Laughter) Every morning, I look at myself in the bathroom mirror to see if my tongue is black.

if it's not black it's perfect

(Laughter) I recommend it to everyone.

I started thinking that it's the entrance

right? is the gateway to the digestive system

But I'm sure you'll agree, but a picture of the actual human mouth isn't as pretty as it looks.

(Laughter) You can see why.

[ Useless Mystery ] What happens when clarity and mystery are mixed?

this is a common case

I call it a useless mystery

When you go to a subway station -- and I use the subway a lot -- you see this piece of paper stuck up on a pillar.

There is, right? I'm like, "No way," the train is coming, and I'm trying to understand what's written, but it's very difficult.

The problem here is that you're trying to break down information in a way that's easy to understand, but it doesn't help at all.

You could say this is an unnecessary mystery

We need something that is clear and useful, so we changed it up just for fun.

I use exactly the same content

(Applause) Hi, I'm waiting for an invitation from the Urban Transportation Authority.

(Laughter) The first thing you'll notice is that there's some kind of change in the service, and then there are two complete sentences, beginning, middle, and end, that tell you what the change is and what happens.

It's that easy! (laughs) [useful mystery]

Next up is a mystery piece that I love so much. Packaged.

The new Diet Coke design, by Turner Duckworth, is a work of art in my opinion.

It's a work of art and beautiful

What really appeals to me as a designer is that he takes the visual language of Diet Coke, the typeface and the color and the silvery background, and strips it down to its most essential parts, just like that Charlie Brown face.

It's thinking about what the least amount of information is that people can understand what it is, and it's taking advantage of what people already know about the product.

It's cool. It's really cool to go to the grocery store and see these cans on the shelves.

And here's what's next — disappointing [unnecessary clarity] I think

Back on the subway, here's a photo I took after that Coke was released.

Location: Times Square subway station Coca-Cola is buying up advertising space

Some of you will know what I'm talking about

ahem

"I came to New York with nothing but a change of clothes on my back, money in my pocket and a dream in my heart.

Now it's time Coke" (You're doing cocaine) "I'm in New York with an MBA, a nice suit and a firm handshake.

Now it's time Coke." (You're doing cocaine, aren't you?) This is a real ad! (Laughter) Even the pillars are sacrificed, but this one has a Yoda look. what am i doing ] This ad was a disaster

It was quickly taken down due to consumer backlash, and the internet is flooded with all sorts of parodies.

Good grief

It's a wonder to me that the packaging of the tin can be so mysterious and brilliant, and the accompanying message is excruciatingly plainly wrong.

I couldn't believe it

Today, I would like to share with you how I use clarity and mystery in my work. I hope it helps you decide when you want to be more clear, or when you want to be a little more mysterious and not "share" too much.

(Laughter) If there's one thing I'd like you to remember from today's story, it's this.

fluent

(applause)

In every group of women, there are people who are interesting, people who come to see you when you want to cry, and people who tell you to keep calm when things get tough.

Same for this group

This was a group of revolutionary women. This was a group of revolutionary women. They went from team members to friends to family in the most unlikely place: a special mission battlefield.

Their bond of friendship was strong, and they were brave on the battlefield. It wasn't just about authentic battlefield experience, it was also historical.It wasn't just about authentic battlefield experience.

The trigger was the words of a special forces leader, a man who had gone through various trials in the U.S. military, "We need women to carry out this war."

"You can't just end a war by killing your enemies."

“We need a wide range of knowledge and understanding.”

You know, if you want to understand what's going on in your community or in your home, whether it's in South Afghanistan or in Southern California, you have to hear it from women.

But in Afghanistan, a conservative, traditional society, men weren't allowed to talk to women because it was very disrespectful.

That's why we needed female soldiers.

The women recruited to work with Army and Navy Special Forces in the context of the war The women recruited to work with Army and Navy Special Forces in the context of the war will face a unique battle that less than 5% of the U.S. military experience.

less than 5%

Recruitment has started

"Let's make history by recruiting female soldiers"

Special Forces personnel fighting in Afghanistan

this was in 2011

From Alabama to Alaska, a select group of women who want to work together to do something worthwhile and serve their country have applied.

It was a non-political but meaningful task for them.

Women who flocked to North Carolina to compete for a spot on the front lines of special missions quickly formed a community unlike anything they'd seen before.

Many women were brave, adaptable, and willing to change something.

I shouldn't have felt sorry for being a woman, I should have welcomed it.

In North Carolina, we suddenly realized that there were many women just like us.

As one person said, "It's like looking around and realizing that there are more than two giraffes in the zoo."

On this amazing team was Cathy, a young woman in the Reserve Officers' Training Corps, with a minor in women's studies, who could do many things by herself.

Tristan is a military academy trickster who always runs and marches without socks, so you can tell by the smell of his shoes.

(Laughter) Amber, who looks like Heidi, wanted to join the infantry, but they didn't allow women to join, so she decided to become an intelligence officer.

After serving in Bosnia, she worked with the FBI in Pennsylvania to fight drug cartels.

Kate was a high school football player for all four years Kate was a high school football player for all four years Actually, I wanted to quit after one year because I belonged to the chorus club, but I wanted to quit after one year because I belonged to the choir club, but when the boys said, "It's impossible for girls to play football," Kate decided to stay in the club for the sake of the juniors.

Some things are predestined by gender, but Kathy once said, "It's hard for women to do noble things."

But this time, I had the opportunity to carry out an important mission for the nation with a select group of people, not because they were women, but because they were women.

This women's team is, in many ways, normal women.

I also put on makeup, and we actually talked about eye makeup in the restroom, and we deepened our bond.

They also wear bulletproof vests

With 20 kilos of luggage on my back, I boarded a helicopter for a military operation, and when I returned to the base, I saw a movie called "Bridemaids: The Worst Wedding Plan Ever."

(Laughter) They also wear something called Spanx, because the men's-fitting uniforms were big in the small parts, and small in the parts that they wanted to be big.

Lane, an Iraqi war veteran -- you can see it on the left side of the image -- she ordered Spanx from Amazon and had it delivered to her base, so she could wear matching pants every night when she went out on duty.

They came from Afghanistan and various bases to have a video conference on the job that the few female soldiers do.The agenda was on the job that the few female soldiers do.

We joked, we talked about what worked and what didn't, what we learned and how we could improve.

I went from being a frontline female soldier working in special missions back to being a normal woman, like a female potty aid that allows you to stand up like a man and run errands, but it's said to be about 40 percent accurate in aiming.

(Laughter) They're from the nagara tribe.

They're brave, but they're also feminine.