"Maybe I can help you out here."

I got an email saying that I went there.

(Laughter) Don't tell kids no! seemed to follow

Three months later, I finally got a day to meet this person, and I went to his lab.

Many professors gathered in such a small laboratory, and they bombarded me with questions, and in the end, it was like a crowded train.

Twenty PhDs, me, and a professor crammed into this tiny lab, and we're all asking question after question, trying to poke holes in our research procedures.

Is there such a thing? I don't care

(Laughter) But even though I was exposed to this interrogation, I answered all of them, and I guessed quite a few, and I got them right.

But it soon became clear to me that what was once a glorious procedure had so many mistakes in it that I spent more than seven months meticulously correcting every single one.

What happened? with one small test strip

It costs three cents and you can now test in five minutes.

This method is 168 times faster, less than 26,000 times less expensive, and 400 times more sensitive than current standard testing methods.

(Applause) But the best part is that this test strip can detect with near 100 percent accuracy, and it can detect very early stage cancers where patients have a near 100 percent chance of survival.

So, within the next two to five years, this test strip could raise pancreatic cancer survival rates from a dismal 5.5 percent to nearly 100 percent, and it would do the same for ovarian and lung cancers.

But this is not the end

By changing the type of antibody so that it detects different proteins, it can detect different diseases, potentially any disease in the world.

From heart disease, to malaria, to HIV, AIDS, and other types of cancer, you can use it for anything.

I hope that one day I will be able to save an uncle who was previously helpless, my mother will be saved, my brother will be saved, my sister will be saved, my beloved family member will be saved.

I wish that I would never be troubled and worried about pancreatic, ovarian, and lung cancers, and that I would never have to suffer any disease.

Anything is possible with the internet

You don't have to be a professor with multiple degrees to pass on a theory, to share it, and to be considered a worthwhile idea.

In a neutral space, no matter what you look like, your age, your gender, it doesn't matter.

Only Ideas Matter

For me, it was all about a whole new way of looking at the Internet, and the Internet can be used in other ways than just uploading pictures of your goofy faces, depending on how you use it.

I realized that I could change the world

Imagine what you could do if a 15-year-old who didn't even know what the pancreas was could discover a new test for pancreatic cancer.

thank you

(applause)

(Nature Sounds) When I first started recording natural soundscapes 45 years ago, I had no idea that ants, insect larvae, sea anemones, viruses, etc., all had unique sounds.

is making a sound

That's true of nature everywhere on earth, and what we're hearing now is the sound of the Amazon rainforest.

In fact, temperate and tropical rainforests each play a concerto of living animals, improvised harmonies of insects, reptiles, amphibians, birds and mammals.

Every soundscape that emerges from the natural world has its own unique characteristics. They contain an incredible amount of information, some of which I would like to share with you today.

A soundscape is made up of three elements

The first is earth sounds, geophony, which are non-biogenic sounds that can be heard in all habitats, such as the wind in the treetops, the murmur of a brook on the beach, the movement of the earth, and so on.

The second is the sound of biological origin "biophony"

Biophony is the sounds that organisms make in specific habitats at different times and places.

The third sound is a sound we humans make, called anthrophony.

Some sounds are controlled, like drama and music, but most are chaotic and disorganized, what we call noise.

I used to think wild soundscapes were worthless.

It just exists and has no meaning

I was wrong. Time and time again, I've learned that if you listen carefully, you can learn something very important: the sounds of all the creatures that live there can be used to gauge the health of a habitat.

When I started recording in the late '60s, my recording methods were limited, and I could only capture fragments of individual species, first mostly birds, then mammals and amphibians.

It was like trying to understand the magnificence of Beethoven's Fifth Symphony by picking out a violinist and just listening to his tone instead of the whole orchestra.

Fortunately, the more holistic model that my colleagues and I introduced to soundscape ecology has been adopted by more and more research laboratories.

When we started recording 40 years ago, if you could record 10 hours, you would have an hour worth of usable data, good enough for records, movie soundtracks, museums.

But now, because of global warming, resource mining, man-made noise and other factors, it takes 1,000 hours to collect one hour of usable sound.

Half of the archive's collection was recorded in locations where the environment has changed so much since then that the sounds of the creatures are either completely silenced, or silenced at the time of the recording.

Usually, habitat assessment is done by visually counting the number of species of organisms in the area and the number of individuals belonging to each species.

But by combining the density and diversity of the sounds we hear and comparing the data, we can get a more accurate picture of the health of the habitat.

Let me give you a few examples, so you can see the possibilities that open up when you dive into the world of sound.

This is Lincoln Meadow

It's a three-and-a-half-hour drive from San Francisco toward the Sierra Nevada Mountains, at an altitude of about 2,000 meters.

In 1998, loggers convinced locals that a new method called "selective logging" would have absolutely no environmental impact: instead of cutting all the trees, they would selectively cut them.

We got permission to record the sounds before and after the logging, and we brought in the equipment and recorded the dawn chorus over and over again.

Here is the spectrogram

The spectrogram is an image of the sound over a given time span, spread across the screen from left to right -- 15 seconds are shown here -- low frequencies at the bottom, high frequencies at the top, low frequencies at the bottom, and high frequencies at the top.

As you can see, the characteristic waveform of the babbling brook is visible in the bottom third to half of the screen, while the birds that once lived in the meadow are chirping at the top of the screen. There were so many birds.

It's displayed at the top of the screen. There were so many birds.

This is Lincoln Meadows before selective logging

(Birds chirping) A year later, I went back to the same place, followed the same steps, under the same conditions, recorded the same dawn chorus over and over again, and here's the result.

This is after selective logging

The babbling brook still exists in the bottom third, but the top two-thirds is really lonely.

(Crying of wild birds) What you hear is the sound of woodpeckers

I've visited Lincoln Meadows 15 times in the last 25 years, and I can say with certainty that the biophony has not returned to its former density and diversity after logging.

Here's a picture of Lincoln Meadows after it's been logged. From a camera's perspective or a human eye, it looks like very little has changed.

However, our ears cannot be fooled.

They ask me what the animals say, but they ask me what the animals say, and I don't know.

But the animals are sending out some kind of message.

Whether we can make sense of it is another matter.

I was walking along the coast of Alaska and found a tidal pool full of sea anemones, really beautiful carnivores, cousins ​​of coral and jellyfish.

I wanted to know if sea anemones make sounds, so I put a rubber-covered underwater microphone in its mouth, and the creature immediately tried to fit the microphone into its belly, crawling its tentacles over the surface of the microphone for food.

It sounds like radio noise. Let me hear it for you.

(sounds like radio noise) See, but when you know it's not food, (sounds like a horn) (Laughter) I guess that phrase works in any language.

(Laughter) At the end of the breeding season, the Great Basin Skifrog digs a three-foot burrow in the hard desert soil of the western United States, where it spends several seasons until it becomes comfortable above ground.

In the spring, when the soil becomes saturated with water, the frogs come to the surface and congregate in large numbers in large spring-filled ponds.

And they sing in unison, a beautifully harmonious chorus.

There are two reasons for this

The first is competition. They are looking for a mate to mate with. The second is cooperation.

Here's a spectrogram of their choir, showing a very healthy pattern.

(Frog croaking) Mono Lake is in California, just east of Yosemite National Park. It's a favorite habitat for these frogs. It's also a favorite training ground for U.S. Navy pilots. yes drowns out the chorus of frogs

As you can see in the spectrogram below, the high frequency voices we saw in the first spectrogram have lost their power, and you can see the chorus pauses at 2.5 seconds, 4.5 seconds, 6.5 seconds.

(Frog croaking) After this low-flying flight, it took the frogs 45 minutes to re-chor, during which time I witnessed two coyotes and a great horned owl prey on several frogs under the full moon.

And the good news is that after restoring habitat and reducing the number of flights, frogs, which had been declining in the 1980s and '90s, returned to their former numbers.

Finally let's talk about beavers

It's a very sad story, but it tells us that animals can sometimes show emotions, a topic that old biologists would disagree with.

A colleague of mine was recording sounds in the American Midwest, near the end of the last ice age, probably around 16,000 years ago, by a lake.

At one end of the lake was a beaver-made dam that kept the ecosystem in a delicate balance.

One afternoon, as he was recording, out of nowhere, some gamekeepers appeared, and for no apparent reason, they approached the beaver dam, planted dynamite, and blew it up, killing the mother beaver and her children.

My colleague was so horrified that he stayed, picked himself up, and continued recording for the rest of the afternoon. That evening, he recorded something astonishing: a lone surviving male beaver swimming in a slow circle, crying mournfully for its dead mate and cubs.

It was the saddest sound I had ever heard from any living creature, including humans.

(Beaver barking) How are you?

There are many facets to soundscapes, some of which are animals that teach us to sing and dance.

By now, you can see how biophony can help us understand the natural world.

I've talked about the effects of underground resource mining, and I've talked about man-made noise and habitat destruction.

Environmental scientists try to understand the world from what they see, but they understand the world much better from what they hear.

Biophony, or geophony, are sounds that reveal unique characteristics of the natural world, and when we listen to them, they give us a sense of place and we hear real stories about the world in which we live.

In a matter of seconds, soundscapes can reveal a wide range of information from many perspectives, from quantifiable data to cultural inspiration.

When you look at space with visual information, you unknowingly limit your perspective to the front, but the soundscape expands the 360 ​​degrees that surround you.

If a picture is worth a thousand words, a soundscape is worth a thousand pictures.

Through our ears, we hear the voice of all living beings, whether they are plants or animals, whispering to the source of life. It may hold the secret to loving all things, especially human beings. For the final message, let's leave it to the jaguar of the Amazon.

(Jaguar roars) Thank you for your attention.

(applause)

Where are you from? the question is

It's very simple, but in this day and age, the answers to simple questions are becoming more and more complex.

I'm often asked where I'm from, and most of the people who hear it think of India as the answer.

But since I was born, I have never lived in India for a single day.

I can't speak a single word out of over 22,000 Indian dialects.

So I don't feel qualified to call myself Indian.

a question asking where you are from

If it means "Where were you born, raised and educated?"

I come from a strange little country called England, but I left England soon after I graduated from college, and all my childhood, I was the only one in my class who looked nothing like the classic English heroes you see in textbooks.

a question asking where you are from

"Where do I pay my taxes?

Do you want to go to the hospital or the dentist?"

I'm American, which means I've been a little kid for 48 years now.

But for many years, I had to carry around a strange pink card with a green line across my face that indicated I was a permanent alien.

I strongly feel that the longer I live, the more I become a foreigner...

(Laughter) So if you're from

If it means "Deepest in your heart - where do you want to spend most of your time?"

I'm Japanese, and for the last 25 years, I've spent as much time as possible in Japan.

But I always enter the country on a tourist visa, and I don't think many Japanese would want to think of me as a friend.

I tell this story because I wanted to emphasize how outdated and simple my background is. I want to emphasize how simple it is. When I go to Hong Kong, Sydney, Vancouver, many of the kids I meet there are much more cosmopolitan and more culturally diverse than I am.

In addition to the hometown to which they are connected to their parents, they have a hometown associated with their spouse or lover, where they happen to live at the time, and where they want to live.

They live their lives taking pieces of different places and putting them together like stained glass.

For them, home is a work in progress.

It's like a project that's constantly being upgraded and improved and fixed.

Many people think of home as a place connected to the soul, not the soil.

If suddenly someone asks you, "Where is your hometown?"

I think of my dearest and dearest friend, the song that's in my head all the time.

I've always thought so, and there was an incident that really struck me a few years ago when I was walking up the stairs at my parents' house in California, and I looked out the living room window and saw that the house was surrounded by 20-meter high flames, wildfires that are consuming the hills of California and many other places.

Three hours later, the flames had reduced my house and everything inside to ashes, and I was the only one who survived.

The next morning, when I woke up on the floor of my friend's house, all I had with me was the toothbrush I bought at the grocery store in the middle of the night.

If at that time someone asks me, "Where is your house?"

Couldn't point to a physical location

My hometown was only in my heart

In many ways, I think this is a wonderful liberation.

When my grandparents were born, they were born with a sense of home, a sense of community, even a sense of antagonism, and there was little chance of getting out of it.

But today, we're able to choose what our home is, create a sense of community, shape our sense of self, and overcome the racism and simplistic judgments of our grandparents.

No wonder the president of the most powerful nation on earth has half Kenyan descent, and the president of the most powerful nation on earth has half Kenyan descent, was briefly raised in Indonesia, and has a Chinese-Canadian stepbrother.

There are now 220 million people living outside their home country, an unimaginable number. If you add all the populations of Canada and Australia together, and add all the populations of Canada and Australia together, and then add the populations of the two countries again, and double that number, you still don't have the numbers of this huge mobile population.

The number of people living outside the framework of the old nation-state is growing at breakneck speed. In the last 12 years, it's increased by 64 million people, and soon it will be larger than the population of the United States.

That's already enough people to make the fifth largest country on earth.

In fact, the average inhabitant of Canada's largest city, Toronto, was born in a different country, formerly known as a foreigner.

The beauty of being surrounded by the exotic is that it wakes you up.

nothing to take for granted

Traveling is like love for me Suddenly all the senses switch on

You begin to feel the secret side of the world.

As Marcel Proust famously said, "The true voyage of discovery is not to seek new landscapes, but to have new eyes."

With new eyes, old landscapes and even your hometown will look different.

Many people living in foreign countries are evacuees.

But for the lucky ones, the Great Migration Age offers exciting new possibilities.

When I travel, especially in the big cities of the world, I meet people like this, for example, a young Korean-German girl who lives in Paris.

If she met a young Thai-Canadian man from Edinburgh, she would instantly recognize him as a mate.

You think you have more in common than someone who is 100% Korean or 100% German.

they became friends and fell in love

move to new york

(Laughter) Or Edinburgh.

The little girl born of these two is not Korean, German, French, Thai, Scottish, Canadian, or American, but -- it's a combination and development of elements from all these places.

Maybe the way this girl dreams about the world, or writes about it, or thinks about it, is different than most people because it comes from a mix of cultures like never before.

We've come to an age where "where we're going" is far more important than "where we're coming from."

More and more people are living as much in the present and the future as they did in the past.

Home is not just the place where you were born.

Home is a place where you can be who you really are.

But there's one big problem with mobility: it's very hard to know where you are when you're moving around.

A few years ago, I realized I had accumulated a million miles on United Airlines alone.

It's that weird system where if you do badly for 6 days, you get the 7th day free.

(Laughter) I've come to think that mobility is useful and meaningful only when you can stop.

Eight months after my parents' house burned down, I bumped into a friend who teaches at a local high school.

I try not to believe those words too soon I try not to believe those words too soon

"It's true," he continued, "it's only a three-hour drive—and it's not expensive."

I'm starting to get a little curious, "Where are you?"

"Um," my friend cleared his throat and stammered- "It's actually a Catholic monastery."

was not a good answer

I went to Anglican school for 15 years, so I've experienced hymns and crosses for a lifetime.

I've had enough

But a friend of mine and one of his students, who aren't Catholic, said he takes his students there every spring.

He says that even the most restless, distracted, androgen-ridden 15-year-old Californian boy finds just three days of silence calming and clearing his mind.

you can know yourself

I thought, "If it works for a 15-year-old boy, it must work for me."

So we drove three hours north along the coast, where there were fewer and fewer cars, the road narrowed, and eventually we entered a narrower path, followed an unpaved bend for about three kilometers, and then climbed up to the top of the mountain.

When I got out of the car, the air was full of power.

The whole place was completely silent, and that silence is not the absence of noise.

There was some kind of energy or pulsation.

Beneath my feet, the Pacific Ocean stretched far, like a still blue slab.

It's surrounded by 800 acres of dry scrubland.

I entered my room

It's small, but very comfortable, with a bed, a rocking chair, a long desk, and an even longer window that overlooks a small walled garden, from which golden reeds descend a slope of 1,000 feet to the sea.

I sat down and started writing, and I came here to get away from work, and once I started writing, I couldn't stop.

By the time I got up from my desk, four hours had passed.

It was already night, and the stars spread out like a sprinkling of salt in the sky, and I could see the taillights of cars disappearing over the tip of a headland about 20 kilometers to the south.

The things that bothered me until the day before disappeared

The next day, I woke up in a room with no phone, no TV, no computer, and the day felt like a thousand hours.

I thought these things were the freedom that you get when you travel, but they make you feel like you're back home.

I'm not religious I didn't go to church I'm not religious I didn't go to church

I didn't ask the monks for advice.

Just walk the streets around the monastery and send postcards to your loved ones

I was looking at the clouds, and I was working on what is usually the hardest thing to do, which is to do nothing.

I kept coming back to that place, just sitting there quietly and unconsciously doing the most important work, making important decisions that I would never have been able to do while I was so busy juggling emails and appointments.

Something inside me was craving for silence, but I was too busy to hear it, but I was too busy to hear it.

I was like the crazy person who blindfolded himself and complained, "I can't see anything."

It reminded me of a famous quote I read in a Seneca book when I was a child, "It is not he who has little, but he who desires much is poor."

Of course, I'm not going to tell you that you should go to a convent.

because the point is not there

But I think it's only when you stop - you know where you're going.

And it's only when you step aside from life and what the world is doing that you realize what's most important to you -- and find your home.

Now, many of us make a conscious effort to sit quietly for 30 minutes each morning to gather our thoughts in a corner without our electronics, or go for a run every night, or go out for a chat with friends without our phones.

Mobility is a wonderful privilege, and it has allowed me to do a lot of things that were unthinkable in my grandparents' time.

But movement only makes sense when you have a home to return to.

After all, home isn't just a place to rest

It's a place to stop as a base

thank you

(applause)

(applause) (music) (applause)

They say, "The grass is greener on the other side," and I think you're right. President Obama has often said that South Korea's education system is a benchmark for success.

But the reality is that the South Korean school system is so rigid and competitive that it's been called a pressure maker, and not everyone can thrive in that environment.

Many people have adapted to this system of education in their own way, but my way of coping with the enormous pressure was to make a bow out of wood near my apartment.

why bow?

I'm not sure

Perhaps a wild instinct for survival under constant pressure combined with the bow.

Come to think of it, bows have kept humans alive since prehistoric times Bows have kept humans alive since prehistoric times

Three kilometers around my house used to be a mulberry field.

To make this historical fact known, the government planted mulberries.

These mulberry seeds were carried here and there by birds, and even spread by highway noise barriers built during the 1988 Seoul Olympics.

No one cares about this area around the sound barrier, and it's largely untouched.It was here that I found my first treasure.

Once I got hooked on making bows, I started looking not only in my neighborhood but also far away.

On school excursions, on the way home from family trips and after-school activities, on the way home from family trips and after-school activities, he would go into the woods and collect branches, and he would secretly put tools in his school bag.

They wrapped things like saws, knives, sickles and axes in towels.

I used to take the bus and the subway to bring the branches home. I used to take the bus and the subway to bring the branches home.

I didn't bring any tools up to this point.

Because there is a security check at the airport (laughs)

(Laughter) I was secretly covered in sawdust in my room.

One day, there was a fire when bamboo was heated to change its shape.

where do you think It's on the roof of my apartment building, which was occupied by 96 families.

A customer at the department store across the street called 911, so I ran down and told my mother what had happened. My hair was half on fire.

I would like to take this opportunity to say something to my mother who is in the audience today.

My mother had to explain over and over again that my son didn't set the fire.

I've done extensive research on bows from all over the world.

In the process, I tried to combine bows from different times and places to create the most effective bow.

We used different kinds of trees, maples, yews, mulberries, and so on, and we did a lot of bow-pulling experiments in the bushes along the highway I talked about earlier.

The most effective bow for me is

One is that the bow bends well and the spring works well when shooting an arrow.

Second, when the arrow is drawn, the bow barrel bends inwards, producing more force.

The third is that the tendon used in the curved part, called Himetan, can withstand a large amount of tension.

Fourth is the horn, which is used to store energy.

Adjust, break, redo, repair, bend, fix again, my ideal bow has taken shape, and here is the finished product.

I'm very proud of myself because I made the perfect bow myself.

This is a picture of a traditional Korean bow that's on display in a museum.

Thank you to my ancestors for stealing my inventions (Laughter).

Learning the wisdom accumulated over the years and reading the messages left by my ancestors was better than any counseling or advice given by adults today.

While I did a wide range of research, I never stuck to any one era.

From this realization, I began to take an interest in Korean history, even though I had never been interested in it before.

After all, the grass was greener in my garden, we just don't notice it.

Now let me show you how good my bow is

let's take this bow

This is a bamboo bow, a 20 kilo bow.

(Sound of arrows being shot) (Applause) Bows are simple mechanics, but to make a good bow you have to pay close attention.

Listen to the voice of the wood and have a good conversation Listen to the voice of the wood and have a good conversation

Every fiber in wood has a meaning and a role. Only when they support and fuse together can a wonderful bow be born.

I may be an odd student and an unconventional hobbyist, but I hope I can help you by sharing my story here.

My ideal world would be a world where no one would be left behind, where everyone is needed and where they should be, just like the fibers and tendons of a bow, where the strong are flexible and the weak are resilient.

The bow looks like me I look like the bow too

i give you a part of me

I released a piece of my heart into your heart

Did it capture your heart?

thank you

(applause)

Here are the most important economic facts of our time.

Now, income inequality is growing rapidly, especially between the top and the rest, especially between the top and the rest.

This shift is most pronounced in the United States and the United Kingdom, but it's a global phenomenon.

It's happening in communist China, it's happening in ex-communist Russia, it's happening in India, it's happening in my home country of Canada.

Even moderate social democracies like Sweden, Finland, Germany.

Let's look at what's going on with a few numbers.

In the United States, in the 1970s, the richest 1% earned 10% of the national income.

Today, the wealthy have more than doubled their earnings, earning over 20%.

But what's even more shocking is what's happening at the top of the income distribution, what's happening at the top of the income distribution.

In the United States today, the top 0.1%

Earns more than 8% of the national income Earns more than 8% of the national income

We are earning the ratio of 1% of the wealthy class 30 years ago.

To clarify, let's look at another number, which was calculated in 2005 by Robert Reich, Clinton's secretary of labor.

Reich took two undisputed billionaires, Bill Gates and Warren Buffett, and said that the combined wealth of these two men is the same as the combined wealth of the bottom 40% of American society, 120 million people.

Warren Buffett is a super-rich man, and Warren Buffett is a super-rich man, and he keeps a keen eye on this phenomenon, and he has his own favorite numbers.

Buffett often points out that the 1992 Forbes 400 -- the 1992 Forbes 400 -- the top 400 richest people in America had a total wealth of $300 billion.

please think about it

In 1992, you didn't have to be a billionaire to be in the Forbes 400.

But now that number has more than quadrupled to $1.7 trillion, and of course none of this has happened to the middle class.

There's a rise in super-rich people all over the world right now, but we don't really realize it.

The reason for this is the same as the boiling frog fable.

Slow change means it's hard to notice, even if the impact is huge.

What happened to the frog in the slowly heating water?

but that's not all

Talking about income inequality is unsettling, even for those who aren't on the Forbes 400 list.

It's not a very bright and predictable story, because it's about how to divide a fixed-sized pie, not how to make the pie bigger.

Talking about income distribution, and income redistribution beyond that, is also an obvious threat to anyone in the Forbes 400.

Income inequality is growing rapidly right now, and it's getting even worse, especially at the top.

What is the cause and how should I deal with it?

There are also some political factors: low tax rates, deregulation, deregulation especially in financial services, privatization, weak legal protections for trade unions, all of which make those at the top of the income distribution even richer.

These political factors can be broadly summed up as "criminal capitalism," meaning that this political transformation benefits certain well-connected individuals but does little to others.

Practically getting rid of crony capitalism is very difficult.

In Russia, for example, over the years various reformers have tried to end corruption, and even after experiencing the worst economic crisis since the Great Depression, it has been very difficult to re-regulate the banks. Even large multinational corporations, including those whose motto is "Don't be evil," have become very difficult to get them to pay taxes at roughly the same rate as the middle class.

Practically speaking, getting rid of crony capitalism is really hard, but in theory it's easy.

No one thinks that crony capitalism is good.

In fact, the left and the right have a rare agreement on this.

Criticizing crony capitalism is as important to "Tea Party" as it is to "Occupy Wall Street."

But even if crony capitalism is easy, at least in my head, the complication is that it's economically fueling burgeoning income inequality.

itself isn't that mysterious

Globalization and technological change have both transformed the economy, but they've changed our lives, they've transformed the global economy, and they've given rise to the super-rich.

please think

For the first time in history, when a passionate entrepreneur comes up with a fresh idea or a great new product, they can instantly access a global market of over a billion people with almost no barriers.

As a result, very, very smart, very, very lucky people get very, very rich, very, very quickly.

A recent example of this phenomenon is David Karp.

Founder of blogging service Tumblr, the 26-year-old recently sold his company to Yahoo for $1.1 billion.

Think about it, $1.1 billion at the age of 26.

As you know, technological innovation and globalization have created these superstar effects in the glamorous world of sports and entertainment.

Great athletes and performers are putting their talents to work in the global economy today like never before.

But now the superstar effect is spreading across the economy.

Some superstar technologists

There's a superstar banker

We have superstar lawyers and superstar architects.

There are superstar cooks and superstar farmers.

And then, and this is my favorite example, there are superstar dentists, the brightest of which is Bernardo Tuati, a Frenchman who helps his fellow superstars smile, like Russian businessman Roman Abramovich and European-born American fashion designer Diane von Furstenberg.

I know very well that globalization and technological innovation are creating these global super-rich people, but it's very difficult to understand how to make sense of it.

Because much of what globalization and technological innovation have done, as opposed to crony capitalism, has been very positive.

Let's start with technology

i love the internet and mobile devices

And I think it's great that this talk can be seen by anyone who wants to, even if they're not here.

globalization is even better

This globalization has lifted hundreds of millions of the world's poorest people out of poverty and into the middle class. And for those who live on the rich side of the world, globalization has made a wide variety of products more accessible. Think about who made your iPhone -- and the old ones are considerably cheaper.

So do dishwashers and T-shirts.

Are there any downsides?

there are actually a few

One of the things that worries me is that the rise of the so-called powerful super-rich could easily turn into crony capitalism.

Imagine, you're an amazing entrepreneur, and you become a billionaire by successfully selling your ideas and products to billions of people around the world.

Then there is the temptation to use your economic intelligence to manipulate the global political and economic rules to your advantage.

This is not just a hypothetical story

Look at Amazon Apple Google Starbucks

These are some of the most respected, loved and innovative companies in the world.

At the same time, one of the things they've been particularly good at is using the international tax system wisely to dramatically reduce the taxes they pay.

We cannot be content with manipulating the existing global political and economic system to our maximum advantage.

Once you have a tremendous amount of economic power, and the political power that comes with it, which is at the top of the income distribution, it's tempting to change the rules of the game to your advantage.

Again, it's not just a hypothetical story.

It's also what the post-Soviet Russia oligarchs did when they privatized Russia's natural resources of the century.

It's another way of looking at the consequences of the deregulation of financial services in the United States and the United Kingdom.

The second thing that worries me is that the rise of powerful ultra-rich people is prone to aristocracy.

These ultra-rich people are alpha geeks, and they know very well how important analytical and mathematical skills are in today's economy.

That's why they're devoting more time and resources to educating their children than ever before.

The middle class also spends a lot on education, but the elite education race in the global world starts in kindergarten and continues all the way to Harvard, Stanford, and MIT, while the remaining 99% are getting far behind the 1%.

The result is what economists Alan Kruger and Miles Corack call the "Great Gatsby Curve."

As income inequality increases, social mobility decreases.

The rise of the super-rich may be the result of meritocracy, but increasingly, those who are not born at the top of the income distribution cannot even compete.

And the third thing that worries me the most is how much these generally positive forces that are driving the rise of the global super-rich are simultaneously hollowing out the middle class in the industrialized countries of the West.

Let's start with technology

This force that creates millionaires is also swallowing up many traditional middle-class jobs.

When was the last time you used a travel agency?

In contrast to the Industrial Revolution, these new economic giants haven't created many new jobs.

General Motors hired hundreds of thousands in its heyday, but Facebook has less than 10,000.

The same goes for globalization.

We're lifting hundreds of millions of people out of poverty in the emerging world, while outsourcing a lot of our work from the developed world in the West.

The terrifying reality is that if the economy grows, of course, there is no rule that everyone will get richer.

And that's what the most alarming statistic of our time shows.

Since the late 1990s, productivity growth has been decoupled from wage and employment growth.

So our country is getting richer, our businesses are getting more efficient, but we're not creating more jobs, and overall wages aren't increasing.

A terrible conclusion that can be drawn from all this is structural unemployment.

But it's another scenario that worries me more.

After all, in a completely free market for labor, almost everyone can find a job.

But the worrying thing is that a few geniuses will invent Google or something like that, and the rest of us will end up doing nothing but rubbing the shoulders of the geniuses.

When these thoughts make me very pessimistic, I think of the industrial revolution and relax.

Even though it was scary, it worked out in the end, didn't it?

We're getting richer, healthier, taller -- with a few exceptions -- and living longer than our early 19th-century ancestors did.

But it's important to remember that until we could share the fruits of the Industrial Revolution with a wider society, we had to navigate through two recessions, the Great Depression of the 1930s and the Great Depression of the 1870s.

We also deliberately made sociopolitical reforms, we made sociopolitical reforms.

we created a modern welfare state

made public education

Created a public health insurance system

created a public pension

created a labor union

Today, we are living in an era of economic transformation that rivals the industrial revolution in scale and scope.

To ensure that this new economy benefits everyone, not just the super-rich, we must embark on an equally ambitious era of social and political change.

We need a new New Deal policy.

(applause)

I'm Tom and today I'm going to show you my "work".

Actually, there are certain things that I do with my mouth that make money.

(Laughs) Usually, the stage is set in a small bar in the city or on the street.

(Beatbox) Well, one more song, a nostalgic masterpiece

(Applause) Let's take it back, let's go back to those days

(Beatbox "Billie Jean") Billie Jean ain't my lover He's just saying he's my girlfriend A kid ain't got nothing to do with me (Applause)

Hello everyone

Thank you TEDx

Again, I'm Tom Sam, the beatboxer. Actually, all the sounds you've just heard are my voice, nothing else.

I'll prove it to you, look, this mic has absolutely no tricks or gimmicks.

(Applause) It's nice to get some applause for everything.

mother! I finally did it!

I'm the happiest I've ever been. Some people have the same talent but can't turn this into a career.

The market is still small and there aren't many jobs, especially in my hometown.

brisbane is a great place to live

oh! It seems that people from all over the city are coming

(Laughter) I'm from Brisbane.

So most of my work is out of town, or rather, out of the country.

So I want to share my experience with you

Let's all go on a world trip Let's go beyond the earth and travel the world with sound

Your starting point is the desert of central Australia.

(Indigenous musical instrument didgeridoo) (airplane) India

(Beatbox) (Indian string instrument sitar) China

(Chinese string instrument guzheng) (beatbox) Germany

(Beatbox) Come on, let's party

(Laughter) Now it's time for the final destination, but before that, I want to show you a new technology that I brought with me from Brisbane.

This is a machine called Chaos Pad, and it can add various effects to my voice.

First of all, this machine on the left, it makes my voice sound better.

(Laughter) Now here's a machine that can record different sounds and combine them, like a drum machine.

Record my voice and press this button to play

(sound) TEDx

(music) (applause) You've run out of time.

And finally, this is the machine on my right side that plays my voice over and over and over and over again.

With all these machines, we're taking you to a completely different world, transforming the Sydney Opera House into a city jazz bar.

then please listen

(music) Let me introduce you to my alter ego, a first-class bassist.

"Smoky Jefferson"

(Music) Okay, everyone. Finally, today's main event is the appearance of a famous jazz player.

Music lovers and jazz lovers alike, please give a warm round of applause.

(music) (applause) Thank you very much.

(applause)

we are at a crucial time

Our leaders and supposedly great organizations are failing us.

why?

Sometimes it's because of incompetence or dishonesty, but more often it's because you're aiming in the wrong direction.

this is not acceptable

must stop

How can such mistakes be corrected?

How can I choose the right path?

it won't be easy

I've worked with many great teams over the years, and they've chosen the right goals and the wrong goals.

There have been many successes and many failures.

I want to talk to you today about what makes that difference, what is important and why and how they set meaningful and ambitious goals -- the right goals for the right reasons.

Let's go back to 1975

this is me

I was a long-haired computer engineer who learned a lot. I worked for Andy Grove, who has been called the greatest manager of all generations.

Not only is he a great leader, but he's also a great teacher, and he told me, "It doesn't really matter what you know. It's all about doing."

He also created a system of "goals and key outcomes."

Your vocabulary is good

a system to run well

This is a famous clip from the 70's where Professor Andy Grove is speaking.

(Grove) The two keywords for managing by objectives are goals and key outcomes, each of which has its own uses.

Goal Orients

Key outcomes must be measurable You must be able to say, without arguing, when you're done, "Did you do it or didn't you?" Yes or no, simple.

(Doah) It sounds like Andy

yes or no it's simple

OKRs (Objectives and Key Results) are simple goal-setting systems that can be used by organizations, teams, and individuals.

A goal is what you want to achieve

The "key outcome" is how you do it

“Objectives” and “Key Results”

"What" "How"

The truth is, many people set the wrong goals, and most of them don't even set them.

Indeed, many organizations set some goals and achieve them.

It makes sales, it launches a new product, it puts out numbers, but it lacks the sense of purpose that inspires the team.

How to set goals correctly?

First, we need to answer the question, "Why?"

why?

The teams that really make a difference are the ones that have a good combination of ambition, passion and purpose, and have a clear and compelling reason.

let me give you an example

I work with an amazing entrepreneur

A woman named Jeannie Kim

I run a company called Nuna.

Nuna is a healthcare information company

When the company was founded, it used data to meet the health needs of employees of large companies.

About two years after its founding, the U.S. government called for a company to build the first cloud database for Medicaid.

You know that Medicaid is the health care that supports 70 million Americans, and it targets the poor, the children, the disabled.

Nuna had only 15 people at the time, and the database had to be built in a year.

It's time to bet on the company's fortunes, and Genie seized the opportunity.

I jumped at the opportunity without hesitation.

why?

there was a personal reason

Genie's younger brother Gimon was autistic.

I had my first major seizure at Disneyland when I was seven years old.

I fell to the ground and stopped breathing

Genie's parents were immigrants from South Korea.

He came to America with little recourse, didn't speak English very well, and it was up to Genie to get his family on Medicaid.

when she was nine years old

That moment defined her mission, and that mission became her company, and that company bid on this big deal, won it, and did it.

genie explains why

Genie: Medicaid saved my family from bankruptcy, and it's still keeping Gimon and millions of others healthy.

Nuna is my love letter to Medicaid

Each line of data is a person's life, a story that should be told with dignity.

(Doerr) Genie's story shows how a strong "why do you do it" can be a launch pad for your goals.

What exactly do you want to accomplish?

Good goals are important, action-oriented, and inspiring, and they act as a vaccine against vague thinking.

It's hard to imagine a rock star using "goals and key outcomes," but Bono has been using OKRs for years to fight poverty and disease in the world, and his organization ONE is working on two very ambitious goals.

One is debt forgiveness for the poorest countries

The other is to make HIV medicines universally available.

Why is this a good goal?

Check the checklist

important? Jesus specific? Jesus

action oriented? Jesus

What inspires you?

Let's ask Bono about this.

(Bono) Do you have passion?

How passionate are you?

What are you doing with that passion?

Passion has no meaning if the heart is not accompanied by the head

The OKR framework fosters enthusiasm, it's the inner workings.

It provides an environment of risk and trust where failure is tolerated.

If you have that structure and environment and the right people, the magic is right there.

(Doer) I like his words.

OKRs foster enthusiasm The magic is right there

It fits well

Bono told me why he does it and what his goals are

Let's turn our attention to what we're going to do now

I said that how you do it is the main result.

it's a way to reach your goals

Good results are specific and time-bound

proactive yet realistic

It can be measured and verified

That's a good major achievement.

In 1999, I introduced OKRs to Google founders Larry and Sergey.

They're 24 years old in the "garage" pictured.

Sergey said enthusiastically that he would adopt OKR—

isn't it accurate

I actually said, "I don't have what it takes to run a company, so I'm going to try that."

(Laughter) I took that as a stamp of approval.

But after that, every Googler, every quarter, wrote down their goals and key achievements.

We evaluate it and publish it for everyone to see.

It's not used for bonuses or promotion assessments.

that's another story

It's for a higher purpose, for everyone to work seriously toward that goal.

Back in 2008, Google's Sundar Pichai's goal was to build the next generation client platform for the web apps of the future -- in short, to build the best browser.

he chose his key achievements very thoughtfully

How can you measure the best browser?

There are "ad clicks" and "engagement".

He chose the number of users, because it's up to the users to decide if Chrome is a great browser.

Three years with one goal: to build the best browser

The key result was the same number of users every year, but we were raising the bar.

In the first year, we aimed for 20 million users, but we didn't achieve it.

was less than 10 million

Raise to 50 million in the second year

The result was 37 million

getting better

In the third year, we raised the target even further to 100 million.

Do an aggressive marketing campaign, expand your channels, make technical improvements and BOOM!

Reached 111 million users

I love this story not because it has a happy ending, but because it's carefully chosen the right goals and has been chasing them for years.

It's a perfect story for a geek like me.

I see OKRs as transparent vessels made up of aspirational "whats" and "hows."

What really matters is why you put it in that vessel.

why do you do what you do

OKRs are not a panacea

It's not a substitute for a strong culture or strong leadership, but if you have that foundation in place, OKRs will get you to the top.

I want you to think about your life for a moment.

Do you have good metrics?

Write down what you value, your goals, your key achievements.

do it today

send me your opinion

to john@whatmatters.com

When you look at Intel's, Nuna's, Bono's, Google's goals to change the world, they're all absolutely amazing: ubiquitous computing, affordable and best healthcare for everyone, poverty-free world, making all the world's information accessible.

All of these goals are driven by OKRs.

I'm called "OKR's Johnny Appleseed," spreading the good gospel of Andy Grove, and I want you to join me.

Fight for what really matters OKRs aren't just for business

You can use it in your family, in your school, in your government.

Government can be held accountable

can change information

We can get you back on track, if only you could measure what really matters.

thank you

(applause)

Why can't I sleep?

Do you have serious thoughts?

Excitement before a big trip?

Stress from unfinished business? before the test? A family reunion that doesn't feel like it?

For many people, this kind of stress disappears quickly once the cause is removed.

But what if not being able to sleep is itself stressful and you can't sleep?

This seemingly unsolvable vicious cycle is the essence of insomnia, the most common sleep disorder in the world.

Almost anything can cause an occasional sleepless night: a snoring person next to you, physical pain, or emotional distress.

Something like jet lag, which disrupts sleep significantly, throws your body clock out of whack and disrupts your sleep schedule.

Most sleep disturbances subside after a short period of time

because I am exhausted and go to sleep

However, respiratory ailments, gastrointestinal disorders, and many other long-term health hazards have a stronger effect than fatigue.

The sleepless nights continue, and the bedroom reminds me of the sleepless nights, and I'm overwhelmed with anxiety.

When it's time to go to bed, people with insomnia become stressed.

When stress builds up too much, the brain hijacks the response system and fills it with chemicals that trigger a "fight or flight or cower response."

Cortisol and adrenocorticotropic hormone travel through your blood vessels, increasing your heart rate and blood pressure and making you hypervigilant.

In this state, the brain seeks out threats and cannot ignore even the slightest discomfort or noise.

By the time people with insomnia fall asleep, their quality of sleep is also compromised.

The brain's primary source of energy is glucose, but during healthy sleep, your metabolism slows down, saving this glucose for when you're awake.

PET studies have shown that adrenaline interferes with restful sleep and boosts metabolism.

Even during sleep, the body continues to work, supplying glucose as an energy source to the brain and continuing to consume it.

This condition causes the insomniac to wake up in a state of exhaustion, confusion and stress, and the process repeats itself.

When this cycle of stress and anxiety lasts for months, it's called chronic insomnia.

Insomnia is rarely fatal, but the chemical mechanism is similar to the anxiety attacks that occur during depression and anxiety.

Having one of these conditions increases your risk of having the other two as well.

Fortunately, there is a way to break the vicious cycle of insomnia.

Managing the stress that causes hypervigilance is the best way to treat insomnia, and good sleep habits reestablish the relationship with sleep times.

Keep the bedroom dark and moderately cool to minimize fear factors during hyperarousal

Use your bedroom only for sleep, and when you can't sleep, get out of your bedroom and exhaust yourself with activities that you can do while relaxing, like reading a book, meditating, like reading a book, meditating, journaling.

By keeping your sleep and wake times constant, you regulate your metabolism and adjust your body clock.

This circadian rhythm is also sensitive to light, so avoiding bright lights at night tells your body it's time to go to bed.

In addition to these remedies, some doctors prescribe sleeping pills, but there is no one-size-fits-all medicine.

Over-the-counter sleeping pills are highly addictive, and symptoms worsen when stopped

But before we treat it, we need to make sure it's actually insomnia.

About 8% of people diagnosed with chronic insomnia have a minority genetic cause, delayed sleep phase syndrome (DSPD).

DSPD is a disorder in which circadian rhythms are significantly longer than 24 hours and out of sync with typical sleep hours.

I can't fall asleep at my normal bedtime, but stress isn't the reason.

When my sleep time comes late, I can sleep comfortably

The sleep-wake cycle is in a delicate balance, and it's important for your physical and mental health.

That's why it's so important to put in the time and effort to keep a regular bedtime and not lose sleep.

I love paper and technology, and my job is to make paper interactive.

When people ask me what I do, I say yes, and that usually confuses people, so the best way to communicate what I do is to use technology to create creative experiences.

So I've been thinking about what I can do here. A few weeks ago, I had a crazy idea.

I'm going to show you the performance at the end of the talk, but I'm nervous whether I can show it properly.

I'm not a DJ or a musician, so I'm a little nervous.

I've found the best way to tell my story is to touch on a few small things that happened in my life.

First, I'm going to tell you about three things that happened to me, and then I'll tell you about my job.

As a kid, I was obsessed with wires. I wanted to run wires under carpets and behind walls to connect little switches and speakers to make my room interactive in a discreet way.

At the same time, I was very interested in wireless.

I bought a kit to make a little FM transmitter, and I dug out an old book and hid the transmitter in it.

I wasn't interested in what my father said.

What I was interested in was how you could make a difference by simply adding something to the things around you.

A few years later, I failed all my exams with flying colors, and I left school without doing much. Perhaps the reward was a one-way ticket to Australia from my parents, until I returned home four years later.

I spent my time on a remote farm

in western New South Wales

It is a farm with an area of ​​about 500 km2.

It housed 22,000 sheep and temperatures were around 40 degrees Celsius, or about 100 degrees Fahrenheit.

On this farm lived a farmer, his wife and a four-year-old daughter.

They took me in as a farmer and taught me how to live and work on the farm.

Of course, the most important thing is the sheep.

We build fences and use bikes and horses to move the sheep to the shearing sheds in season.

So what I learned was, at the time, I thought, like everyone else, that sheep were stupid when they didn't do what they were told, but now that I think about it -- in the past few weeks, I've realized that sheep aren't stupid at all.

The sheep just didn't want to follow our instructions because we were creating an environment they didn't want.

So the challenge was how to get the sheep to move the way we wanted them to, reading the weather and the terrain and setting the environment so that the sheep would flow in the direction we wanted them to go.

A few years later, I was at the Cavendish Laboratory at the University of Cambridge.

was in a PhD in physics

The theme of my PhD was to move electrons one by one.

And here again there was a realization, and looking back at what I was doing, I realized that this research was pretty much the same as moving sheep.

are really the same

It's not about moving, it's about arranging the environment to move.

I learned an important lesson here: instead of working on things,

Things move by changing the environment

So what we've done is scale it down to a size of about 30 nanometers, and if we change the environment by changing the voltage and the temperature as low as liquid helium, the electrons will move one by one, and the current will move in circles on the graph, turning on and off, acting like a little memory.

I wanted to take it one step further and achieve both on and off states by moving a single electron.

People told me it was impossible, and when other people tell me that, I want to make it happen.

I made up my mind and I've proven I can do it.

What helped me in this process was my experience on that farm. When I was working on the farm, I had no choice but to use what was around me, and when I put the environment on my side, there was nothing I couldn't do.

Printing is what I'm obsessed with right now, and I'm fascinated by the idea of ​​making paper and cards interactive using existing printing technologies that are often printed on many of our familiar objects.

When I started this project, I went to the printing company and told them that I wanted to print on paper with conductive inks, and they said, "I can't do that."

So I took out 10 credit cards, a loan, almost bankrupt, and bought a big printing press without knowing how to use it.

It was five meters long, and it covered the floor and me with ink all over the place, but I mastered how to print it.

When I went back to the printing company and showed them the finished product, they said, "Of course we can."

"Why didn't you come here in the first place?"

I'm always like this

What we're doing is taking an existing printing press, making conductive ink, using the printer to print, and then we're going to run hundreds of thousands of electrons onto many sheets of paper, making the paper interactive.

It's a very simple process

It's just a collection of things that have been around, but put together in a different way.

For example, a piece of paper printed with conductive ink is attached to a small substrate, and it has two chips on it. One runs capacitive touch software to detect where you touch it.

So let's take a look at some of the works we've created.

we created various things

this is one of them because i love cake

And this is a big poster, with a speaker behind it, and when you touch it, the poster speaks to you, and it asks you questions, and from those answers, you come up with the perfect cake.

But I can't tell you the corresponding cake on the spot.

Check out our facebook and twitter for images and reasons for your perfect cake.

We're trying to connect the physical world with the digital world in this way, not with a screen, but with something like a poster that you normally look at.

We're working with several universities on interactive newsprint.

For example, I made this newspaper, which at first glance looks like a normal newspaper.

Put on your wireless headphones, touch the newspaper, and you'll hear the music.

You can listen to the press conference, and at the same time read the editorial written by the reporter about the conference.

You can also press the "Like" button on Facebook and answer surveys.

Another idea that I created a few years ago was this project.

Government subsidized user-centered design for energy-efficient buildings, which I didn't understand at first, but when I went to the workshop, I quickly understood.

I wanted to create something that people would be motivated to use energy efficiently.

So instead of reading the power meter to see how much energy we're using, instead of checking how much energy we're using, we decided to make a poster that connects wirelessly. So if you use color-changing ink, if you're energy efficient, you'll have leaves, you'll have rabbits, and all will be well.

If you're inefficient, graffiti will appear and leaves will fall off.

In other words, it encourages people to take care of what's close to them. Rather than expecting them to improve their lives for the good, they're more likely to act if they feel good about themselves.

And when I think back to my experience on the farm, it's all about arranging the environment so that it works naturally, rather than telling people to do it.

Then

Now here's the part I'm most worried about

Here are some posters I made that let you play the drums.

I'm not a musician, but it looked interesting, so I made it.

Anyone who wants to play drums can enjoy

I will briefly explain how it works

This poster is wirelessly connected to my phone, and when I touch the poster, it launches an app.

(Drums) It's a very quick reaction.

It uses Bluetooth 4, so it's quite agile.

thank you

(Applause) And there's more.

This is a soundboard, and when I touch it, I love this awful sound.

(Siren, explosion, breaking glass) And here's the DJ table.

It's wirelessly connected to my iPad, and here's the iPad's software.

yes this is the best

I'm not a DJ, but I wanted to try it once.

(Scratch sound) There are two decks and a crossfader here.

I built new technology. I love being creative, and I love working with creative people.

So I asked my 15-year-old niece, a wonderful girl named Charlotte, so I asked my 15-year-old niece, a wonderful girl named Charlotte, to record something, and I mixed some beats with my friend Elliott.

This is my niece Charlotte

(music) Yay!

(Applause) I showed you what I do.

I enjoy combining technology and doing creative things.

But it's not the technology that matters.

We want to create great experiences

thank you

(applause)

Let's talk about "consciousness"

Why raise awareness?

That's because "consciousness" is a subject that has been strangely neglected in the world of science and philosophy.

i think it's weird

Because consciousness is the most important thing in our lives, and it makes sense logically: consciousness is a necessary condition for everything that matters in life.

If you're interested in science, philosophy, music, art, etc., it doesn't matter if you're a zombie or a comatose person.

That's why awareness is the most important thing.

The second reason is that even when people are interested in consciousness, they tend to make ridiculous claims.

Even if you don't say that, and even if you take it seriously, the research isn't progressing.

When I first got interested in it, I thought that consciousness was purely a biological problem.

So I used machines to try to understand the inner workings of the brain. So I used machines to try to understand the inner workings of the brain.

So I went to the University of California, San Francisco, and talked to some of the top neurobiologists, and they seemed annoyed, as is often the case with scientists who have been asked tough questions.

One of the most memorable was when a prominent neurobiologist said indignantly, "In our field, you can be interested in consciousness, but you should become a professor and get tenure first."

I have been working on this subject for a long time

Consciousness research might get me tenure now Consciousness research might get me tenure now

If so, we've made progress in this area.

So why is there this strange resistance and hostility to the study of consciousness? So why is there this strange resistance and hostility to the study of consciousness?

I think it's because of two features of intellectual culture that take diametrically opposed positions, but actually share common premises.

The first is the tradition of religious dualism, where consciousness does not belong to the physical world --

The idea that it is part of the mental world

The idea that consciousness resides in the soul and the soul does not belong to the physical world The idea that consciousness resides in the soul and the soul does not belong to the physical world

This is God's teaching, the tradition of the soul and immortality.

On the other hand, we have a tradition of accepting the worst assumptions, even though we're against this ourselves.

It's a tradition of hardline scientific materialists that consciousness doesn't belong in the physical world, doesn't it exist in the first place?

The view that it's a computer program or something that's kind of silly, and it's not the subject of science anyway.

It was a very stomach-churning discussion.

It's like this

"Science is objective, consciousness is subjective - so there can be no science of consciousness"

We are bound by these two traditions and cannot move.

It's very difficult to escape from two traditions.

The only thing I really want to tell you this time is that consciousness is a biological phenomenon, like photosynthesis, digestion, and cell division.

I'm going to look at some of those issues.

Now let's talk about some of the weirdest claims about consciousness.

1 "Consciousness does not exist"

Consciousness is just an illusion, like the setting sun

Scientifically speaking, both sunsets and rainbows are illusions.

Therefore consciousness is an illusion

2 "Consciousness may exist, but it is something else -

Consciousness is a computer program running in the brain."

3 “There is only action”

It's embarrassing to think about the past influence of behaviorism, but let's leave that story for later.

4 "Consciousness may exist, but it has no effect on the physical world."

"What if the mind can move something?"

Every time someone says this, I want to ask, "Shall I show you?" Every time someone says, I want to ask, "Shall I show you?"

Look, if I consciously try to raise my hand, it will.

Some days it goes up, some days it doesn't."

Instead, when you want to go up, go up.

Let me explain how it works

oh you haven't defined yet

You can't explain without a definition

Defining consciousness is said to be difficult

But without a scientific definition, I think it's rather easy.

I can't give you a scientific definition yet, but here's a common sense definition.

Consciousness consists of all states of feeling, feeling and perception Consciousness consists of all states of feeling, feeling and perception

Consciousness begins when you wake up in the morning, if you don't dream, and continues throughout the day, ending when you sleep, die, or become unconscious.

Dreams, by this definition, are a form of consciousness.

That's the common sense definition. It's this definition that we're going to consider.

I think anything that doesn't fit isn't consciousness.

Some might think, "Even if that's true-

How can such a thing exist in the real world? ”

If you've studied philosophy, you know that this is the famous mind-body problem.

A simple solution to this problem is

All of our states of consciousness, without exception, arise from lower neurobiological processes in the brain and manifest themselves as higher functions or system properties.

The mystery of consciousness is like the fluidity of water.

don't you Fluidity isn't water molecules releasing liquid --

is the state of the system

Just as a container of water changes from liquid to solid according to the behavior of its molecules, the brain also changes from conscious to unconscious, from conscious to unconscious, depending on the movement of molecules.

The famous mind-body problem is this simple.

Now let's move on to more difficult problems.

By identifying the various features of consciousness themselves, let's refute the four statements I just raised.

The first characteristic of consciousness is that it is real and irreducible.

Consciousness cannot be ignored

The difference between reality and illusion is the difference between how things appear in our consciousness and how things actually are.

As the French say "arc-en-ciel" (rainbow) In your consciousness, as the French say "arc-en-ciel" (rainbow) In your consciousness the rainbow looks like an arch in the sky and the sun seems to set behind the mountains.

In your mind, that's what it looks like, but it's not what's actually happening.

But you can't make the same distinction against the existence of consciousness because of the difference between what things look like and what they actually are.

Suppose one expert after another came up to me and said, "We're first-rate neurobiologists, and we've come to the conclusion that you're not conscious. You're a sophisticated robot."

Descartes is right in this matter, not thinking about it at all.

Because I can't doubt the existence of my own consciousness

This is the first feature of consciousness

exist and cannot be ruled out

Even if we point out that consciousness is an illusion, we can't just ignore it like a normal illusion.

The second feature of consciousness that causes us some trouble is that each of our states of consciousness has its own unique texture.

There's something about what it feels like to drink beer that's different than what it feels like to calculate your income tax or what it feels like to listen to music. And this quality leads to the third characteristic: States of consciousness are, of course, subjective, because they can only exist as experiences of a subject, such as a human or an animal -- some self that experiences a state of consciousness.

Even if there is a possibility that machines with consciousness can

We don't know how the human brain develops consciousness, so we're not in a position to build such a machine right now.

Another feature of consciousness is that it manifests itself as a unified field of consciousness.

I don't just perceive images of people in front of me and my voice and the weight of my shoes on the floor. These perceptions are part of one larger field of consciousness that stretches forward and backward.

This is the key to understanding the great power of consciousness.

It's still impossible to do with robots.

Unfortunately, until robotics finds ways to give consciousness, machines with a field of consciousness won't be available.

Next to this amazing feature of this integrated field of consciousness is the feature that consciousness functions as the cause of our actions.

I just raised my hand to show you the science, but how does that work?

How do thoughts in the brain move objects?

let me tell you the answer

We don't know the details yet, but we do know the basics: a series of neuronal firings occur, and when the signal reaches the axon terminal of the motor neuron, acetylcholine is released.

I've used "philosophical terminology," but when acetylcholine is released at the axon terminal of a motor neuron, a series of amazing things happen in ion channels, and this arm goes up.

Think about the story up to this point.

The exact same event as the conscious decision to raise your hand is explained on another level as having a sensory and mental quality.

A conscious decision is a thought in the brain, but it's also a rush of acetylcholine and many other phenomena that occur between the brain's motor cortex and the nerve fibers in the arm.

What this shows us is that the language we use to talk about the problem of consciousness is outdated.

We can explain the same phenomenon neurobiologically and mentally, but there is still one phenomenon, and that is the way nature is.

With that in mind, let's try to answer some of the previous objections in light of the various features of consciousness.

The first objection is that consciousness is an illusion and does not exist.

I already answered this, so don't worry

The second was incredibly influential, and you may still hear it today. The second was incredibly influential, and you may still hear it today.

It's a computer program that runs in the brain, and to create consciousness you just have to get the right program to create consciousness you just have to get the right program.

Don't worry about the hardware, as long as you can have a program - anything is fine as long as it's rich and stable."

It's clear that this is wrong

If you've ever thought about computers even a little bit, you've probably made a mistake, because the definition of information processing is the manipulation of symbols, usually 0s and 1s, but you can use any symbol.

Being able to program an algorithm in binary code is the defining characteristic of a computer program.

But this is purely grammatical and symbolic.

There's more to actual human consciousness than that.

Consciousness has content as well as grammar.

that means it has meaning

I made this argument -- I hate to think about it, but it was over 30 years ago. I hate to think about it, but it was over 30 years ago.

Consciousness creates the reality of money, wealth, government -- marriages, meetings at CERN, cocktail parties, summer vacations -- all of these things are created by consciousness.

Its existence depends on how the observer perceives it.

A piece of paper can turn into money, or a group of buildings into a university, depending on how the conscious agent perceives it.

Think about information processing here.

Is it absolute, like force, mass, gravity?

Or does it depend on how you perceive it?

Certainly there are essential parts

If you add 2 and 2, you get 4

It doesn't matter what anyone thinks

But when I pull out my calculator and do the math, the only thing that really matters is the electrical circuit and how it behaves.

That's the only absolute event

all the rest is our interpretation

Information processing does not exist without conscious interpretation.

Either a conscious actor carries out the process -- or has a device that does an interpretable process.

The process itself is not sloppy

I'm spending money on equipment.

On the other hand, it's easy to confuse subjectivity and objectivity as features of "reality" with subjectivity and objectivity as features of "assertion."

The point here is that it's possible to have a completely objective science that makes objectively true claims, even if it targets domains that are subjective -- the senses, emotions, perceptions that exist in the human brain -- subjective domains.

So it's kind of a joke to say, "It's impossible to have an objective science of consciousness because consciousness is subjective and science is objective."

It's a bad joke about objectivity and subjectivity.

Even if the domain is subjective, it is possible to make objective claims, and in fact neurologists do it.

If there is a patient who actually complains of pain, we try to understand the pain objectively and scientifically.

Now, I promised to refute all of them, but I'm short on time, so I'll refute just a few more.

I just said, "Behaviorism is a mistake if you think about it for a moment - it's the greatest shame in our intellectual culture."

Because you think mental state and behavior are equal?

For example, think about the difference between feeling pain and responding to pain.

It's possible to pretend to be in pain even if you don't feel pain

So this is an obvious mistake. Why did you make this mistake?

The source of the error -- and it's recurring in the literature of the past -- is that behaviorists believe that if we accept consciousness as irreducible, we're abandoning science.

All of the last 300 years of human progress, all hope, has been abandoned.

Everyone, remember, consciousness is a purely biological phenomenon, just like any other biological or scientific phenomenon. We should allow consciousness to be scientifically analyzed.

thank you

(applause)

What is the relationship between the "tide" of the detergent and sweat? If I asked you this question, you'd think it would be the easiest question to ask in Edinburgh this week.

But when I say that they're both examples of new forms of money in a tangled, digitized global economy, you're probably wondering what I'm talking about.

By the way, my specialty is advertising.

(Laughter) I'll explain later, but let's start with something else.

There's also a tougher question. A fellow writer asked me a few weeks ago, and I was at a loss for an answer. What is the strongest currency in the world?

Bitcoin is actually

Many of you may not be familiar with it, but Bitcoin is a cryptocurrency, a virtual currency, a synthetic currency.

It was developed in 2008 by an anonymous programmer with the handle Satoshi Nakamoto.

No one knows who he is on the internet-

Banksy (masked artist)

I may not be the right person, but anyway, let me explain my understanding of how it works. Bitcoin is extracted through a process called mining.

There's a very complicated math problem, and the first person to solve it using a computer network wins bitcoin.

When you take out a coin, it's recorded in a ledger called a blockchain, and it begins to circulate. It becomes money.

No authority or state backing

the network actually manages

It's been a huge success because it's private, anonymous, fast, and cheap.

There are indications that bitcoin fluctuates

Here's the range: from $13 to $266, it went up in four months, then crashed and lost half its value in six hours.

And as of right now, it's around $110.

Anyway, it looks like you've established some kind of position and status.

There are web services like Reddit and WordPress that accept bitcoin payments.

You can see the trust in this technology. Traditional institutions, currency and money thinking are being defeated or disrupted and need to be overhauled.

Not surprising given the economic crisis in the EU.

A recent Gallup survey found that bank trust in the United States is at an all-time low of 21 percent.

In this photo from London, you can see a bicycle system, an advertisement for British bank Barclays, with activist guerrilla campaigns, and the slogan has been rewritten to read:

"Go to Subprime" "Barclays Roller Coaster"

This is the most elegant picture I can show you today.

You see the point: we're starting to lose faith in the system.

Every year, a PR firm called Edelman does an interesting survey about exactly what people think of trust.

We are conducting an international survey, so the results are from all over the world.

The interesting thing is that hierarchies are being compromised and non-hierarchical structures are on the rise, where people trust people who are more like themselves than corporations and governments.

The fact that trust numbers are much lower in developed countries like the UK and Germany is

i think it's scary

People generally trust businessmen more than governments and leaders.

What's going to happen is that when you think about money and you get to the bottom of what money is, what money literally represents is value, agreed value.

What's changed in this digital age is that it's become much easier to determine value in a number of ways, and sometimes these ways of quantifying value make it much easier to create new and effective forms of money.

That's how we begin to understand networks like Bitcoin.

Now, at a time when the meaning of money, its relationship to us, and what defines it, is questioned, confused, and re-examined, the ultimate question that arises from these ideas is: Is there still a reason for governments to control money?

If you look at it from a brand's point of view, through the spectacle of marketing, a brand thrives or dies based on its reputation.

If you think about it, reputation is also a form of currency.

Our reputation is built on trust, consistency and transparency

Once we decide to trust a brand, we want to engage with it in a positive way, and we're already starting to use new forms of currency.

Given brand loyalty

It's basically microeconomics.

User points and mileage

A few years ago, The Economist reported that there are more unpaid miles than total dollar bills in circulation.

When you stand in line at Starbucks, you realize that 30 percent of Starbucks payments are actually Starpoints.

So the Starbucks currency circulates within that ecosystem.

Amazon recently launched Amazon Coin, which is interesting.

Right now, it's a purely Kindle-only currency.

You can buy apps, you can make in-app payments, and with Amazon in mind, notice that with the trust numbers that I just showed you, they're starting to trust businesses more than they trust governments.

And then Amazon realized they could push this further.

If you let it evolve naturally, you can buy not only Kindles, but books, music, household goods, household goods, and so on.

And before you know it, Amazon has become a brand that rivals the Federal Reserve, about how you want to spend your money, what money is, and what it's all about in the first place.

Now, as promised, let's get back to Tide, the detergent.

There was an interesting article in the New York Magazine about drug addicts in the United States using Tide detergent bottles to pay for their bills.

Steal Tide at a convenience store. A $20 bottle of Tide is equivalent to $10 of crack, cocaine, or other yak.

A criminologist investigated this and commented, "Tide is a premium product.

Sell ​​50% above the average price of competitors

It's mixed with very complex chemicals, it smells gorgeous and unique, and it's heavily advertised under the P&amp;G brand.

Drug addicts are also consumers, so when they see "Tide," they have a special short circuit in their nerves.

will be inspired

That's what trust is. That's right. This is quality.

Thus, Tide became a unit of currency, which, according to New York Magazine, led to a surge in bizarre brand-oriented crimes, and criminals dubbing Tide "liquid gold."

I thought it was funny how the P&amp;G spokesperson responded.

Even as he tried to stay away from drugs, he said, "One thing I've noticed is that brand values ​​remain consistent."

Speaking of sweat, we haven't talked about it yet.

Nike has a campaign in Mexico called 'Let's get sweaty'.

I mean, Nike shoes with sensors, or fuel bands, basically track your movement, your activity, your calorie burn.

What that means is that you've embraced Nike, and you've chosen to join the community.

It's not a loud campaign. Advertising is now starting to turn into services, tools and applications.

Nike acts as a service provider as a partner in happiness, health and fitness.

So it goes something like this: "In the data panel, you can tally things like how far you've run, how far you've gone, how many calories you've taken, and so on.

The more you run, the more points you earn and the more you can participate in Nike-only auctions.”

NO OTHER WAY TO PARTICIPATE NO PESOS IN A COMMUNITY OF SWEET USING NIKE PRODUCTS

It's just an auction that takes place in a limited member environment.

As you know, in Africa, airtime has its own currency.

Mobile has no enemies, everyone uses mobile to send and pay in a perfectly normal way.

From a brand perspective, Vodafone in Egypt is a good example, and many people shop at markets and independent shops.

Small amounts of change are a thorny issue, and when you do a lot of shopping and you get, say, 10 cents, 20 cents change.

Stores often give me onions, aspirin, gum, and I don't have change.

When Vodafone realized the problem -- it realized the consumer's pain, it created a small-price product called Fakka, which is what the store gives to the customer, and you can add that credit to your phone.

It's very interesting that this currency is gaining credibility.

Our research shows that in the United States, at a whopping 45 percent,

They say they don't mind using their own branded currency.

It's interesting, there's dynamic and interesting things happening.

The new money starts to use assets, changes perceptions and trades.

So is this a big change?

It may seem like a hodgepodge, but in 1860 in America, 1,600 companies issued banknotes.

There were 8,000 denominations of banknotes in the United States.

Until it ran out -- the government controlled only 4 percent of the supply -- and the reason it ended was the outbreak of the Civil War -- the government suddenly wanted to control the money.

The government, the money, the war, the characters don't change

So let's ask, "Will history repeat itself?

Will technology make paper money obsolete?

Separate government and money? ”

Brands are trying to fill this gap

Businesses, unlike governments, can fill the gap.

If you happen to visit this stage again next year, when you buy organic, fair-trade coffee, use a TED silver coin—whether it's a florin or a shilling.

thank you

(Applause) Thank you. (Applause)

Chao

this is our son mario

I'm two and a half years old, and I had a troubled pregnancy that required absolute bed rest for about eight months.

Seemed to calm down at the end

my son was born with a healthy weight

Apgar index was normal.

we were at ease

But 10 days after he was born, he was found to have had a stroke.

As you probably know, a stroke is damage to the brain.

A perinatal stroke is something that happens during the first nine months of pregnancy or shortly after birth. In my son, as you can see, he's missing the right side of his brain.

Due to the effects of the stroke, Mario could have limited movement on his left side Mario could have limited movement on his left side

If you compare it to a computer and a printer, you send a document to print, but the printer doesn't have the right drivers. And that's what happened to Mario.

He wants to move his left half of his body, but he sends that information correctly and can't move his left limb.

life changed

plans were forced to change

The birth of a child has changed the meaning that it brings to our lives.

As you can imagine, it was hard for us to accept.

I had never been taught how to deal with these obstacles, and countless questions came to my mind.

It was a really painful experience

If the question is simple, for example, "Why is this happening to us?"

"What went wrong?"

If it's tougher, "What is the impact on Mario's life?"

"Can he work?"

"Will the disability be cured?"

And as a first-time parent, I was like, "Why can't this kid be better than my parents?"

It hurts to say this, but after a few months, we realized that we felt like we had made a mistake.

The only thing left for the future was failure.

Moreover, this failure was a failure that had a major impact on my son's life, rather than on our husband and I.

honestly depressed

I was really depressed, but then I saw my son's face and knew I had to do something.

As my wife said, we immediately changed our lives.

We've taken the idea of ​​mirror neurons as part of rehabilitation, starting with physiotherapy and rehab.

I've been doing this for months with my son.

Hold an object, show it to your son, and teach him to grab things.

According to the mirror neuron theory, if you're watching me right now, the same neurons in your brain are working when you're doing this movement, and the same neurons are working when you're doing this movement.

It is said to be the most advanced method in the field of rehabilitation.

But one day my son doesn't see our hands,

I realized that it's all of us

Everything about his parents is a mirror for him

So, as you can imagine, it's not good for us to be depressed. We shouldn't see our son as a problem, not as a son, and be unable to move forward.

That day changed my way of thinking

we have to be good mirrors for our son

We started afresh to leverage our strengths and our son's strengths.

I decided to stop treating my son as a problem and see it as an opportunity to grow.

This was a real turning point, and we started saying, "What are the strengths we want Mario to inherit?"

We started with what we like

My wife and I have a lot of differences, and my wife and I have a lot of differences, but we also have a lot in common.

I love traveling, I love music, I love places like this, so we decided to bring Mario in and show him the best that we could show him.

This is how it looked last week

But -- (Applause) I don't mean to call it a miracle, because we're just getting started.

But because of Mario, we've learned an important lesson: to look at what we've been given, not to focus only on what we haven't been given, but to see what we haven't been given as an opportunity.

this is what i want to tell you

That's why I'm here today

Mario!

And this is -- (Applause) And this is why I wanted to show my son the best mirror in the world.

thank you very much everyone

thank you goodbye

(Applause) Thank you. (Applause)

When I was five years old, I had something I wanted to brag about.

My father built the coolest outdoor toilet in our little Ukrainian village.

Inside, it's just a big smelly hole in the ground, but on the outside, the pearly white veneer literally glistens in the sunlight.

I was very proud of that, and I felt that I had become very important.

And he would crawl around the houses in his neighborhood, finding flies caught in cobwebs and releasing them.

Four years ago, when I was just one year old, after the Chernobyl disaster, black rain fell, and my sister's hair fell out, and I was hospitalized for nine months.

The hospital didn't allow visitors, so my mother bribed the people who worked there.

I got a nurse's uniform, and every night she would crawl into my room and stay by my side.

Five years later, light suddenly shines through the cracks in the clouds

Because of Chernobyl, I was evacuated to America.

When I turned 6, I didn't cry when I left my hometown for America. When I left my hometown for America, I didn't cry when I left my hometown for America.

On the first day we arrived in New York, my grandmother and I found a penny on the floor of the homeless shelter where my family was staying.

But I didn't know it was a homeless shelter-

I definitely thought it was a hotel with a lot of rats.

I found a petrified penny on the floor and thought it must have been left by some rich man, because it's impossible for a normal person to lose money.

When I held the coin in my palm, it was sticky and rusty, but I felt like I was holding a lot of money.

"Okay, I'll use this money to buy a bazooka bubblegum," I decided.

I felt like I was rich

About a year later, I had the same feeling again, when I found a bag full of stuffed animals in a dumpster, and suddenly I had the most toys ever.

And then it happened again, and I heard a knock on the door of my apartment in Brooklyn, where I was living at the time, and I opened it and there was a delivery man with a box of pizza, and I didn't order a pizza.

My sister and I picked up our pizzas and devoured them one by one as the delivery man watched us on the doorstep of our first ever pizza.

he said pay the bill but we don't understand english

That's when my mother came out, but I didn't have anything with me.

My mom used to walk 50 blocks from home to work every day to save on bus fare.

Then I thought someone from the other room came out, and before I knew it, his face was turning red with anger, because somehow the immigrant family downstairs had put their hands on their pizza.

chaos in the place

But that pizza tasted exceptional

For a while, we didn't realize how poor we were.

Ten years after I moved to America, I decided to celebrate by booking the first hotel I stayed at.

The front desk clerk laughed and said, "You can't book here, it's a homeless shelter."

the whole family was shocked

My husband Brian was also homeless when he was a kid.

When he was 11, his family lost everything, and he and his father lived in a motel, where they confiscated all the food they had and wouldn't give it back until they paid for the room.

One day he managed to retrieve a box of corn flakes and found cockroaches inside.

In the meantime, there was something he cherished

Nine comic books and two Spider-Man-style G.I.

The heroes he's assembled, and they've helped me keep my dreams alive without drugs and delinquency.

Let me tell you another story about a family that was once homeless.

it's scarlet

Back in the day, Scarlett was the "bite dog" of dogfights.

By chaining them, throwing them into a dogfighting rink, and biting them, they fueled the fighting spirit of the dogfighters.

Now she eats organic food and sleeps in an orthopedic bed with her name on it, but still, all I do is give her a bowl of water and she looks up and wags her tail happily.

Sometimes, I take Brian and Scarlett for walks in the park, and I just watch her roll on the grass and look at her like that, and then we look at each other, and that alone fills me with gratitude.

When that happens, forget all the frustrations and disappointments you feel now that you're middle class, and you'll feel like a millionaire.

thank you

(applause)

What do we know about the future?

It's a hard question, but the answer is simple, I don't know anything.

no one can predict the future

But you can paint a picture of the future, and that's when the breakthrough ideas are born.

Many people have created visions of the future, for example, this illustration from the early 20th century.

A futuristic seaplane

It takes only a day and a half to cross the Atlantic.

This vision of the future did not become a reality.

The biggest plane right now is the Airbus A380.

I'm teaming up with Airbus to create a more sustainable future of aviation.

For us, considering sustainability is very important socially, but it's also important for the environment and economic value.

So we devised a very novel structure that mimics the design of bones and skeletons found in nature.

So it looks a little quirky, especially if you're involved in the structure of manufacturing.

But at least it gives us a way to explore different possibilities for the future.

So what will be the customer base of the aircraft of the future?

There are older people, there are younger people, more women are entering the workforce, and we have a megatrend that affects us all.

About the future of anthropometry

It seems that the children's bodies are getting bigger, but we're also getting bigger sideways.

So we need space in a very crowded plane.

Because there are many people

Some people, like the elderly, need better health.

I would like to receive a service that meets my individual needs.

You want to make the most of your time while you're on the move, and that's why we came up with the idea of ​​putting the latest human-machine interface in an aircraft and making it a product.

Integrating cutting-edge technology with passenger needs

For example, when you want to make the cabin brighter

How can we bring in natural light?

For example, this plane has no windows.

What will the data and communication software we need for the future look like?

I believe the planes of the future will have their own will.

I think it's going to be more like a living creature than a collection of complex technologies.

Airplanes of the future will look different

Various locations allow aircraft to interact directly with passengers.

In terms of equipment, we could also consider using synthetic biology.

Structural considerations are important when designing airframes, so there will be more and more new materials that can be incorporated into the structure of airframes.

Let's compare the old world with the new world

First, let's take a look at the current situation

This is the mounting hardware found on the A380

It's very heavy, and it adheres to outdated design standards.

This part is used for the same purpose.

Uses bone structure

totally different design

The old one is 1.2kg and the new one is 0.6kg.

So with 3D printing and new design criteria, we can reduce the weight of the airframe, which is directly related to greenhouse gas emissions, which is an important issue in aircraft design.

Let's dig into this idea

How are structures and their components made in nature?

Nature is so smart that it packs all the information into a small chunk -- DNA.

From there a larger skeleton is formed.

It's a bottom-up approach, because all the information is packed into the DNA.

And that's coupled with a top-down approach, where you get stronger by working your muscles and your bones, just like we do all the time.

The same technique can be applied to technology.

For example, we use carbon nanotubes for the airframe, which form the skeleton of the large, seamless airframe.

Let's take a closer look

Imagine a carbon nanotube growing inside a 3D printer, embedded in a plastic matrix that strengthens the part against forces.

because there is a huge number

You can put a bunch of these together and put them into the best shape, which means you can create structures and substructures that can mediate electricity and data.

And then you can use this material to assemble larger parts in a top-down approach.

Let's take a look at the planes of the future.

The seat will transform to fit the shape of future passengers, adapting to different anthropometry.

There's a social space on board, you could do something like virtual golf.

Finally, the fuselage's biomechanical structure, covered in a transparent biopolymer membrane, will fundamentally change the future of aviation.

Jason Silva said, If you can imagine it, why not make it happen?

see you in the future

Thank you. (Applause)

this is an ambulance

In any emergency, rush to the earliest

Except for the bed, it has all the facilities an ambulance has.

Can you see the AED (cardiac defibrillator)?

You saw the tragedy that happened in Boston, didn't you?

When I saw that picture, distant memories of my childhood came flooding back.

I grew up in a small town in Jerusalem

I was six years old, on my way home from school, it was a Friday afternoon, and I was with my brother.

when you pass by the bus stop

The bus exploded in front of me.

The bus caught fire and many people were injured and died.

I remember an old man who turned to us and asked for help, "Get me up."

he just needed help

we were so scared we ran away

When I grew up, I decided to become a doctor and save lives.

Maybe it's because I saw that accident when I was a kid.

When I was 15, I took a course in paramedics and volunteered in an ambulance.

I was in Jerusalem for two years.

I helped a lot of people, but when I really needed help, I never got there in time.

Whether the traffic is heavy or far away, the causes are all

I really needed help, but I couldn't go.

One day, I got a call saying, "This seven-year-old is choking on a hot dog."

Traffic was bad and we were coming from the other side of town north of Jerusalem.

I arrived at the scene 20 minutes later, and started CPR on the child.

A doctor came in from a block away, stopped us, checked the child, and told us to stop the CPR.

It was the moment when I announced the death of my child.

That's when I knew that this child's death was in vain.

If this doctor who lives a block away had arrived 20 minutes earlier, if he hadn't waited until he heard the ambulance sirens, if he had found out about the child sooner, he could have saved the kid.

ran from a block away

could have helped this kid

I said to myself, there must be a better way

Fifteen of my friends and I decided that we were all paramedics, that we were going to protect our neighbors, and if something like that happened, we'd be there faster than an ambulance could.

And so I went to the ambulance service company and said to the manager, "If there is a call in our neighborhood, there are 15 guys willing to -- "If there is a call in our neighborhood, there are 15 guys willing -- they'll drop everything and they'll come and rescue them."

Please call me on your pager."

"We're all buying pagers, so please let us know when you're ready to go."

He was laughing. I was a 17-year-old kid at the time.

I remember it like it was yesterday, and he was a great guy, and he said, "You go to school or start a shop."

"I'm not interested in your new attempts or your help."

i was kicked out of my room

"I don't need your help," he said.

I was a very stubborn child

As you can see, I was walking around like crazy.

(Laughter) (Applause) So I went with Israeli tricks. I'm sure you've all heard of Chutzpah.

We took turns listening to the police radio.

The next day, as I was listening, I got a call from a 70-year-old man who said he had been in a car accident a block from where I was on the main street.

I ran, no medical equipment

When we arrived at the scene, the 70-year-old man was lying on the street with blood running down his neck.

I was taking an anticoagulant

I knew that if I didn't stop the bleeding, I would die.

I didn't have any medical equipment, so I used the yarmulke hat I was wearing and put a lot of pressure on it to stop the bleeding.

I was bleeding from my neck

When the ambulance arrived 15 minutes later, I handed over the living patient.

(Applause) When I went to visit him two days later, he hugged me and cried and thanked me for saving his life.

That's when I realized, after two years of volunteering in an ambulance, that I had saved someone for the first time, this is my life's mission.

22 years later we now have United Hatzalah

(Applause) "Hatzalah" means "rescue" in Hebrew.

I forgot that this is not Israel

There are thousands of volunteers who are passionate about saving lives, they're everywhere, they're always there when you call them, they drop everything, they run, they save lives.

Now the average arrival time is less than three minutes in Israel.

(Applause) I've told you stories of heart attacks, stories of car crashes, crazy bomb attacks, shootings, whatever, at 3 a.m., if a woman is lying down in her house and needs help.

In three minutes, there are men in pajamas who can run to a woman's house and help her get up.

We have been successful for three reasons.

Thousands of dedicated volunteers who leave everything they do to help even strangers.

we're not an ambulance replacement

I'm there to fill the time between calling and the ambulance arriving.

Help those who can't be saved

Second, thanks to technology.

Israelis are tech-savvy

Everyone has a cell phone, no matter what type of device -- NowForce GPS, so whenever a call comes in, the five nearest volunteers will get to the scene very quickly, and they'll use their sat-nav system to get there, so no time is wasted.

This is great technology that we have in our country.

The third is this ambulance bike.

Ambulance motorcycle is a two-wheeled ambulance

It doesn't carry people, but it stabilizes them and saves lives.

With this, even if you get stuck in a traffic jam, you can still run on the sidewalk.

Don't get stuck in traffic

so you can arrive early

A few years after I started this organization in the Jewish community, I got a call from two Muslims in Jerusalem.

you wanted to meet me

Mr. Muhammad Asri and Mr. Murad Aryan

Muhammad told me his story. His 55-year-old father went into cardiac arrest and collapsed at home. It took an hour for an ambulance to arrive, and he saw his father die in front of him.

I told myself I've seen so much tragedy and disgust And I'm Jewish and I'm Muslim

I'm not a Christian, I came to save people

(Applause) And we started United Hatzalah in East Jerusalem.

Hand in hand, we started saving Jews and Arabs.

Arabs help Jews Jews help Arabs

something special happened

It never works out. Arabs and Jews are in the same place. It's literally a community. It's an unbelievable situation.

Migrants Save Arabs Arabs Save Migrants

It's an incredible concept that only works when there's such a cause.

only volunteers

We all work for free.

I work for the sole purpose of saving lives.

When my father died of cardiac arrest a few years ago, one of the first volunteers to come to me was a Muslim from East Israel who had taken the first course to attend Hatzalah, and he saved my father.

He was the one who took the first class, and he saved my father.

Do you know how I felt at that time?

I was 17 when I started this organization.

I never imagined that one day I would be able to speak at TEDMED.

At the time, I didn't even know what TEDMED was.

I don't think it was then, but I never imagined it.

What you need is a partner who's a little bit crazy like me, someone who's passionate about saving lives and who's willing to do so.

I'm actually starting in India soon, with a friend I met at Harvard recently.

Hatzala actually started years ago in Williamsburg, Brooklyn, by devout Jews, and now it's spread to Jewish communities in New York City, and it's also spread to Jewish communities in Australia, Mexico, and many other countries.

can spread everywhere

very easy

You've probably seen volunteers saving lives at the World Trade Center in New York.

We rescued 207,000 Israelis last year alone.

42,000 of them were in life-threatening conditions.

are making progress

You could say it's a life-saving flash mob, and it's effective.

If you look around the room, you'll see a lot of people who could do more to help people -- no matter what your religion, no matter where you come from.

everybody wants to be a hero

All we need is good ideas, motivation, and a lot of brazenness that could save millions of lives that might not have been saved.

Thank you for your attention

(applause)

The gentle sound of the sea, seagulls chirping in the distance

But that peace is interrupted by an unpleasant sound, which is getting closer and closer...

And... Pishah!

Repel annoying mosquitoes and bring peace back

How did you spot the noise coming from far away and target it precisely at its source?

Our ability to perceive and locate sounds is made possible by our auditory system.

The auditory system consists of two main parts: the ear and the brain.

The role of the ear is to convert sound energy into neural signals, and the brain receives and processes the information contained in those signals.

To understand how the auditory system works, let's follow the journey of sound into our ears.

A sound source creates vibrations that travel through air, liquids, and solids as pressure waves through particles.

Meanwhile, the inner ear organ, called the cochlea, is filled with a saline-like fluid.

So the first problem is how to convert sound waves, wherever they come from, into liquid waves.

The solution is the eardrum and the little bones in the middle ear.

These tiny bones translate the large movements of the eardrum into pressure waves of the fluid that fills the cochlea.

When sound enters the ear canal, it hits the eardrum, causing it to vibrate like the skin of a drum.

The vibration of the eardrum moves a bone called the malleus, which hits the incus and moves the third bone, the stirrup.

The movement of the stapes pushes the fluid-filled tympanic chamber within the long cochlea.

Here, the sound vibrations are ultimately converted into vibrations of the liquid, and the liquid vibrations travel like waves from one end of the cochlea to the other.

Inside the cochlea is a membrane called the basement membrane that runs the length of the cochlea.

The hair cells that line the basement membrane have special structures called auditory hairs that are moved by vibrations of the fluid in the cochlea and the basement membrane.

This movement creates a signal that travels from the hair cells to the auditory nerve and then to the brain where it's interpreted as a specific sound.

Not all hair cells move when sound vibrates the basilar membrane, only certain hair cells move depending on the frequency of the sound.

This is due to precise biological design

At one end of the cochlea, the basilar membrane is stiff and vibrates only in response to short-wave, high-frequency sounds.

The other is much more flexible, and vibrates only with long-wave, low-frequency sounds.

So the sounds that seagulls and mosquitoes make vibrate different parts of the basilar membrane, like striking different keys on a piano.

But that's not all

The brain has yet another important role: identifying where sounds come from.

The brain compares the sound coming into the two ears to find the source of the sound in space.

Sound coming from the front reaches both ears at the same time.

The volume of the sound is the same on the left and right

But if a low-frequency sound comes from one side, it will reach the nearer ear a few microseconds earlier than the farther ear.

Also, high-frequency sounds are heard louder in the near ear, because the sound reaching the far ear is blocked by the head.

This series of information reaches a specific part of the brainstem, and the time difference and intensity difference between the left and right ears are analyzed.

Results are sent to the auditory cortex

So the brain has all the information it needs, the pattern of activity to know what the sound is, and the information to know the location of the source.

some people don't have normal hearing

Hearing loss is the third most common chronic disease in the world

When hair cells are killed by exposure to loud noises or drugs, information is blocked from traveling from the ear to the brain.

Diseases such as osteosclerosis can immobilize the tiny bones in your ear, preventing them from vibrating.

And tinnitus is when the brain goes into an abnormal state where it perceives there's sound when there's no sound.

But when it's normal, hearing is a wonderfully elegant system.

Our ears house fine-tuned biomachines that transform the noise produced by the various vibrations in our environment into precisely-tuned electrical pulses that distinguish between clapping, dripping water, sighs, and flies.

I am honored to participate in the conference on the theme of "Inspiration from the natural world" It is an honor to participate in the conference on the theme of "Inspiration from the natural world"

And I'm even more honored to be able to participate in the foreplay section.

Did you notice that this is the foreplay section?

Because I'm going to talk about one of my favorite creatures, and it's the long-tailed grebe, whose courtship dance is worth seeing once in a lifetime.

Go to Bowman Lake in Glacier National Park - it's a long, narrow lake that reflects mountains upside down, and me and my partner were rowing.

A single collared grebe has arrived

Usually when the birds do their courtship dance, the pair starts running in the water together.

As you paddle faster, your speed will increase, and eventually your body will rise above the surface of the lake, and your legs will begin to paddle across the surface of the water while keeping your back straight.

While I was rowing a racing boat, a long-tailed grebe came

It's a rowing boat, so it's moving at a considerable speed.

This long-tailed grebe must have thought we were lovers, and began running on the water by the rowing boats, performing a courtship dance for miles.

Stop and start, stop and start again

It's just foreplay

(Laughter) That's when I knew I wanted to change my species.

We can learn from other creatures about entertainment, and there is much more we can learn from living creatures.

What I want to talk to you about today is learning about technology and design from living organisms.

After my book came out -- the book on biomimicry -- and then the architects, the designers, the engineers, the people who are building society, they called me and said, "I want biologists to come to design conferences to get inspiration."

What makes me even happier is, "I want nature to guide me. I have a design problem, so I want to observe highly adaptable organisms and get hints." "I want nature to guide me.

This is a photo from a trip to Galapagos.

In fact, several engineers were not enthusiastic about the purpose of the inspection.

At first, I said, "We're already using biomimicry to purify water using bacteria."

At the beginning, we said, "We're already using biomimicry to purify water using bacteria."

You're talking about biotreatment and bioassisted technology. The use of microbes in wastewater treatment is a very old technology called adaptation. The use of microbes in wastewater treatment is a very old technology called adaptation.

Biomimicry is about looking at living things and applying ideas.”

but they still didn't understand

So when I went out for a walk on the beach, I asked, "Name one big problem you're facing, which is a challenge that prevents you from continuing."

"Scaling - the buildup of minerals in water pipes," was the reply.

Inorganic matter accumulates in pipes like dust accumulates in a house.Inorganic matter accumulates in pipes like dust accumulates in a house.

It's clogged up and needs to be flushed or dug up

So if there was a way to prevent scaling..." So I picked up a shell on the beach and asked, "What's inside the tube? ”

"Calcium carbonate," they said.

I replied, "This is also calcium carbonate."

They didn't know, they didn't know what seashells were made of.

They didn't know, they didn't know what the shells were made of. Seashells are made of proteins, and seawater ions crystallize them. Seashells are made of proteins, and seawater ions crystallize them.

There's no protein in the tubes, but the wastewater engineers didn't know that something similar would happen.

It's not a lack of information, it's a lack of information

We are isolated in different fields, and we are not able to exchange information with each other. One of our engineers thought and said, ``If seashells can self-assemble, crystals that form automatically from seawater, then why can't shells grow infinitely? What Stops Scaling? ”

Why don't seashells grow infinitely? What Stops Scaling? ”

The answer is, just like shellfish secrete a protein that causes crystallization -- the answer is that shellfish secrete a protein that causes crystallization -- they leaned over to make sure they didn't miss -- they secrete a protein that stops the crystallization process in the shell. The protein literally sticks to the surface of the crystal.

It secretes a protein that stops the crystallization process of the shell.The protein literally sticks to the surface of the crystal.

In fact, there's a commercial product called TPA that mimics the crystal-stopping protein, an eco-friendly way to stop tube scaling.

From that moment on, the engineer's attitude changed.

When I went out on the first day, I snapped a photo and returned to the ship in 5 minutes.

"It's over, I've already seen that island"

But after hearing about shellfish, I crawled around and snorkeled whenever time allowed.

What happened was that they realized that the problem they were trying to spend their life solving was already solved by the creatures over there, and the problem they were trying to solve their whole life was already solved by the creatures over there.

We've shifted from learning about the natural world to learning from the natural world, and that's a big shift.

We've shifted to learning from the natural world, and that's a big shift.

What they realized was that the answers to their problems were everywhere, and they could be found just by looking at them differently.

10-30 million or more species after 3.8 billion years of field testing

After 3.8 billion years of field testing, I think 10 to 30 million or more species have a well-adapted solution.

It's important to have solutions that address a particular situation, and that situation is the global environment.

It's important to have solutions that address a particular situation, and that situation is the global environment, and it's the same situation that we're dealing with.

not a stereotypical imitation

We consciously model our biological genius. Einstein imitates hairstyles, but it's not unoriginal imitation, it learns from design principles and the genius of the natural world.

There are a lot of people in the IT field here, but I won't talk about IT in detail, but what I would like to mention is that we have already learned a lot from organisms in software.

Software has learned a lot, and the strange thing is that hardware has lagged behind. If computers are responsible for the discovery of dozens of carcinogens in the waters of Silicon Valley, then these machines aren't high tech.

So the hardware is nowhere near what living things have achieved.

What can we learn about making things, not just computers?

The plane or car you took to get here The chair you are sitting on

How do we redesign the human-made world?

And more importantly, what should we learn from biology over the next decade?

Living things have many excellent technologies

how to organize the timetable

There are three challenges that are key to learning

First, how do organisms make things?

This is our method as opposed to biology.

It's a process of heating and tapping, that's what materials scientists say.

Because it's a top-down method, 96% is wasted, and only 4% is turned into a product.

Living things can't afford that. How do you make things?

Second, how do organisms make the most of things?

pollen of geranium

This shape makes it easy to float. Look at this shape.

Organisms add information to matter

structure

Adding information Adding information creates functionality that you don't get if you don't have structure.

Third, how do organisms weave things into systems?

Nature doesn't treat things in isolation.Nothing is isolated from the natural system.Nothing is isolated from the natural system.

This is the outline of the lecture.

There are many surprising discoveries in biology, as you'll notice if you pay attention and read the news.

At the same time, we're looking at different business communities to find out what the most important business challenges are.

There is absolutely no interaction between biology and the business world.

There is absolutely no interaction between biology and the business world.

What can biology offer us to get out of the evolutionary knothole we're in now?

I have 12 recommendations from biology that I'll outline briefly.

The first is self-organization, which excites me myself.

I think everyone in the nanotech field has heard of

Back to shellfish, shellfish are self-organizing materials.

At the bottom left is a photograph of nacre, which is very hard with a layered structure of minerals and polymers formed from seawater.

Twice as hard as man-made high-tech ceramics

What's really interesting is that, unlike ceramics that are made in a kiln, pearls are made in and near the bodies of marine organisms.

Dr. Jeff Brinker of Sandia National Laboratories

Dr. Jeff Brinker of Sandia National Laboratories is developing a self-assembled manufacturing process.

Imagine making ceramics at room temperature, which means using the same principle of crystallization, you dip an object into a liquid, take it out of the liquid, and evaporation causes the molecules in the liquid to clump together like a jigsaw puzzle.

What if all hard materials could be made like this?

Imagine spraying the building blocks of a solar cell, in liquid form, onto a roof and allowing the light-harvesting layers to self-assemble.

What's interesting to the IT world is biosilicon, which is diatoms made of silicate.

Silicon, which is essential to semiconductor manufacturing, produces carcinogens during the manufacturing process, a process that is currently mimicking bioinorganic formation.

Look at the diatoms at the University of California, Santa Barbara

Ernst Hankel's research results

Imagine being able to solidify through a liquid process in a casting process and have a structure like this at room temperature.

Imagine manufacturing a perfect lens

On the left is a brittle star, with a lens covering its entire body, and a study by Lucent Technologies found no lens distortion at all.

Now known as one of the most distortion-free lenses

I have a lot of it all over my body

Interestingly, this is also self-organization.

Dr. Joana Eisenberg of Lucent is working on making lenses like this at low temperatures, and she's also working on optical fibers.

this is a sponge with fiber optics

You can see it at the base of sponges. It lets more light through than our optical fibers.

The next big idea is to use carbon dioxide as a material.

According to Dr. Jeff Coates of Cornell University, carbon dioxide is not the number one toxin for plants.

Just because we think so, plants just keep making starch and glucose out of carbon dioxide. And he discovered a catalyst and developed a way to make polycarbonate out of carbon dioxide.

Solar energy conversion is the most attractive concept

At Arizona State University, we're studying an energy harvester that mimics the red bacterium At Arizona State University, we're studying an energy harvester that mimics the red bacterium. What's interesting is that we recently discovered that an enzyme called hydrogenase can convert protons and electrons into hydrogen and catalyze hydrogen. It's basically the same thing that happens to the positive terminal of a battery.

Man-made fuel cells use platinum, living things use ordinary iron.

We have recently been able to mimic hydrogenases that catalyze hydrogen.We have recently been able to mimic hydrogenases that catalyze hydrogen.

Being platinum-free is great news for fuel cells. Platinum-free is great news for fuel cells.

"Force of Form." This is a whale. Whale fins have circular nibs, and those little bumps increase the efficiency of drag reduction. For example, on an airplane wing, efficiency increases by 32 percent.

Just putting it on the edge of an airplane wing can save a lot of fossil fuel.

"Color without Pigment" Peacock creates color with shape

Color bounced off a transparent layer is called thin film interference Color bounced off a transparent layer is called thin film interference Imagine a self-assembled product where the surface layer creates the color Imagine a self-assembled product where the surface layer creates the color

Imagine creating a self-cleaning surface with just water. A leaf is an example. Imagine creating a self-cleaning surface with just water. A leaf is an example.

Please pay attention to the enlarged image

It is a drop of water with dust attached

This is an enlarged photo of a lotus leaf

There's a company that makes a product called Rota Sun. When the paint on the exterior of a building dries, it's self-cleaning. Rain water cleans the building when the paint on the exterior of the building dries. It mimics the humps on a leaf, and rainwater cleans the building.

Water becomes a big problem for us How to quench thirst

There are two organisms that draw in water.

On the left is a sakada chigomushidamashi that draws water from the fog.

The one on the right is a pill bug that draws water from the air, it doesn't drink fresh water.

Absorbing water from Monterey fog or Atlanta hot air before it enters the building is very important Absorbing water from Monterey fog or Atlanta hot air before it enters the building is very important

Separation technology will be in the spotlight from now on

What if we told you that you no longer need to mine ore?

What if we could extract metals from waste streams? Microorganisms can select and collect trace amounts of metals from water Microbes can select and collect trace amounts of metals from water

A company in San Francisco called MR3 uses filters that mimic microbial molecules to extract metals from wastewater.

Green chemistry is chemistry in water

Our chemistry is chemistry in organic solvents

Here's a picture of a spider's thread coming out of a wart. It's beautiful.

Green chemistry replaces industrial chemistry with nature's recipes

It's not easy because living things use only a subset of the elements on the periodic table It's not easy because living things use only a subset of the elements on the periodic table

we use even toxic elements

The goal of green chemistry is to use just a fraction of the periodic table to create simple recipes for substances as miraculous as spider silk.

"Timed decomposition" The packaging material begins to degrade when it has done its job and is no longer needed.

This is a mussel from our coastal waters. It's attached to a stone by a string. After exactly two years, the string begins to break down.

"Medical" is a very good story.

Over there is a water bear

All over the world, the problem is that vaccines don't get to patients.The world has problems that vaccines get to patients.

Bruce Rosner's research shows that tardigrades can survive and regenerate for months after they've completely dried out.

He's found a way to dry the vaccine, enveloping it in sugar capsules similar to those found in tardigrade cells, so the vaccine doesn't need to be refrigerated.

Is it ok to put it in the glove box

We learn from organisms. This is a session about water, and if we learn from organisms that can survive without water, we can manufacture ambient-stable vaccines.

I don't have time to talk until 12

The most important thing I want to tell you is that in addition to adapting to the environment, living things have mastered the skills to accomplish amazing things.

Living things are thinking about very important things while they are doing foreplay Living beings are thinking about very important things while they are doing foreplay We are trying to pass on our genes to our descendants 10,000 generations from now.

That's why I'm searching for a way of life that doesn't destroy the global environment that supports my descendants.

That's the biggest challenge in design.

Luckily there are millions of geniuses with good ideas Luckily there are millions of geniuses with good ideas

Let's do our best to interact with living things

thank you

(Applause) Speaking of foreplay, let's skim through to number 12.

really?

Yes, super short version please The slides are beautiful and the ideas are huge I can't stop listening to the rest I can't stop listening to the rest

ok i'll keep the mic

I just talked about medical

“Detect and react” feedback is a big challenge

Grasshoppers, 80 million locusts in a square kilometer, they don't collide, but grasshoppers, 80 million in a square kilometer, they don't collide.

We cause 3.6 million traffic accidents every year

(Laughter) Newcastle University researchers found that grasshoppers have very large nerve cells.

She's building a collision avoidance circuit based on the large neurons of a grasshopper. She's building a collision avoidance circuit.

Number 11 is very significant.

it increases fertility

Agriculture that makes the land more fertile with each harvest

More fertility means more crops

We need to increase the carrying capacity of the planet to create opportunities for more life to thrive.

other organisms are running

Entire ecosystems are doing this, increasing the opportunities for life to thrive.

Agriculture has done the exact opposite

Farming based on grassland soil mechanics Farming based on a system where indigenous ungulates increase rangeland health Ranching based on a system where indigenous ungulates increase rangeland health Bog-mechanism-based wastewater treatment that not only purifies water but produces greater productivity

So here's a quick overview of the designs, they look simple, but they've been created by the natural world over 3.8 billion years.

So the organisms that didn't find a way to improve their environment, the organisms that didn't find a way to improve their environment, no longer exist.

This is the twelfth initiative

Biology's secret trick, or magic trick, so to speak, is that it creates conditions for its own benefit.

It builds the soil, it cleans the air, it purifies the water, it creates the atmosphere we need to live.

And while doing nice foreplay, and meeting a variety of other needs, so these aren't mutually exclusive.

We have a duty to make the earth a Garden of Eden while meeting our own needs. We have a duty to make the earth a Garden of Eden while meeting our needs.

thank you jinine

(applause)

On my first day in college, when I left home, the sky was clear and filled with hope and optimism.

Academically good, my future was promising, and I walked into college gleefully going to lectures and parties, stealing road corn, and playing pranks.

Of course, appearances can sometimes be deceiving. The cheerful image of enjoying a lecture and stealing road corn was just a facade, though it was hidden so well that no one noticed.

In fact, I was very depressed, anxious, and constantly scared, afraid of other people, of the future, of failure, of emptiness.

But I hid it well, and when someone looked at me from the side, I was someone they could envy and look up to.

The apparent strength was the perfect thing to deceive even myself.The first semester ended, the second semester began, and something that no one could have predicted was about to happen.

As I was leaving the classroom, humming and rummaging in my bag, as I always do, I suddenly heard a voice say, "She's leaving the room."

I looked around and no one was there, the clear, determined voice was unmistakable.

I was so upset that I left the book on the stairs and hurried home.

I heard, "She's opening the door."

That was the beginning of "Voice"

"Voice" goes on for days and weeks "Voice" goes on for days and weeks And says everything I do in the third person.

"She goes to the library"

"She goes to lecture"

After a while, I began to feel strangely comforted by the voice, which was neither emotional nor judgmental.

When I suppressed my anger and hid my emotions skillfully by doing what I often do, my "voice" seemed to get irritated.

"Voice" wasn't malicious or annoying, but even then it was clear that "Voice" had something to do with my emotions, especially subconscious emotions, and "Voice" had something to do with my emotions, especially subconscious emotions.

And one day, I made a fatal mistake.

And that's where the subtle adjustment process began: the fact that normal people can't hear, the fact that I'm something very strange.

I was possessed by such fear and disbelief.

All of a sudden, the "voice" wasn't innocuous. My second mistake was when a friend advised me to go see a doctor, and I followed through on it.

Anxiety Concerns about the future, etc.

I told my university internist about my problem, and he was indifferent, but when I mentioned the voice, he put down his pen, turned to me, and started asking serious questions.

I grabbed at a straw and told them about this strange "explainer."

"She's digging her own grave," I wanted the voice to say this time.

I was referred to a psychiatrist, who interpreted everything I said as delusional, again with the recognition that the voice was the problem. Everything I said was interpreted as delusional.

At the time, I was on a student TV station that broadcast breaking news on campus, and the doctor's appointment was taking a long time.

I said, "Excuse me, I'm in charge of the news at 6:00, so I have to go home."

The chart read, "Eleanor has the delusion that she is a television newscaster."

It was at this point that things rapidly started to take on their own.

Starting with my hospitalization, I was first diagnosed with schizophrenia, and then I began to feel hopeless and humiliated about myself and my future.

By being told to see the voice as a symptom rather than as an experience, fear and resistance to the voice increased.

It was like I was going into my brain and taking an aggressive stance, like a psychological civil war, and as a result, the "voice" became more frequent and more hostile and menacing.

Helplessly, I became trapped in my own nightmarish world, where the Voice became my critic and only friend.

The "Voice" said that if I could prove that I was worthy of help, that I would be saved and that I would be restored to my former self, that I would be saved and that I would be restored to my former self.

At first it was a very small matter, just pulling out three hairs, but then it escalated to ordering me to hurt myself.

You'll see a cup filled with water

Pour that water on his head in front of the students."

As a result of following it, of course, I was disliked by the teachers As a result of following it, of course, I was disliked by the teachers

Thus was created a vicious cycle of fear and avoidance, mistrust and misunderstanding.

Two years later, his condition deteriorated dramatically.

I began to suffer from a variety of symptoms all the time: horrible voices, grotesque visions, strange, uncontrollable delusions.

My mental state led to discrimination, verbal abuse, physical and sexual abuse, and my psychiatrist said, "Cancer is better than schizophrenia because it's easier to treat."

I was diagnosed, drugged, abandoned, tormented by my voice, and even drilled a hole in my head to try and get my voice out.

When I look back at my broken self and my despair at that time, I feel like one person died and another person was saved.

A wounded and frightened human begins his journey, survives the ordeal, and lives the life that has been set for him.

I won't forget the people who hurt me I won't forget the people who hurt me But my memory fades and fades in comparison to the people who helped me

Comrades who lived together and heard their voices, compatriots and collaborators who fought together, believed that one day her daughter would return, and no matter how long it took, my mother never gave up and waited for me.

"Don't give up, Eleanor can get over it.

It may snow at the end of May, but summer will always come."

These 14 minutes are too short to mention all the achievements of those who fought with me for me. They waited for me to come back from a lonely world of anguish and accepted me. They waited for me to come back from a lonely world of anguish and accepted me.

They brought together courage, creativity, faith, and an unshakable belief that the shattered me would be healthy.

I said that these people saved me, but more importantly, they gave me the power to save myself.

I didn't think so at first, because the "voice" was full of hostility, so the important first step was to understand what the "voice" meant, not just take it literally.

For example, if a voice threatened to attack my house, I now understand that it's not actually a danger, but rather my fears and anxieties about society.

In the past, I would have believed in "voices"

For example, one night, I was sitting in front of my parents' bedroom to protect them from the threat of "the voice."

Most of the knives in the house were hidden so that I wouldn't hurt myself, so I was clutching a plastic picnic fork, clutching a plastic picnic fork, ready to take action if something happened.

"If you try to lay a hand on me

I have a plastic fork."

that's a good strategy

The coping strategies I learned later are much more useful, because if you analyze the meaning behind the words "voice" and warn "voice" to stay out of your house, you can thank the voice for alerting you to your anxiety, thank the voice for alerting you to your anxiety, and then take some positive action from it to reassure yourself and the voice that it's okay.

I set boundaries in my voice and slowly established a process of communication and collaboration as we supported each other, allowing us to interact with each other through self-establishment and mutual understanding.

What I eventually learned through this process was that each of the "voices" that were intimately associated with me was carrying my sexual trauma, my abuse, my anger, my shame, my guilt, my lack of self-confidence, all these unmanageable, stranded emotions.

"Voices" took these pains and put them into words. And what I realized, perhaps most importantly, was that the most hostile, aggressive "voices" were actually the parts of me that hurt the most, and those voices that really needed the most compassion and care.

Understanding this helped me unify my shattered selves in all of the voices, and gradually moved me away from drugs and back into psychiatry.

I graduated 10 years after my voice appeared. I got the first psychology degree in the university's history, and a year later I got a top-level master's degree.

Actually, one of the "voices" told me the answer during the exam, so technically it's probably cheating.

(Laughter) To be honest, there were times when I was happy that the voice was the focus.

Oscar Wilde said, "The only thing worse than being talked about is not being talked about."

You can listen to two conversations at the same time, so you're good at eavesdropping.

So it's not all bad

I've worked in health care, I've given lectures, I've published academic papers and research papers, and one of the things I'll continue to try to convince people of is the importance of the idea that the key question in psychiatry should not be, "What's wrong with you?" but "What happened to you?"

I've been listening to "voices" for a long time, but finally I'm able to coexist with "voices".

I remember being overwhelmed when I supported a young woman who was frightened by her voice.It was the first time I realized that I didn't feel like this anymore, and that I could help someone who was suffering the way I used to.

I am extremely proud to be part of Intervoice, the organizing body of the International Hearing Voices Movement, a new initiative inspired by the work of Professor Maurice Rohm and Dr. Sandra Escher, which positions auditory hallucinations as not just a strange symptom of schizophrenia, but as a normal response to living in extraordinary circumstances, a complex, important and meaningful experience to explore.

We aim to create a society that understands and respects those who can hear, and is able to respond to their needs and accept them as full citizens.

Such a society is not a dream, it is already being built.

To paraphrase Chavez, once society begins to change, it cannot go backwards.

You can't humiliate someone who's proud.

The haze cannot oppress those who are not afraid

The work of the Hearing Voices movement reminds me of more than words: friendship, justice, respect.

Over the past 20 years, the Hearing Voices Movement has established a Hearing Voices Network in 26 countries on five continents, working together to promote dignity and solidarity and empower those affected by emotional distress, empowering people with mental illness with new hope and treatments.

Peter Levine says the human animal is a unique creature Peter Levine says the human animal is a unique creature endowed with an instinctive ability to heal and an intelligence that harnesses this innate ability.

There is no greater honor or privilege than being a member of society with the hope of recovery, sharing the suffering, being a witness, reaching out, and helping others in their recovery process.

A word to those who have survived pain and adversity: Our lives are not defined by the damage done to us.

we are the only irreplaceable beings

What's in us can never be violated, it can't be distorted, it can't be stolen.

hope is never lost

A wonderful doctor once told me, "Not what other people think.

Speak for yourself in your own words."

thank you

(applause)

(Music) "Oedipus Rex" "The Lion King" "Titus" "Frida" "The Magic Flute" "Across the Universe" (Applause) Thank you very much.

You've seen some of the theatrical and operatic films I've done over the last 20 years.

First of all, I would like to tell you about my experience in Indonesia.

We all go through hard times and transitions, just like I am right now, and I think you all are the same.

People who create things know that sometimes they don't know if what they're creating will be a phoenix or a ash.

(Laughter) I'm really stuck, but that's another story for another time.

Back in Indonesia, I was 21 or 22 at the time, and a long time ago, I got a scholarship.

After spending two years there, I was studying and performing near the crater of Mount Batur in Bali.

In my village, there was a ceremony for young people, an event that marked the milestone of coming of age.

I never dreamed that it would be a milestone for me too.

I was sitting in the dark under a large linden tree in the temple square. There was no electricity, just a full moon.

I thought I was the only one under the dark tree

And then suddenly, in the darkness on the other side of the square, I saw a mirror glittering in the moonlight.

Twenty old people I'd seen somewhere suddenly stood up in armor with helmets and spears The square was deserted and I was lost in the darkness.

They came out where no one was and they danced an incredible dance.

"Foooooooooooooooooooo"

As I moved forward, I could see the moonlight reflecting off my armor.

I've been acting and producing in theater since I was 11 years old, and I thought, "Who are they dancing for in all these elaborate costumes and these magnificent helmets?"

I thought I must be dancing to God I thought I must be dancing to God

There was an atmosphere of not caring what people said

money doesn't move

It is neither recorded nor reported.

As they danced, it seemed to me that these artists would last forever.

And as soon as they had finished dancing and disappeared into the darkness, a young man with a lamp appeared, hung the lamp on the tree, and set up the curtain.

The village square was filled with hundreds of people,

they played the opera all night long

man needed light

can't see without light

What I learned as a young artist from this precious moment in my life is that as an artist you must always be true to what you believe in.

That's what I've always believed in, when I try to create something that's never been seen before, something that defies convention, and I try to create a world of imagination that I don't know what I'm capable of.

So let me tell you a little bit about my creative process, let's take "The Lion King" as an example.

You've seen some of my work, but I'm sure you all know this one.

Let's start with the idea of ​​ideograms

Ideograms are like brush paintings, or Japanese ink paintings.

You can draw a bamboo grove with 3 strokes

When it comes to The Lion King, "What is the concept?

What if we abstract it?

If the whole story were made into one image, what kind of image would it be? ”

It's a ring, it's definitely a ring

Ring of Life Mufasa's Masked Ring

Tamaki in Act 2 is drought. How do you express drought?

Made the silk ring placed on the floor disappear from the hole in the stage floor

The wheel of the leaping gazelle also used a ring.

This device is made visible

As a theatrical performer, what I love most about the stage is when the audience sees it and understands it. When you see men and women walking with grass and trees on their heads, you know it's the savannah.

no one doubts

I love that kind of definite fact in the play.

I love it when the audience fills in the gaps that aren't explained.

Of course the audience knows, "That's not the actual sun, is it?"

of several long sticks

Fasten the silk fabric on the tip

lay it flat on the stage

If it is lifted by a string, it becomes the sun.

But it's actually made of silk fabric and sticks

In a way, this projects a spiritual meaning

evoke emotions

What you're seeing isn't the actual sunrise

that's the great thing

So in theater, the story, the script and the dialogue, is important, but the way it's told, how it's told, how it's told, how it's told, is just as important as the story.

I'm a person who likes any technology

I've tried a lot of things... For example, I'll show you later, the big gimmick in Spider-Man that motivates people.

In fact, it doesn't matter if you don't have a dancer who understands how to use that body and wire.

I'm going to show you some footage from this year's big project I'm working on, "The Tempest."

It's a movie, but I did "The Tempest" three times on stage, it's my favorite play from 1984 to 1986.

Prospero was always male

I thought to myself, "Who should play Prospero?

What about Helen Mirren? He's a great actor, let's do it."

In fact, the subject matter was perfect for women, too.

For now, let's take a look at the footage from "The Tempest."

(music) PROSPERA: Fairy, did you raise the storm as I commanded?

Ariel: I boarded the King's ship and threatened him with flames.

Prospera: These two fell in love at first sight

Miranda: Do you love me?

Ferdinand: Endlessly

Prospera: Both captivated by each other

Trincuro: In times of misfortune, you can join hands with anyone.

(music) Look at me Governor

Caliban: Are you from Heaven?

Stéphano: From the moon, no lie

Prospera: Caliban!

Caliban: This island is mine

Prospera: Did I tell you? As a punishment, I'll have convulsions tonight

Antonio: My brother lying here is no different than a piece of dirt.

Sebastian: Take out your sword

I will look after you like a king

Prospera: I'll torment all three of you to the depths of hell.

Ariel: I made you crazy

Prospera: We are the same as dreams

A modest life begins in sleep and ends in sleep

(music) Now

(Applause) I started "The Tempest" many years ago on a very low-budget stage play.

I'm going to talk a little bit about how you create a stage in a theater and turn that idea or story into a movie.

So what about the ideograms we talked about earlier, what is that in "The Tempest"?

Will the story boil down to a solid image?

The sovereignty we build is a sandcastle, and it's about whether people should be natural or civilized. Prospera, played by Helen Mirren, speaks at the end. People build their civilizations in nature, in the midst of great storms.

I started playing this scene in the theater, using a black rake and a white background, a girl named Miranda is building a sandcastle.

Miranda is at the edge of the stage, and two Kurokos run in with watering cans and pour water over the sandcastle, and the castle begins to crumble, as the audience sees Kuroko.

It was clear that Kuroko was intervening

But when they started pouring water, the lights that were showing Kuroko switched, and this is a trick we often use on stage, and only the water is illuminated.

The feeling of the audience will change by itself

it's going to be something terrifyingly big

it's going to be a storm

Gone are the masked actors and puppeteers, and the audience is drawn into that world, a fictional world in which the storm of "The Tempest" is taking place.

Now, when you make that scene into a movie, the approach is different. I actually started with a close-up of the black sand castle. What you can do in the movie is use the camera to switch perspectives, and use long shots and close-ups.

Movies can use different delivery methods, so we try different methods.

Let's see "Spider-Man"

(music) Peter Parker: ♪ You can stand on a cliff and fly from here ♪ In live theater, we try to do things that we can't do in the two-dimensional world of movies and television.

♪ Pick yourself up and rule ♪ George Tzipin: We see New York through Spider-Man's eyes

Spider-Man is not bound by gravity

Manhattan in the show isn't bound by gravity either.

♪ Believe in yourself and be inspired ♪ ♪ Hit! Don! ♪ ♪ Pop!

What's really happening is real

I want people to see what they're doing and say, "Wow, what's that?"

(music) Add enough movement to the sculpture that when the actor moves it, it seems to come to life.

It's a living manga, and it's brought to life

(music) Bono: They're myths

They are the heroes of modern mythology and comics.

♪ They believe ♪ Oh! (music) (applause) Ugh what's that?

circus rock and roll drama

What are we doing on stage?

Lastly, let me tell you a short story.

While I was in a village in Indonesia, I saw a volcano erupt across the lake, and on the other side, Mount Batur, there were active volcanoes and extinct volcanoes side by side.

I didn't get swallowed by the volcano then, so I'm here now.

but it was very easy to climb

You can get to the top by grabbing a root and stepping on a small rock and climbing up.

"Let's try how close we can get to an active volcano."

So we climbed up to the top, on top of a sheer cliff, and Roland, obscured by the sulfurous smoke of the volcano on the other side, stands alone on that amazing cliff, alone on that amazing cliff.

Did you hear the lyrics?

Looking down from the top of the cliff, you can see the crater of a dead volcano on your left.

The right side is shale, and it's crumbling down.

I wore flip-flops and a loincloth, a long time ago.

there were no hiking boots

A crazy French gypsy actor disappeared into the smoke and I thought I could never go back the way I came.

So I ditched my camera and my flip flops, stared at the straight line in front of me, and got down on all fours like a cat.

The wind was blowing hard and all I had to do was stare at the straight line in front of me to get to the other side.

You've had that experience too, haven't you?

i am going through trials

It's a trial of fire

It's a test for my company

But we'll get through it 'cause the theme song is "Rise Above"

A boy who fell from the sky soars

The future is in our hands, in my company's hands

I have good friends, so I can reach great heights as a creator.

you know

Please keep moving forward, and one day you'll see something amazing.

thank you

(applause)

The world of car racing is an interesting one

Every year we build a new racing car and spend the rest of the season figuring out how to make it better and faster.

And then the next year, we repeat the same thing.

The racing car in front of me has a rather complicated structure.

The chassis is made up of 11,000 parts, the engine alone is 6,000 and the electrical system is 8,500 parts.

So there are 25,000 parts that can fail.

Car racing is really about how much attention you can pay to details.

Especially when it comes to Formula 1, always modify the car

trying to be fast

Every two weeks, we make 5,000 new parts for that machine.

Five to 10 percent of racing cars change every two weeks for the whole year.

how do i do it

Let's start with a racing car

Attach a lot of measurement sensors to the vehicle body

In the case of this racing car here, when it's running in a race, it has about 120 sensors on it.

measure everything about that machine

The data is recorded, 500 parameters in the data system, 13,000 anomaly detection parameters, and events that indicate things aren't going according to plan, and that data is sent wirelessly to the pit garage at a rate of 2-4 megabits per second.

So in a two-hour race, each car sends 750 million numbers.

That's twice as many words as we speak in our lifetime.

It's a huge amount of data

But it's not enough just to take data and measure

so you have to do something

So we've spent a lot of time and effort trying to get the data to tell you all sorts of things, like how your engine is doing, how your tires are wearing, how your fuel consumption is.

It's basically taking data and turning it into actionable information.

Let's take a look at the data

What you see here is data from a patient who was three months old.

This is a child, and what you're looking at right now is real data. And if you go to the right side of the screen, things are all messed up. Patients are going into heart failure.

This was considered unforeseen

It was a heart attack that no one expected

But if you look at the information here, you can see that about five minutes before heart failure, it's starting to get a little messy.

You can see small changes, like your heart rate.

All of these were undetected by the standard anomaly detectors.

So why didn't you know?

Was this an expected event?

If we looked more closely at the patterns in the data, could we have done something to help?

This kid is about the same as the race car you see here, and he's three months old.

This child had a heart problem

If you look at the data on the screen above -- the heart rate, the pulse, the oxygen, the respiratory rate -- they're all different than a normal child, but they're normal for this child.

Like a racing car, when any patient starts to go bad, there's no time to stop.

So what we did was put a data system into the hospital computers that ran Formula 1 every two weeks, which we did at Birmingham Children's Hospital.

We've streamed data from bedside monitors that are used in pediatric intensive care so that we can see the data in real time and, more importantly, accumulate the data and learn from it.

First, we applied an application that allowed us to recognize patterns in data in real time, to see what was happening and to sense when change was likely to occur.

In car racing, everybody's a little ambitious, a little fearless, and a little arrogant at times, so we decided to see the children being rushed to the hospital.

There's no reason why we should wait until we get to the hospital.

So we also built a real-time network between the ambulance and the hospital, using a regular 3G line to send the data, so the ambulance really became an intensive care unit bed.

we started to analyze the data

The colored wavy lines in the graph above are the data you would normally see on a monitor: heart rate, pulse rate, blood oxygen level, respiration rate.

The blue and red lines at the bottom are interesting.

The red line is an automatically calculated early warning score that Birmingham Children's Hospital already uses.

We've had it since 2008, and it's prevented heart failure and cardiac arrest in the hospital.

What the blue line shows is a change in pattern that's immediately visible, without any medical interpretation, and the data speaks for itself.

The data is telling us that something is wrong.

And what you see in the red and green clusters are the little bits of data plotted against each other.

Green is the normal range for the child

We call it the "regular cloud"

Conditions start to change - the line turns red when conditions start to get worse

No advanced science here

It's just a different presentation of the data that's already there, to amplify the data and give the doctors and nurses clues and visualizations of what's going on.

Similarly, the best racing drivers rely on these cues to know when to brake or turn corners, and we need to help doctors and nurses spot problems.

we have a very ambitious program

The race for change has already begun.

I'm thinking big, but I should

Our approach, if successful, doesn't just end in the hospital.

You can spread beyond that wall

With wireless connectivity like we have today, patients, doctors and nurses don't have to be in the same place all the time, and they don't all have to be together.

And we're going to take our cute three-month-old car to the racetrack and make it safer and faster and better.

thank you

(applause)

good morning!

are you all awake?

I removed my name tag, but if you wrote your name in Arabic on your own name tag,

are you there? Nobody is here? ok ok

Not too long ago, when I was sitting in a restaurant with a friend and ordering food.

I looked up at the waiter and said, "Do you have a menu (in Arabic)?"

The waiter looked back at me suspiciously Did you think I heard you wrong?

I said "yes?"

"Give me the menu (Arabic)," I said.

"Don't you know what to call it?"

"I know," I said

He said, "No! Menu (English) or menu (French)."

Is your French pronunciation correct?

"Somebody please take care of this customer."

And reluctantly, as if to himself, "Even if she's the last girl on earth, I don't want to see her!"

What does the word 'menu' refer to in Arabic?

With just one word, the young Lebanese decided that I was old-fashioned and uneducated.

"Why are you talking like that?"

it was right at this time

I burst into anger

It really hurt!

You were denied the right to speak your mother tongue in your own country?

How could this happen?

How did this happen?

I think that many people, like myself, at some point in their lives, reluctantly give up everything that happened in the past, and they find themselves modern and civilized.

Should I? Should I forget my culture, my way of thinking, my knowledge, all my memories?

Childhood may be the best memory, but our memory is war!

Should we forget what we learn in Arabic in order to fit in?

to assimilate with them?

Is there logic in that?

I was so outraged, but I tried to understand him.

Because I didn't want to judge him with the same cruelty that he was criticized for back then.

Arabic does not meet today's needs

It's not used in science or research, it's not used in college, it's not used in the workplace, it's not used when you're working on a high-level research project, it's definitely not the word you'd use at an airport.

If that happens, security will catch you.

Where can I use it? Everyone is interested!

When you say you use Arabic, where do you want it to be used?

this is one situation

And there's another, more important reality to consider.

Arabic is spoken as a mother tongue

Researchers say mastering one's mother tongue is essential to mastering another language.

Familiarity with one's mother tongue is a prerequisite for creative expression in other languages.

I'll give you an example

When Khalil Gibran first started writing poetry, he used Arabic.

All his ideas, his imagination, his philosophy, all sprang from himself, a boy who grew up in a village, where he smelled his own scents, heard his voice, and grew up with his own way of thinking.

So when I started writing poetry in English, I already had a lot of drawers.

If you read the poems he wrote in English, I'm sure you'll smell the same and feel the same.

You can tell that it was he who wrote it down in English.

This is a clearer example than looking at fire.

Second, it's often said that the only way to kill a country is to kill its language.

It is a fact that developed countries know

German French Japanese Chinese know

So they keep their language under the law.

it is sanctified

Because of this, they put language into production and spend huge sums of money on its development.

how do we compare

Well, we're not a developed nation, we don't have this kind of high-level thinking here yet, but we want to catch up with the civilized world.

Countries that were once like us, doing research in the name of development, are now catching up with the developed countries.Turkey, Malaysia and others, as they climbed the ladder of development, did not give up their language, guarding it like a diamond.

I kept it close

If you buy a product from Turkey or another place and it doesn't have a Turkish label, you can't call it a local product.

Local products cannot be trusted

Consumers are simple things, and so are we.

In order to develop and produce products, it is necessary to protect the language of one's own country.

If I shout "Freedom, sovereignty, independence" (Arabic), what do you think of?

don't you remember anything?

You don't know who said what or in what situation.

Language is not just a tool for conversation that comes out of your mouth.

Language is a representation of the particular background we've walked through, and it's connected to our emotions.

When we hear the words "freedom, sovereignty, independence," each of you may have a different image in mind.

Language is not just a set of words and letters

It's an expression of the inner ideas that are rooted in our thoughts and our relationships with others.

What about our intelligence?

How do you know if you understand yourself?

When I say, "Liberty, sovereignty, independence," and when your son walks up to you and asks, "Dad, have you survived the slogan of freedom?"

You think differently, don't you?

If you're ignoring this issue, let's stop here and stop talking.

I want to say that these expressions evoke certain things.

I have a French-speaking friend who is married to a French man.

When I asked her about her married life,

The reply was, "No problem, but just once I spent the night translating to him the meaning of 'toqborni'."

(Laughter) (Applause) My poor friend said "toqborni" and had to spend the night explaining it to her husband.

He must have been perplexed, "What a cruel story.

does she want to kill herself

Bury me? ” This is just an example

It seems like you can't say words that your husband doesn't understand anymore, because in fact he thinks differently.

She said, "I was listening to Fairouz with him, and one night I tried to translate it for him, so that he could understand how I felt when I heard Fairouz."

My poor friend tried to translate again, "I spread my arms and took you away from them..." (Laughter) And here's the masterpiece: "You're theirs, so I let go of you."

(Laughter) Let's stop here.

(Applause) What have we done to protect the Arabic language?

We've also launched a campaign to protect the Arabic language by raising it as a civil society issue.

A lot of people ask me, 'Why do you care about that?

Forget all these headaches and enjoy your life."

That's fine, everyone!

The slogan of the campaign to protect the Arabic language is "I speak to you from the east, you reply from the west."

We avoided strong language such as "that is unacceptable!"

The reason I avoid this style is because no one will understand me with this attitude.

I hate Arabic when someone speaks to me in a strong tone.

We want to -- (applause) change the status quo and make our dreams and aspirations feel in our daily lives.

It will be reflected in the way you behave and the way you think.

So "I speak to you from the East, and you answer from the West" is right on target.

It's very simple, yet creative and compelling.

And then we launched another campaign, which was to scatter letters on the ground.

I'm sure you've seen it outside the venue, and it's surrounded by black and yellow tape, and it says, "Don't kill your language!"

Why you ask? don't kill your language

you really shouldn't kill your language

If I kill my words, I need to find my identity

to discover our existence

I have to go back to the drawing board again

That would lead to more than just missing opportunities for modernization and civilization.

It was when I published a picture of children wearing Arabic letters.

Pictures of "cool" boys and girls

We are really cool!

You may say, "Cool is English!"

My response is, "No! I just put the word 'cool' in." If you want to object, let me say so.

I keep using the word "Internet." I'm not going to say, "I use the World Wide Web." You should also avoid sticking strangely

Now, I hope you all understand, we need to stop the people who think they are in power from trying to manipulate us into their will about language.

creativity is an idea

If you can't go to space or build a rocket, get creative.

Right now, each and every one of you is a creative project.

Our mother tongue is the key to creativity

start here

Write a novel or make a short film

A single novel invites us back into the wide world.

Arabic may be able to make a comeback as the world's number one language.

So there is no solution!

We need to understand and believe that there is a solution, and each of us can contribute to that solution.

So what can you do after this?

Let's tweet on Twitter Anyone doing Twitter?

After this talk, I would like to ask you to use Arabic, English, French, and Chinese.

Stop mixing Latin letters and numbers in Arabic!

(Applause) It sucks! that is not a word

If you use the language of the virtual world, you step into the virtual world.

Once you enter such a place, it will be difficult to come back.

this is the first thing we can do

Second, there are tons of other things we can do.

It's not the discussion here to confirm that.

Our purpose today is to raise awareness of the need to protect our mother tongues.

let me tell you a secret

It's through language that babies first recognize their fathers.

When my daughter is born, I will say, "This is your father, honey (Arabic)."

Don't say, "This is your father, honey."

When my daughter Noah says "thank you" (Arabic) at the supermarket, I never secretly say "say merci maman."

(Applause) Let's get rid of the cultural stigma.

(applause)

Ladies and gentlemen, ask yourself questions that you haven't asked before: What can the human voice do?

What can the human voice do?

(Human beatbox) ♪ Oh baby ♪ ♪ Baby ♪ ♪ Baby ♪ ♪ Baby ♪ (Baby crying) ♪ Baby ♪ (Baby crying) ♪ Baby ♪ (Cat barking) (Dog barking) What do you think?

(Applause) (Sound of boomerang flying) It came straight back, so I couldn't avoid it.

As you can imagine, I was a weird kid.

(Laughter) Because I was always trying to maximize the range of sounds I could make.

I was always experimenting with sound.

still continuing

I'm looking for sounds that I can make

I'm a little bit smarter and a little bit better than I used to be.

There are sounds that no one can speak out

For example, you can't play two pitches at the same time.

Two tones can be produced at the same time.

(Two-tone recitation) This is really a phony

And it hurts my throat

There are things that humans can't do. I've always struggled with the limitations of the human voice. Beatboxing is the best way to get your ideal music out of your head and out into the world, but it's still just a sketch.

Maybe there's a way to make my ideals unhindered as they are?

I thought so, and I worked with these guys to build this machine.

This machine is an on-the-spot sound production machine. It's a real-time music maker. With this machine, I can use just my voice to create music exactly as I hear it in my head, in real time, unencumbered by the limitations of my body.

Now let's show it's performance

Before I start using my voice to make sounds, I'll repeat it again: all the sounds you'll hear from now on are made right here with my voice.

This machine -- thank you very much, Mr. Assistant -- this machine has no sound source of its own.

Once I turn the machine on and it starts processing my input, it doesn't sound like a human voice, but it's actually a human voice.

Starting with polyphony: my voice is one

How do you solve this problem of getting as many voices as you want at the same time?

The easiest way is this

(Beatbox) Ride the rhythm like this

(music) Hi

(Applause) This is the easiest way.

How can I do it more immediately? Want to do more than live looping? There are other ways voices can be multiplexed

Changing the pitch, this can do wonders, let me hear it

start with another beat sound

(Beatbox) Let's dance a little first, it's fun, you can clap your hands.

Don't overdo it, let's get started

add the base

(music) rockabilly guitar joins

And -- (Applause) -- thank you rock organ.

would you go in? Record my voice of course

(Sound of the organ) That's it, recording complete

assign to keyboard

(music) Cool

(Applause) When you want the sound of the whole Pink Floyd band?

Impossible? no

It's possible, it's very easy, use this machine to listen like magic.

(music) Every sound I hear is my own voice

You are not playing a recording

No samples, no synthesizers, just processing my voice.

No samples, no synths, just processing my voice. "What the hell are you trying to say?"

"Why are you doing this?" (Laughter) The simple answer is, "Because it's cheaper than hiring Pink Floyd."

Actually, I didn't build this machine to imitate existing sounds.

To make any sound I can imagine.

If you don't mind, today I'd like to share with you what's on my mind.

(Voice processed) (Music) What about this?

(music) Just a quick overview, this is the answer to the question, "What is the human voice capable of?"

thank you for listening

(applause)

I'm Dan Cohen, a scholar.

That's why we always argue, because it's such an important part of life.

i like to discuss

I'm not just a scholar, I'm a philosopher, so I think I'm pretty good at arguing.

I also like to think about arguments.

While I was thinking about it, I ran into a problem many times.

One of them is this: I've been thinking about arguments for decades, and I'm getting better at it.

The more you argue, the better you get - the more you lose, and this is the conundrum.

The other thing is that you don't care if you lose.

Why are you okay with losing? Why are people who are good at arguing so good at losing?

Conundrum still exists

why do we argue? Who benefits from the discussion?

So what I'm talking about here is a debate about perception, what you might call an academic or epistemological debate. For example, is this proposition true? Is this theory good?

Is the interpretation of this data or statement valid? that's how it is

The less interesting debates are things like who does the dishes and who takes out the trash.

Of course, we have discussions about that at home.

I know the tricks, so I have the confidence to win

It's not just the debate that matters, it's the contemporary academic debate that interests me.

Let me start with the question that I have. First, what does a good debater get when he or she wins?

For example, what do I get by persuading that ``Utilitarianism is not suitable as a framework for moral theory''? What do you get by winning an argument?

What does it have to do with making people think that Kant's claims are valid, or that Mill is a model ethicist?

It doesn't matter to me who thinks functionalism is a valid theory of mind.

So why are you trying to argue?

Why are you trying to persuade people to believe something? is that a good thing?

Is it an appropriate attitude to treat people to make them think about unnecessary things? Is it an appropriate attitude to treat people to make them think about unnecessary things?

Touching on three models of argumentation, I

I'm going to try to answer the first one, the dialectic model, which treats arguments as wars.

It's not very useful in practice, but it's a well-known and well-established model for discussion.

The second model is "argument as proof."

Consider the argument of mathematicians

It goes like this Is the discussion appropriate?

Is the premise correct? Is the inference valid?

Are the conclusions derived from the premises?

There is no counterargument, no conflict here, conflict of argument is not necessary.

The third model I want you to know because it's useful The third model I want you to know because it's useful The third model is "argument as a performance." It's an argument that takes place in front of an audience.

You might think of politicians trying to take a stand or trying to persuade an audience.

And there's another important aspect of this model, which is that when you have an argument -- often the audience has a role to play -- it's like an argument in front of a jury that decides a verdict and decides a crime.

Let's call this the "rhetorical model," where you need to tailor your arguments to your audience.

No matter how solid, well-thought-out and rigorous the argument is in English, it won't work if the audience is French-speaking.

Now we have three models: Argument as War, Argument as Proof, and Argument as Performance.

The most common of these is the argument-as-war model.

It's this model that usually comes to mind when we talk about or think about an argument, so it's where the discussion and how it actually behaves comes from.

That's why when we talk about arguments - we use war language.

We need "strong" arguments, "punchy" arguments -- "targeted" arguments.

Prepare a “strategy” while “defending”

We need an argument that "crushes" the opponent

What is required is this discussion

This is the prevailing view of the argument

This is the adversarial model that comes to mind when you think of an argument.

But the metaphor of war, the analogy of the argument to war, and the model of war, distorts the way the argument goes.

First, strategy becomes more important than content.

Logic and arguments can be learned in lectures

Learn about phrases and mistakes to win an argument

It emphasizes the point of conflict between ourselves and the other.

sees the debate as divided between friends and foes

The expected outcome is either a spectacular victory or a miserable and humiliating defeat.

This distorts the debate and unfortunately hinders negotiation, consideration, compromise and collaboration.

What did you think when you started the discussion? "Let's not argue, let's try to argue -

What can we all solve? ”

If you think of arguments as war, you're hindering this kind of solution.

In the end, the worst part is that the discussion doesn't come together.

Arguments become deadlocks, detours, traffic jams, stagnations.

out of control

Then, as an educator, my headache is

And then, as an educator, my headache is that when we see debate as war, we see learning as defeat.

let me explain what's going on

Suppose you and I discuss

You believe proposition P, but I don't.

When I ask him why he thinks P, you explain

When I ask him why he thinks P, you explain

I refute that explanation

you answer the objection

I ask further What is it?

How else can it be applied? you answer the question -

At the end of the discussion, you've run out of counterarguments, questions, and objections, and you've answered them all satisfactorily.

As a result, at the end of the discussion, I say, "You're right, P."

I get new ideas

It's not just an idea, it's a clear, well-considered and contested idea.

Better understanding Now who won the argument?

If I use the analogy of war, I have to say, even if I understood it, you won.

But what did you understand by persuading me?

Sure, you'll be satisfied, your self-esteem will be satisfied, and you may be able to secure yourself a professional status in your field.

But who won in terms of understanding?

If I were to use the analogy of war -- I understand, but you win and I lose.

But something is wrong

It's this situation that I want to change

How do we know how to have a positive - debate?

What we need is a new discussion exit strategy.

But without new ways to start discussions, there can be no new exit strategies.

We need to think of new ways of discourse.

I just don't know how

sorry news

The argument = war metaphor is like a monster.

And the magic bullets that live in our hearts and kill them

No magic wand to erase

i have no answer

I can make some suggestions

But I can make some suggestions, but in order to think about a new debate, we need to think about a new picture of the participants.

Let's try Think about the role that the participants play in the discussion

In a confrontational, dialectical argument, there are pros and cons.

Rhetorical arguments have an audience

In arguments as proof, there are those who reason.

There are various roles Can you imagine this?

You're arguing, and you're also in the audience watching your argument.

Can you imagine seeing yourself lose an argument, but at the end of the argument saying, "That was a good argument?"

I'm sure you can

If that's an argument -- if the loser says to the winner, "That was a good argument," and the audience and the jury can say the same, I imagine it's a good argument.

And not only that, but you've also got to think of a good debater, the kind of debater that you should be aiming for.

I have lost many arguments

Good arguments take practice, so that you can get something out of your defeat, but luckily I have a lot of colleagues who volunteer to give me practice.

thank you

(applause)

In an age of international competition and climate change, I'm here to answer the important question: Why is sex so good?

I know you're laughing

Now, before I answer that question, let me tell you about Chris Hosmer.

This is my friend from college. Actually, I hate him.

Because back in college, Chris and I worked on the design of a solar clock.

this is my watch

Mini sunflowers, which are about 30 centimeters tall, are used.

As you know, sunflowers face the sun all day long.

Mark at the bottom which way this sunflower is facing in the morning

At noon we mark the direction of the sunflowers again, and at night we do the same. That's the clock.

I don't know the exact time with this clock, but the idea of ​​using flowers would be new.

I think this invention is wonderful.

Chris' watch is here

There are five magnifying glasses with a glass under each one.

Glasses contain different balms

In the morning, the sunlight hits the first magnifying glass, and the magnifying glass collects that heat into the lower glass.

The balm inside is warmed and its scent is released

After a few hours, the sunlight pours into the next magnifying glass, giving off a different scent.

So during the day, five different scents are emitted.

Households can tell the time just by smelling it.

Do you know why I hate Chris?

My idea wasn't bad, but Chris's idea was genius. At the time, I knew Chris's idea was better, but I didn't know why.

The truth is, I'm a competitive loser.

I have suffered for a long time because of this character

So let's get back to why sex is so good

A few years after Solar Clock, a young lady friend said to me, "What makes sex great is the five senses."

The moment I heard these words, I had an epiphany

I came up with the idea of ​​measuring all of life's experiences with our five senses.

That's why I invented the Five Senses Graph.

The Y-axis has numbers from 0 to 10, and the X-axis is, of course, the five senses.

Every time I have an experience that sticks in my mind, I record it in this graph, which is like a five-sensory diary.

Let's explain with a video

Jinsop Lee: Hi, I'm Jinsop, and today I'd like to show you what riding a motorcycle looks like with all five senses.

Bike Designer: Modified Bike Designer

(roar) [hearing] [tactile] [sight] [smell] [taste] This is the five senses graph.

I've taken data over the last three years, not just for me, but for my friends.

here is the result

The first is a graph of instant noodles

Taste and smell will be very high, while hearing is only three.

Many people say that the best part of eating ramen is the sound of slurping the noodles.

It's this sound. I don't want to eat with people like that anymore.

next night club

What's interesting is the Taste 4 part. Many of the subjects said it was because of the taste of the drink, but it could actually be because of the kiss in the nightclub.

I'm still dating these people

Well this is smoking

A smoker with a tactile 6 attributed it to the joy of holding a cigarette in his hand.

So what would the perfect experience look like in the Five Senses Graph?

Of course, that's the maximum horizontal line.

As you can see, even great experiences, like riding a motorcycle, are far from perfect.

In fact, while we were collecting data, only one result came close to perfection.

It's sex It's good sex

Subjects say that good sex brings the five senses to the highest level.

One of my students said, "Sex is good, even in bad times."

The Five Senses Theory explains why sex is so good.

During this five-sensory graph project, I suddenly remembered the solar clock from my youth.

This theory of the five senses also explained why Chris' watch was superior.

My watch only appealed to my sense of sight and my sense of touch.

But Chris' watch

The first clock to tell the time by smell

When it comes to the senses, Chris' watch is revolutionary.

This idea has taught me about my field of expertise as well.

Until now, as designers, we've only been concerned with how our work looks, and we've paid a little bit of attention to texture, but we've ignored the other three senses.

Chris's watch taught me that even one of the other three senses could be incorporated into it to make it better.

What would happen if we incorporated the theory of the five senses into design?

Here are three ideas I came up with

It's an iron. It's the one you use on your clothes. And we've incorporated a spray function into that. You can fill that container with your favorite scent, and your clothes will smell nice, and at the same time, I hope it makes the ironing experience a lot more enjoyable.

I named this work "Perfumeter"

next

I brush my teeth twice a day What if my toothbrush tasted like candy? What if it's time to replace your toothbrush when it no longer tastes like candy?

Finally, I love flute and clarinet keys.

It's not the design, but the feeling when you press it with your finger is the best

I don't play the flute or the clarinet, so I tried to incorporate this functionality into the equipment I use most often, which is the TV remote control.

Now, I've shown you three ideas, and this theory of the five senses not only changes how you use them, but it changes the design.

So the theory of the five senses is really useful for measuring different experiences and then incorporating the best of them into our designs.

Now, the five senses aren't the only things that enrich our lives.

There are 6 emotions, and there is an element called X, which is still unknown.

that will be my next topic

Until then, enjoy using the five senses in your life and design.

one last thing

Here's what people experienced while listening to this TED talk.

It is desirable to increase other sensory values ​​such as smell and taste.

It's easy to do by handing out candy.

I'll go

that's all

(applause)

After living in the United States for 20 years -- I returned home 15 years ago -- Africa brought me back.

And he founded the country's first school of graphic design and new media.

Zimbabwe Digital Visual Arts School

The ideal and dream is to create a school like the Bauhaus, a school that explores and researches new ideas, creating a new visual language that builds on the creative African tradition.

The school awards a two-year certificate to talented students who complete the high school course.

The curriculum emphasizes typography, but I tell my students to look inward.

This poster was designed by a student with the theme "education is a right."

This is the logo designed by the students.

Africa has a long tradition of writing, but it's not well known, so I wrote a book called "The African Alphabet."

There are many different scripts in Africa, starting with "proto-scripts" like the Nshividi script, which is a secret society of the Ejagam tribe in southern Nigeria.

It is a unique writing system that is used

The Akan people of Ghana and Ivory Coast invented the Adinkra symbols some 400 years ago. They represent proverbs, historical sayings, objects, animals and plants. My favorite is the symbol on the top left, "Sankofa."

The symbol on the top left is "Sankofa."

It means "go back and get it," or learn from the past.

Written by the Chokwe people of Angola, this pictogram represents the creation myth.

Gods are depicted above, humans are depicted below, the sun is depicted on the left, and the moon is depicted on the right.

all roads lead to God

Yoruba, Congo, and Paro secret societies, each in Nigeria, Congo, and Angola, developed complex writing systems that are still in use today in Cuba, Brazil, the New World, such as Trinidad and Haiti.

In the Ituri region in the rainforests of the Democratic Republic of the Congo, men beat a special tree to make cloth, and women who sing songs to God draw intricate patterns on the cloth.

In South Africa, Ndebele women decorate their homes with this symbol and geometric patterns, and Zulu women use a variety of symbols when weaving beads into bracelets and necklaces.

Ethiopia has a very long tradition of writing, and the Ethiopian alphabet was invented in the 4th century AD.

used to write the Amharic language spoken by over 24 million people

In Cameroon, King Ibrahim Njoya of the Kingdom of Bamun made shumon when he was 25 years old.

Because shumon is a syllabary

It's different from the alphabet, to be precise.

Here are three stages of development that Schmon went through over the course of 30 years.

The Vai people of Liberia had a literacy tradition even before they first came into contact with Europeans in the 1800s.

This is a syllabary, read from left to right.

In neighboring Sierra Leone, the Mende also invented a syllabary, but it's read from right to left.

African design traditions are old, and design sensibilities are evident, but there are also problems, especially today, where designers struggle with design because they tend to look externally for ideas and inspiration.

African creativity and manufacturing traditions are as good today as they were in the past. Designers just need to look inward.

This Ethiopian cross confirms Dr. Ron Egglash's claim that Africa can make significant contributions to computing and mathematics by intuitively understanding fractals.

Ancient Africans created civilizations, and the structures that survive today are a testament to their greatness.

The invention of the alphabet is also one of mankind's greatest achievements, and it has been historically accepted that it originated with the invention of cuneiform writing in Mesopotamia in 1600 B.C.E., followed by Egyptian hieroglyphs.

But in 1998, Yale University professor John Coleman Darnell discovered rock inscriptions on limestone cliffs in the Thebes desert of western Egypt, and they were dated between 1800 and 1900 BC, many centuries before Mesopotamia.

Named Wadi El-Hor after where it was found, research continues to this day. Only a few letters have been deciphered, but researchers agree that it was the first human alphabet.

Here's a list of all the ancient characters that have been deciphered to date, starting with the A at the top, "Alep," and continuing with "Bet" in the middle.

Now is the time for design students in Africa to read the works of Senegalese great predecessor Sheikh Anta Diop, for his seminal work on Egypt has been proved by this discovery.

The last thing I want to touch on is the Adinkra symbol, Sankofa, written by the great Jamaican leader, Marcus Garvey and the Akan tribe of Ghana. This symbol brings the past into the present, giving us the power to create the future for us and our children.

Also, it's time for African designers to stop looking outside.

They've turned outward, but what they want is within reach, within their reach.

Thank you very much

(applause)

ADAM OCKELFORD: I'll start by promising that you'll spend more time playing Derek than talking about me, but first let me tell you a little bit about Derek's life.

It's great that he's taller than I am now, but when he was born, he could fit in the palm of your hand.

I was born three and a half months too early.

The high doses of oxygen inhalation also affected my vision, my ability to speak, my perception of the world.

But the bad news is, when Derek came home from the hospital, the family hired a wonderful nanny, who would take care of him throughout his childhood.

Her insight is wonderful, and blind Derek

I thought music was important.

She sang it to baby Derek every day, and Derek said it was like chirping.

Listening to her sing for hours every day must have influenced Derek and sparked his musical talents.

Look at this picture, it's Derek and the nanny.

The nanny's brilliant insight was that she thought of giving Derek an instrument, and she pulled this little keyboard out of the attic, not expecting anything in particular at the time.

But Derek banged the keyboard with his tiny hands, and they say he banged it so hard that it broke.

A few months after I started playing keyboards, I started making beautiful music. It must have been a miraculous moment when I realized that I could imitate any sound in the world with a keyboard.

it was a great find

Because he can't see, he's self-taught.

Derek Paravicini: I learned how to play the piano myself

ADAM: Well, that's true. As a result of his self-study, his playing style was fist, karate chops, and he used the tip of his nose.

And the nanny recorded Derek's performances on a little early tape recorder, and the tape I'm about to play was recorded when Derek was four years old.

Derek: It's a song called "Molly Malone."

Adam: I'm going to stream from now on

"English Country Garden"

Derek: "English Country Garden"

(Music: "English Country Garden") Adam: What do you think?

(Applause) I can only describe it as wonderful.

Little Derek, who is blind and still doesn't understand much of the world, had no one in his family who could play an instrument, but he taught himself how to play the piano.

As you can see in the picture, Derek was making a lot of different movements during the performance.

I met Derek when he was four and a half years old, and when I first met him, I honestly thought he was in a very bad mood, because Derek wanted to play all the keys and would often bang when I got in his way.

Every time I got close to the piano, I was immediately pushed away.

I promised your father, Nick, to teach you how to play the piano, but I'm at a loss how to teach you when I can't get close to the piano.

After a while, the only solution I came up with was to force Derek across the room and have 10 seconds before he came back to the piano and rush back to play and teach him.

Derek finally realized the joy of playing together.

This photo shows me with a brown beard before we got married and a young Derek focused on playing the piano.

yes this was recorded

(Laughter) And by the age of 10, he was taking the world by storm.

Here's a picture of me playing with the Royal Philharmonic Pops Orchestra at the Barbican.

It's been a really exciting road so far.

Derek didn't talk much back then, so there were always tense moments about things like whether he knew what he was about to play, whether he could play it in the right key, and so on.

But the orchestra marveled, and the media around the world were fascinated by his talent for playing so well.

how derek plays

If possible, I would like to show it to you today.

One of the things that happened in Derek's childhood was that by the time he was two years old, he had a musical sensibility that surpassed that of the average adult.

For example, whatever note he hears -- let's play a random note (a piano note) -- Derek can understand that note, and he can instantly determine which key it's on.

This is what we call absolute pitch, and some people have absolute pitch only on the middle white keys of the piano.

(Piano sounds) Do you know what our practice was like?

(Applause) But Derek's hearing is even better.

I'm going to put the mic down a little bit and play some chords now.

If you look at my hands, you can see some noises, but Derek can't see them.

Not only does he know how many notes there are, but he can also play them.

(Playing a chord) Technical stuff aside, it's great.

This is the ability to hear all the sounds in unison. He can hear all the sounds even when the orchestra is playing, and he can instantly reproduce them with hours of practice. I think this ability is the foundation of his musical taste.

even if you say so

If you don't know how to play the piano, having perfect pitch is useless, but luckily for Derek, once we started learning together, he learned all the fingerings.

For example, how to use the thumb in C major

(Piano sound) like this

I progressed so fast that eventually I could play songs like "Flight of the Bumblebee" without any problems, right?

Derek: yes

Adam: By the time he was 11, Derek was playing like this.

Derek: like this

(Music: Flight of the Bumblebee) (Applause) Adam: Derek Bow to everyone.

Well done

And what's even more amazing is that in addition to playing "Flight of the Bumblebee" in the normal key, Derek can also play it in a different key.

So let's actually pick a note at random.

(Piano sound) Can you play "Flight of the Bumblebee" with this sound?

Derek: This sound is "Flight of the Bumblebee"

(Music: "Flight of the Bumblebee") Adam: Change key again? What about G minor?

Derek: G minor

(music: "Flight of the Bumblebee") Adam: Great Derek

As you can see, Derek has a computer-like function in his head that allows him to adjust the sound of any song on the fly.

Most pianists would have a heart attack if I asked them, like now, "Can you play 'Flight of the Bumblebee' in B minor instead of A minor?"

In fact, the first time Derek played the song with an orchestra, the version he'd been practicing was sometimes different from the orchestra's version. During the two-hour wait between rehearsals and the concert, Derek heard the orchestra's version, picked it up, and two hours later, he was playing it.

That's excellent

Another talent of his is memory.

Derek: Memory Adam: You have an amazing memory. At every concert, we ask the audience to request a song for Derek to play.

Everyone says, "That's bold -- what if it's a song that Derek doesn't know?"

And I say, "No, if Derek doesn't know the song, you can sing it to him first, and he can play it."

Anyone want to make a request?

Derek: Pick, can you pick? Adam: It's dark, so please speak loudly.

do you want to hear me play

(Audience: "Paganini's Theme") Adam: Paganini Derek: "Paganini's Theme"

(Laughter) (Music: "Paganini's Theme") (Applause) Adam: Great.

Derek's going to Los Angeles soon. This is a bit of a milestone, because Derek and I have just spent 100 hours on a long-haul flight together. Isn't that interesting, Derek?

Derek: Interesting, Adam, long-haul flight, yeah.

Adam: Talking for 13 hours might sound like a lot, but it's easy for Derek.

(Laughter) In America, Derek is called the "Human iPod."

You're an amazing and creative musician, and the best expression of that creativity was when I went to Slovenia.

Derek: You played "Chopsticks" Adam: You did.

Derek: "Chopsticks"

Adam: It's like this Derek: It's like this Yeah

(Piano sounds) Adam: To Derek's manager there

do you want me to play

Derek: Some people play like this Adam: Are you kidding me? come on play it

(Music: "Chopsticks") Derek: Let Derek play

Adam: What's wrong Derek?

Derek: I want to improvise with this Adam

Adam: This is the musician Derek.

(Music: Improvisation on "Chopsticks") (Applause) (Music) (Applause) Can you match Derek?

(Music) (Applause) The TED administration might get mad at me, but there will be time for an encore.

Derek: One song for encore Adam: Yes, one song for encore

One of Derek's heroes

Great Art Tatum song Derek: Art Tatum

ADAM: He was also a blind pianist. Like Derek, he thought that everything in the world was a piano.

Now Derek plays "Tiger Rag" by Art Tatum.

Derek: "Tiger Rag"

(Music: "Tiger Rag") (Applause)

hello i am an architect

But I'm the only architect in the world who makes buildings out of paper. I use these cardboard tubes.

It was 1986, and long before people started talking about ecology and environmental issues, I started testing paper tubes for use as building structures.

Testing new materials for construction is very complicated, but paper tubes are much stronger than we initially thought, and they are very easy to waterproof.

And in 1990, we built a temporary structure.

Here is the first temporary paper building.

It's made up of 330 55-centimeter diameter paper tubes and just 12 120-centimeter diameter or four-foot paper tubes.

As you can see in this picture, there's a toilet inside.

(Laughter) It's very convenient.

In 2000 there was a big World's Fair in Germany.

I was asked to design a building here because the theme of the Expo was environmental issues.

They chose to build the pavilion out of paper tubes, which are recyclable.

My design goal is not when the building is finished.

My goal is when the building is demolished, because if a country builds a pavilion, it's going to be a huge number, and six months later it's going to be a lot of industrial waste, so my building has to be reusable or recyclable.

After closing, the building was recycled.

My design goal was achieved.

After that, I was very fortunate to win a competition to build a branch of the Pompidou Center in Metz, France.

We were very poor at the time and wanted to rent an office in Paris, but we couldn't afford it, so we decided to take the students to Paris and build our own office on the roof of the Center Pompidou.

We brought in paper tubes and wooden joints to complete a 35-meter long office.

I stayed there for six years without paying a penny in rent.

(Laughter) (Applause) Thank you. There was just one big problem.

The office was part of an exhibition, so even visiting friends were forced to buy tickets.

I was in trouble

The completed Pombidou Center Metz

Now it's a very popular museum, and I built a big monument for the government.

But at that time, I was deeply disappointed in the profession of architecture, because architects are not helping people, they are not serving society, but they are working for the privileged, the rich, the government, the developers.

they have money and power

both are invisible

To show that, we have the architects build structures like monuments.

Being an architect is such a profession, and it works the same way historically as it does today.

I was very disappointed that so many people were losing their homes to natural disasters, and that architects were not serving society.

In fact, it's no longer a "natural" disaster.

For example, people don't die in the earthquake itself, they die because buildings collapse.

This is the architect's responsibility

Where temporary housing is needed, architects are absent because they are too busy working for privileged classes.

So I thought, "Even if you're an architect, why not get involved in building temporary housing?

We can improve the situation."

That's why I started working in disaster areas here and there.

In 1994, there was a big disaster in Rwanda, Africa.

Two races, the Hutu and the Tutsi, clashed.

Over two million people became refugees

I was very surprised to see refugee camps that were set up and managed by the United Nations.

It was a very poor situation. It was the rainy season, and the refugees were wrapped in blankets and freezing. At the UN shelters, they were only provided with plastic sheeting, so they had to cut trees like this.

More than two million people cut down trees

It led to massive deforestation and environmental problems.

So the United Nations supplied aluminum pipes and barracks.

Aluminum is expensive, so the refugees sold the pipes, and the trees were cut down again.

I suggested using recycled paper tubes to remedy this situation, because paper tubes are very cheap and strong, and our budget was only 50 US dollars per house.

We built 50 huts for monitor testing, testing durability, waterproofing, termite resistance, and more.

And the following year, in 1995, there was a big earthquake in Kobe, Japan.

Nearly 7,000 people died, and the entire city, including Nagata Ward, was reduced to a charred wasteland after the earthquake.

Eventually, I learned that many Vietnamese refugees from the disaster had gathered at a Catholic church, which had been completely destroyed.

I went to the site and suggested to the priest, "Why don't we rebuild the church out of paper tubes?"

And he said, "Oh, you idiot! It's after the fire.

what are you thinking

He never believed me, but I didn't give up.

I started commuting to Kobe and met people from the Vietnamese community.

They built very crude plastic sheet tents and lived in parks.

I proposed rebuilding and raised funds.

We built a house for them out of paper tubes, so that even a student could easily put it together and take it apart, using a beer case as the foundation.

I asked Kirin Brewery to provide it, because Asahi Breweries' case was red at the time, and it didn't go well with the color of the paper tube.

Color coordination is important

What I'll never forget is that I was expecting that beer case to come full of beer, but it came empty. (Laughter) I remember being very disappointed.

Together with the students, we built 50 temporary housing units that summer.

Finally gained the trust of the priest, about rebuilding the church

I was told, "It's fine if you prepare the funds and manpower."

Rebuilt the church in five weeks

The church was supposed to last only three years, but it was loved by the people and was actually used for 10 years.

Later, when there was a big earthquake in Taiwan, there was an offer to donate this church.

It still remains in Taiwan as a permanent church.

This building became a permanent building.

So it begs the question of what is permanent and what is temporary.

Even a building made of paper can become permanent if people love it.

Even with concrete, if you build it to make money, it becomes temporary.

In 1999, there was a big earthquake in Turkey, and we went there and built temporary housing out of local materials.

In 2001, we also built temporary housing in West India.

In 2004, in Sri Lanka, we reconstructed an Islamic fishing village that was hit by the Sumatra earthquake and tsunami.

In 2008, nearly 70,000 people died in Chengdu, China's Sichuan province, and a particularly large number of schools collapsed due to corruption-related shoddy construction.

I was asked to build a temporary school building.

Take a student from Japan and have him work with a Chinese student.

A month later, nine classrooms were completed, and the total area exceeded 500 square meters.

There was another earthquake recently in China, but the school building is still in use.

In 2009, there was also a large earthquake in L'Aquila, Italy.

This is an interesting picture, but it's former Prime Minister Berlusconi and Japan's former Prime Minister Aso.

They were very generous and brought me a model.

We proposed a grand reconstruction, a temporary music hall, because L'Aquila is a city that is very famous for music, and all the music halls were destroyed, and the musicians were starting to leave the city.

So I proposed to the mayor to build a temporary music hall.

"If you can afford it, go ahead," was the reply.

and luckily

Prime Minister Berlusconi hosted the G8 there, and the Prime Minister of Japan was also there, and they helped us raise the money.The Japanese government gave us half a million euros to build this temporary music hall.

In 2010, there was a huge earthquake in Haiti, but I couldn't fly directly to the site, so I went to the neighboring country, Santo Domingo, and took the students there, took six hours by car, and built 50 temporary housing units using local paper tubes.

This is what northeast Japan looked like two years ago.

After the earthquake and tsunami, people were forced to evacuate in large spaces like gymnasiums.

you have no privacy

This is going to be both physically and mentally exhausting.

So we went there, and together with the student volunteers, we made partitions out of paper tubes.

But some of the people who managed the shelters didn't like it.

but i really needed to make it

And there wasn't enough flat land in the area to build the kind of one-story temporary housing that the government has traditionally used.

Look, even though it's government-led, the temporary housing was shoddy like this, and it wasn't too far from the next door -- it had no storage, it was messy, it was leaking.

So while we were building the partition, I suggested

In Onagawa, Miyagi Prefecture, I finally met a very good mayor.

I was commissioned to build a three-story house on a baseball field.

We used shipping containers, and with the help of the students, we built all the furniture and made it comfortable to live in. Not only did it stay within the budget of the government, but it was as big as ever, and very comfortable.

Many people want to live here forever

I was very happy when I heard that

I'm currently working in Christchurch, New Zealand.

Twenty days before the earthquake in Japan, there was another big earthquake, many Japanese students died, and the city's most important cathedral, which was a symbol of the city, was completely destroyed.

I was asked to come to the site and build a temporary cathedral.

The cathedral is currently under construction

I would like to continue to build monuments that are loved by people.

thank you very much

(Applause) Thank you. (Applause) Thank you very much. (Applause)

If humans evolved from monkeys, why are there still monkeys?

(Laughter) Because we are not monkeys, we are fish.

(Laughter) Understanding that humans are fish, not monkeys, leads to an understanding of human origins.

I teach one of the largest evolutionary biology courses in the United States, and when you finally understand why I call my students "fish," I feel successful as a professor.

The lecture must begin by clearing up misconceptions.There are many misconceptions about evolution.

For example, we learn "(the only) theory of evolution"

There are multiple theories, and like evolution itself, only those that fit the data survive today.

Darwin's theory of natural selection is best known.

It's a process in which the best adapted organisms survive and reproduce, while the less adaptable organisms gradually die out.

It just is the thing

Evolution is so simple and so true

The theory of evolution is as true as the theory of gravity

easy to prove

You can tell by looking at the belly button. It's the same as other placental mammals, or it has the same backbone as other vertebrates, and it has the same DNA as all life on Earth.

These traits didn't just pop up in humans.

It's a legacy from various ancestors that not only we inherited, but all our descendants inherited.

But biology doesn't teach us that.

You'll learn that plants and bacteria were primitive, fish evolved into amphibians, reptiles and mammals evolved, and then reached the end point of a fully evolved organism like you.

But evolution is not a single line, and we are not the final destination.

Evolution is often taught that monkeys and chimpanzees and extinct humans all move forward and become humans.

But they didn't become us

We are not the goal of evolution

why it matters

Why do we need to get the theory of evolution right?

Misconceptions about evolution lead to many problems, and the age-old question, "Where did humans come from?"

I can't answer that if I don't understand evolution correctly.

Misconceptions about evolution have led to intricate and erroneous ideas about how we treat other life forms, how we treat other people, including those of the opposite sex and of different races.

Let's go back 4 billion years

This is our ancestral single-celled organism.

First came other single-celled organisms, which are still evolving today. Archaebacteria and bacteria, which make up the majority of single-celled organisms, are some people say are the most successful organisms on Earth.

It will certainly outlive humans

About three billion years ago, multicellular organisms arose.

Fungi, plants, animals, etc.

Fish were the first to have a backbone

So all vertebrates are fish, and you and I are fish.

Did I tell you?

A lineage of fish landed and transformed into mammals, reptiles, etc.

Some reptiles became birds, some mammals became primates, some primates became monkeys with tails, and others became great apes, including humans.

So we didn't come from monkeys, but we share the same ancestry as monkeys.

The organisms around us are constantly evolving. Bacteria and fungi are increasing, and fish are plentiful.

By the way, I love fish.

(Laughter) Life evolves and goes extinct.

Most species only live for millions of years.

That means that life around us today has about the same lifespan as humans.

So the idea that plants and bacteria are primitive, and that humans are special because they're relatively new, is very self-centered.

Let's compare life to this book, which is, of course, an unfinished book.

We only see the last few pages of each chapter.

All eight million species of life in this world are products of four billion years of evolution.

We are all young leaves on the giant, ancient tree of life. We are all connected by invisible branches, and we are also connected to extinct relatives and ancestors.

As a biologist, my colleagues and I continue to study how different species are connected.

Maybe it's better to think of it this way: we're all little fish out of the water.

We can walk and talk, but we still have a lot to learn about who we are and where we come from.

Thank you very much

(applause)

Chris Anderson: Welcome to TED

Richard Branson: Thank you, first time at TED, great

CA: Have you met anyone that interests you?

RB: The good thing about TED is that they're all interesting people.

I was so happy to meet Goldie Hawn I had to apologize

I had dinner with her about two years ago, and I couldn't take her big wedding ring off.

When I got home that night, my wife asked me why I was wearing another woman's huge wedding ring.

The next morning my wife and I went to a jewelry store to have it cut.

So sorry for Goldie (laughs) (laughs)

CA: That's a masterpiece

Now let's look at some slides, some of your companies.

One or two were created

It all started with Virgin Atlantic Virgin Records Student Magazine

And many of these companies were founded. What's the secret?

RB: I read the TED instructions, and it says don't talk about your business, and you're asking right now.

That's why you won't kick me off the stage 'cause it's your question

(laughs) CA: It depends on the answer.

RB: I learned early on -- if you can run one company, you can run any company.

Because a company is about finding the right people and motivating them to bring out the best in them.

Plus, I'm a very inquiring person, and I like to find things that seem to maintain the status quo and turn them upside down.

sees life as one long learning process

So I flew on a certain airline and the experience wasn't great, and that was 21 years ago, so I thought maybe I could make an airline that I would love to fly on.

So I got a used 747 and started

CA: You did something weird because a lot of people acted like they were crazy.

In fact your empire was on the verge of collapse

I spoke with an investment banker who sold Virgin Records and invested heavily in Virgin Atlantic, and he thought it was insane to trade the world's fourth-largest record company for the 25th-largest airline.

Why did you do that?

RB: The line between success and failure is very fine.

Starting a business without financial backing tends to cross the line badly.

We were attacked by British Airways

They did what became known as the Dirty Trick Campaign in an attempt to bring down our airline.

And then I realized that the whole empire was about to collapse, and I had to do whatever I could.

To protect the jobs of the people who work at Virgin Atlantic, and to protect the jobs of the people who work at Virgin Records, I had to keep Virgin Atlantic and sell the heirlooms.

CA: You look like a genius in post-Napster eyes, as a matter of fact.

RB: That turned out to be the right thing to do

I was sad at the time, but I had to move on

CA: You're getting brand synergies with a lot of Virgin brands.

What does this brand stand for

Quality is what I want everyone to feel when they come into contact with Virgin. CA: Everyone says quality. What is the spirit of the brand?

RB: There's more

We're having fun and I think the people working there are having fun too.

Like I said before, shake up other industries and do it differently, and the industries you enter can't go back because we attacked the market.

CA: Some of the things you launched didn't work.

What happened to Virgin Bride or something?

(laughs) RB: We couldn't find any customers.

(Laughter) (Applause) CA: I was kind of curious about the Mates branded condoms that didn't work.

Couldn't you just use the Virgin brand?

'Cause I'm no longer a virgin

RB: We had a hard time finding customers here as well.

When I started the company, I got a lot of complaints from customers, and I had to deal with those things.

Three months after the condom went on sale, I received a letter of complaint, and I sat down at the desk and wrote a long letter of apology to the woman.

However there was little I could do

Then, six or nine months later, I got a letter of joy with a picture of the baby and they asked me to be their godmother, so I did.

everything went well

CA: Really? I wanted you to bring me a picture, that's great

RB: I should have brought it

CA: Can you explain the numbers

What are the numbers here?

What is the overall size?

What are your total sales?

RB: total about $25 billion right now

CA: How many employees?

about 55,000 people

CA: You've got pictures of different situations. I don't really care about dignity.

this photo? is it real?

RB: Yeah, I think it was around the opening of the Los Angeles megastore.

RB: Yeah, I think it was during the opening of the megastore in Los Angeles. CA: Is that your hair?

RB: No

CA: Who are you?

RB: I'm going to go to tea

CA: OK

(Laughter) RB: It was a great car boat and it was a lot of fun. CA: That car, that was a TED member's event.

Can you stop here for a minute?

(laughs) RB: Hard work, right?

CA: It's really hard work.

(Laughter) When I first came to the United States, I was trying to do this with my employees, but it's weird because the rules are different here.

RB: Lawyers say you can't do this CA: Tell me more RB: I launched "Pammy" I was inspired to compete with Coca-Cola and launched a bottle of Coke called "Pammy" Curves like Pamela Anderson's body

The problem is that it flips over easily. (Laughter) Philippe Starck design?

RB: Of course

CA: Let's see a little more, Virgin Bride, that's nice.

Did you get any awards for stopping here?

RB: Twenty-five years ago, the Sex Pistols launched the album "God Save the Queen."

what's wrong she seems forgetful

CA: God bless her and you were rewarded

Do you like being called Sir Richard?

RB: Nobody calls me Sir Richard.

Sometimes I hear Sir Richard in America, and I wonder if Shakespeare is performing.

But I won't hear it anywhere else

CA: So the title can be used for something?

RB: No, but it could be useful, for example, when it's difficult to get a reservation at a restaurant.

CA: Say "It's 'Sir' Richard, not Richard"

RB: Let the secretary do it

CA: Let's look at the space business next

There's a video Virgin Galactic flying into space Spaceship designed by Burt Rutan?

RB: Yes, 12 months to finish, and 12 months to test it thoroughly.

And 24 months from now, we'll be able to travel to space.

CA: The interior was designed by Philippe Starck?

RB: Philip did a good deal of it too. He designed the logo and the base in New Mexico.

He's got an eye motif, and the base itself is one giant eye, and when you're in space, you can see these giant eyes looking up at you.

When I land, I return to these eyes

When it comes to design, he's a total genius.

CA: You didn't let him design the engine, did you?

RB: Philippe is totally outlandish so not good for engine design no

CA: He gave a great talk two days ago.

RB: Right? He was-- CA: Some people thought it was great, some people thought it was totally weird.

but i personally thought it was great

RB: He has a very hard working quality and I like him a lot.

CA: You always seem to have an adventurous blood

What do you regret?

RB: Many times

I regretted my adventures in balloons and boats

I was pulled out of the sea by helicopter six times, and each time I returned safely, I thought I would never be able to tell this adventure story.

So in those moments it always makes me wonder what I'm doing in a place like this. CA: When was the most dangerous time you ever thought it was time to say goodbye?

RB: I think so every balloon adventure, it's always a close call.

First of all, no one had ever crossed the Atlantic in a hot air balloon before. We were building a hot air balloon that could fly in the jet stream.

As soon as we took off from Sugarloaf for the Atlantic crossing, we were pushed into the jet stream, and the top of the big balloon was at several hundred kilometers per hour, and the lower capsule, where we were, suddenly took off at about three kilometers per hour.

It was like holding a thousand horses

I was praying so hard for good luck Hope the balloon didn't blow up Good luck

At the end of my balloon adventure something always goes wrong I had an experienced balloon pro with me But I jumped in first and I was alone trying to grab the balloon

(laughs) CA: Did I tell you to jump in too? Or "first!"?

RB: I told him to jump in, but as soon as he lost his weight, the balloon soared to 4,000 meters and I

CA: Inspired an Ian McEwan novel

RB: I put on my oxygen mask and stood on top of a balloon, put on my parachute, saw the swirling clouds below, mustered up the courage to jump into the North Sea, and it was a terribly, ultimate lonely moment.

but somehow it helped

CA: Did you jump in? Or is the balloon going down?

RB: I knew I had about half an hour of fuel left, but I also knew that if I jumped in, I would have about two minutes to live.

I wanted to go back to the lower capsule and somehow make the right decision

Write a letter to your family, get back in the balloon, look down at the clouds again, and go back to your capsule

Finally realized there is a better way

This giant balloon above me is the biggest parachute I'm going to use.

So I used a balloon to go down through the clouds and threw myself about 15 meters before it crashed into the sea.

Then the balloon hit the surface of the sea and rose unmanned to 3,000 meters.

I felt great in the water. CA: What did you write to your family?

RB: That's the sort of thing you write when you're like that, like, I love you so much.

luckily never needed

CA: Adventure stories like this are great PR for a company.

For all the years I've looked at the survey results, you've been seen as a great hero in the UK and around the world.

But cynics, you might say, are just clever entrepreneurs doing their own marketing.

How many PR purposes are there?

RB: PR pros say that, as an airline owner, going out in a balloon or a boat and crashing into the ocean...

(laughs) CA: That makes sense.

RB: Actually, I think they did a full-page ad at the time, saying, "Richard, there's a better way to cross the Atlantic." "Richard, there's a better way to cross the Atlantic."

(Laughter) CA: It's pure genius to do something like this.

RB: I won't argue

(Laughs) CA: It was too naive to push.

Was it terrible at school

RB: I was dyslexic and didn't understand anything in school.

You definitely failed the IQ test

That's one of the reasons I quit school at 15.

don't do things that don't interest you

Weird things happen to people with dyslexia

For example, I run one of the largest corporate groups in Europe, and I didn't quite understand the difference between net and gross.

That's why board meetings are fun

(Laughter) So that's good news, like bad news?

They usually say it's bad news

CA: So just to make sure, is $25 billion gross?

(laughs) RB: I hope it's the internet (laughs) RB: It's the internet (laughs)

CA: No, definitely gross

(Laughter) RB: Maybe when I was 50, they took me outside the conference room and said, 'Look Richard, I'm going to draw a diagram.

If there is a net in the sea and a fish is caught in this net and landed

What's left in this little net is profit, the rest has already been eaten."

That's how I finally understood

(Laughter) (Applause) CA: You were the worst academically in school. CA: You were the worst academically in school, but you were the captain of cricket and soccer.

Were you a sort of born leader or a rebel?

I think I was a lone wolf, but luckily I was good at sports, or at least I excelled at something in school.

CA: You said you had a crazy experience when you were a kid.

You know what my mom did, when I was four years old, I was thrown out somewhere and told, "Then walk home."

Is that true?

RB: My mother thought that humans should be on their own from an early age. RB: My mother thought that humans should be on their own from an early age.

So that's what we did. Now we'd get caught.

Let me travel long distances by bicycle

You never let me watch TV

CA: There's a risk, right?

I think there are a lot of people here who have children, and there are a lot of wealthy people here, but there's a dilemma when it comes to raising children.

What do you think of the children of today? Being overly cherished and ungrateful, the generation we are raising is truly a privileged generation.

RB: If you're raising a child, wrap them in love, compliments, and attention.

It's not about spoiling and spoiling

CA: You didn't go bad yourself.

The principal of your school told you that a clueless person like you would either become a millionaire or go to jail, but you don't know which one.

Which came first?

(Laughter) I did both, but I think the prison came first.

I was sued under two ancient laws of England

The Sexually Transmitted Diseases Act of 1889 and the Obscene Advertising Act of 1916

The first was the public use of the term venereal disease, and we have a relief center for troubled youth.

One of their problems was venereal disease.

According to an ancient law, the word venereal disease may not be printed or publicly mentioned.

A policeman came and told me that if I continued to use the term venereal disease, I would be arrested.

When I changed the expression to "social disease," people who suffered from acne and blemishes began to come, because young people with sexually transmitted diseases stopped coming.

Arrested as soon as expression returned to venereal disease

Then the Sex Pistols album "Never Mind the Bollocks, Here's the Sex Pistols" got arrested for "bollocks" being considered obscene.

Playwright John Mortimer helped me

Tell me to find a linguist to find other meanings of bollocks

So I called the University of Nottingham and asked to speak to a professor of linguistics.

This professor said, "The bollocks have nothing to do with Tama.

It's a common name for a priest used in the 18th century."

(Laughter) And you say, "I'm a priest myself."

So when I asked him to come to court,

He kindly agreed and asked me, "Shall we go in priestly clothes?"

I replied, "Please, please."

(laughs) CA: Great.

RB: He testified that the meaning of the album title was 'Never mind the priest'

(Laughter) The judge reluctantly acquitted us.

(laughs) CA: That's great.

(Applause) Seriously, do you have any guilt?

As it is often said, it is impossible to manage such a large business without threatening people or doing dirty things.

also accused of being ruthless

Somebody wrote a nasty biography

Is there any truth in that book?

RB: I don't think the stereotype of the businessman who climbs up by stepping on people is universally accepted.

If you treat people well they will never leave

All you can have in this small world is reputation All you can have in this small world is reputation

I actually think the best way to be a successful business leader is to treat people fairly.I actually think the best way to be a successful business leader is to treat people fairly.I think that's what we do at Virgin.

CA: What do you think of your family? They're always addicted to new projects, addicted to starting new businesses with Pan.

Like an addict who's obsessed with starting a new business with Paan

How do you feel about work-life balance?

How does your family feel every time you jump into a new big business? How does your family feel every time you jump into a new big business?

RB: I believe that being a father is so important, so when my kids are very young, when they go on vacation, I go with them.

We will spend three months together on vacation.

I feel so lucky to have a tiny island in the Caribbean so I can take my kids and have some friends and have fun together and keep in touch with what's going on at work.

CA: On the recent philanthropic ventures of capitalists

teach me please

BR: Although capitalism works as a system

Communism didn't work

But the problem with capitalism is that great wealth is concentrated in the hands of a few people, and with that wealth comes great responsibility, I think.

Those lucky people shouldn't be competing to have big cars and big boats, they should be spending their money creating jobs and addressing the world's problems.

CA: So what are the issues that you care about the most and want to focus on the most? CA: So what are the issues that you care about the most and want to focus on the most?

RB: Lots of problems

Global warming is a huge threat to mankind, and we've invested a lot of time and energy into developing alternative fuels.

We gotta push everybody to find a way to extract carbon dioxide from the earth's atmosphere We gotta push everybody to find a way to extract carbon dioxide from the earth's atmosphere

I want all the brightest minds in the world to think about it I want the brightest minds in the world to think about it I want to remove methane from the atmosphere I want to remove methane from the atmosphere

15,000 people have applied to do this

I have hope because it's good if I succeed in even one thing

CA: You have some projects going on in Africa as well.

RB: Yeah, I know it's a bad name, but I'm trying to launch something called "The War Room."

I think we're going to probably change the name, but now we're calling it the War Room, where we're trying to bring together all the social issues in Africa and how we're addressing them, and try to figure out the best way to address all the social issues in Africa.

For example, a doctor in Africa found that if an antiretroviral drug is administered in the 24th week of pregnancy, the baby will not have HIV at birth.

So it's important to spread this information and spread it across Africa.

CA: "War room" sounds powerful.

Successful business Westerners motivate themselves Westerners successful in business motivate themselves Unquestioningly believing that with their ability to achieve something, they can change the world Without doubting that they can change the world with their ability to achieve something

If you go to a place like Africa and you have to solve some problem, and you think I can do it, and you think you have billions of dollars or whatever, you're going to make a big deal about it, and you might end up complicating things and actually messing things up.

RB: We're actually working with the government in those situations.

For example, President Mbeki of South Africa had a hard time admitting that HIV and AIDS were involved, but I, like everyone else, would rather work with him and his government on this issue than blame him.

If you want to go to Africa and help out, don't just go and leave in two or three years.

It's important to work consistently

But business leaders can bring the entrepreneurial way to help governments with a slightly different approach.

For example, we're building clinics in Africa, where we'll provide free antiretroviral drugs, tuberculosis treatments, and malaria treatments.

At the same time, we're trying to make it a clinic that they can maintain on their own, so that they can generate some income.

CA: A lot of the cynics think that people like you and Bill Gates are doing these things because they want to create a good image or escape guilt, not really out of charity.

how do you respond to them?

RB: We all do things for different reasons and I want to feel on my deathbed that I've made a difference in people's lives I've made a difference in people's lives

It might be selfish to think this way, but that's how I was raised.

If I am in a position to change people's lives for the better, I think I should.

CA: How old are you now?

RB: 56 years old

CA: As a psychology layperson, my understanding is that psychologist Eric Erickson says that in your 30s and 40s, you're driven by a desire to grow and find fulfillment.

In their 50s and 60s, behavioral patterns shift toward seeking wisdom and leaving something behind.

Sounds like you're still in the growing stages of doing some new amazing plans It looks like you're still in the growing stage of doing some new amazing plans Looks like you're still growing in the doing of some new amazing plans

What do you think about leaving something for future generations? What and how would you like to leave behind?

RB: I don't really think about it

Considering my grandmother lived to be 101, I still have 30-40 years left.

First of all, I want to complete my life

If I can make a difference, I would love to

And now, one of the things that makes me happy at this point is, for example, I have Sergey and Larry from Google, and I'm good friends with them.

Thankfully, there are two people who have wealth and are serious about the world Thankfully, there are two people who have wealth and are serious about the world

If you have that much wealth and you don't think about the world, it's a very sad thing If you have that much money, but you don't think about the world

They're about to bring about tremendous change in the world.

I think it's important that people in those positions try to make a difference I think it's important that people in those positions try to make a change

CA: When I started in business I didn't know anything about business CA: When I started in business I didn't know anything about business People in the business world were just cold-hearted, and I thought that was the only way to be successful.

But there might be another way Your way of life taught me But there might be another way Your way of life taught me

Thank you for making me realize that, and thank you for coming to TED.

Thank you very much

(applause)

Today I want to talk to you about one of my favorite topics, the neuroscience of sleep.

Now there's a sound (squealing) It worked-

It's the sound you're all familiar with, yes, the sound of an alarm clock.

This truly loathsome, terrible sound interrupts the single most important thing we do: sleep.

On average, people spend 36 percent of their lives sleeping, which means that if you live to be 90, you'll spend a full 32 years sleeping.

The last 32 years tell us that sleep is somewhat important.

But most people don't think much about sleep

just go to sleep

I never really think about sleep

So today, I want to ask you to change the way you look at and think about sleep.

To begin this story, let's go back in time.

"Enjoy a sleep as sweet as honey"

Do you know whose words it is?

Shakespeare's Julius Caesar

continue quoting some more

"O sleep, sweet sleep, why should I surprise you, nature's nanny?"

Shakespeare again, this is set in Scotland.

(Laughter) At the same time, they said, "Sleep is the golden chain that binds health to our bodies."

It's very prophetic, in the words of the same Elizabethan playwright, Thomas Dekker.

Fast forward 400 years from there, and something about the tone of sleep changes.

Early twentieth-century Thomas Edison said, "Sleep is a sin of wasting time and a negative legacy from primitive times." Byrne

(Laughter) As some of you may remember, back in the 1980s, Margaret Thatcher was credited with saying, "Sleep is for wimps."

And the infamous -- what was his name -- Gordon Gekko of "Wall Street" once said, "Money never sleeps."

How did we respond to sleep in the 20th century?

Of course, with Edison's light bulb, we invaded the night and occupied the darkness, and under that occupation we treated sleep almost like a disease.

I made sleep my enemy

Even now, at best it satisfies sleep cravings, and at worst, perhaps many people see sleep as a disease that requires some sort of treatment.

The ignorance about sleep is really deep-seated.

I wonder why? Why did you drive sleep out of your head?

because it looks like you're doing nothing while you're sleeping

I don't eat and I don't drink

i don't have sex

Well most of the time you don't

So it's - Is sleep a waste of time? wrong

Sleep is really important for our biology, and neuroscience is starting to figure out why it's important.

Now let's talk about the brain

here is the brain

This was given to me by a social scientist, and they told me that they didn't know what it was or how to use it. (Laughter) Excuse me.

So I borrowed it, well they probably don't realize it.

(Laughter) What I'm trying to say is that even when you're asleep, this brain doesn't sleep.

In fact, in some places, brain activity is higher during sleep.

And the other important thing about sleep is that sleep doesn't come from one tissue in the brain, but to some extent it's a network.

If you turn your brain upside down -- I like the spinal cord out here -- this is the hypothalamus, and right under that, there's a lot of interesting tissue, especially the biological clock.

Our body clock tells us when to wake up and when to go to bed, and the role of this tissue is to coordinate with all parts of the hypothalamus, the lateral hypothalamus, and the ventrolateral preoptic area.

Together they send projections down to the brain stem here.

The brainstem sends commands to the anterior cortex, this wonderfully wrinkled area, filled with neurotransmitters to keep us awake, which in turn gives us consciousness.

Sleep is the result of interactions in the brain, and it's interactions here that turn sleep on and off.

Now let's look back

I mentioned earlier that sleep is complicated and takes up 32 years of your life.

But I haven't told you what I sleep for yet.

why do we sleep

Not surprisingly, of course, scientists disagree.

There are dozens of theories about why we sleep, and I'll tell you about three of them.

First of all, it's an instinctive way of thinking that sleep is recovery from fatigue.

In short, what we use up during our daytime activities, we restore, replace, and rebuild at night.

In fact, these ideas go back to Aristotle, some 2,300 years ago.

There was an ebb and flow

Now it's gaining traction because many genes in the brain are only turned on during sleep, and they're implicated in recovery and metabolic pathways.

Because they're supposed to be linked to recovery and metabolic pathways, so there's ample evidence for this recovery theory.

What about energy conservation theory?

It's also intuitive

In other words, sleep to burn fewer calories.

But when I do the math, it doesn't work.

For example, if you slept through the night compared to waking up and not doing much, the energy saved by sleeping is 110 calories per night.

Same calories as hot dog buns

So, by analogy, that hot dog bun is a small payoff for the complex and demanding activity of sleep.

So I don't think the energy conservation theory is very convincing.

But I'm quite fascinated by the third theory, which is that sleep is for information processing and memory consolidation in the brain.

So if you don't sleep after trying to remember something, your ability to learn will be devastating.

learning ability is severely impaired

So sleep and memory consolidation are also very important.

But it's not just about lining up memories and recalling them.

And what's really interesting is that our ability to come up with new solutions to complex problems is greatly enhanced by a night's sleep.

In fact, it's said to be three times different.

sleeping at night boosts creativity

And apparently, in the brain, the important neural connections, the important synaptic connections, are strengthened, while the less important ones are gradually weakened and become even less important.

Now, I've given you three explanations for why we sleep.

What I want you to realize is, all the details aside, there's probably more than one reason to sleep.

But sleeping is not lazy

It's not the kind of thing that's easy to understand.

Sleep was once compared to upgrading from economy class to business class.

From economy class, not first class.

And here's the bottom line: if you don't sleep, you won't take off.

It means you never reach your destination.

What stands out in many societies today is that we are severely sleep-deprived.

So let's look at sleep deprivation next.

Large segments of society are sleep-deprived, and here's our sleep barometer.

In the 1950s, most of us slept eight hours a night, according to reliable data.

Now it's an hour and a half to two hours less than that, which means that six and a half hours of sleep every night is enough.

teens are even worse

At this age, the brain needs nine hours of sleep to function properly, but many children sleep only five hours on school days.

inadequate

Let's look at another segment of society, the elderly, who have a diminished ability to sleep together and end up sleeping in multiple nights, but less than five hours a night.

shift work this is terrible

Perhaps 20% of the working population works shifts, but their biological clocks adjust to the night shift.

It's not regulated, because we all have the same light-dark cycle.

Poor thing, you come home after a night shift, and no matter how tired you are and try to sleep during the day, your body clock tells you, "Wake up, it's time to wake up."

For night shift workers, the quality of sleep is usually very poor, probably about five hours.

And tens of millions of people suffer from jet lag.

And tens of millions of people suffer from jet lag. Anyone with jet lag now?

Oh my God

Thank you so much for keeping me awake, your brain needs sleep.

One of the things the brain does is microsleep, which is falling asleep involuntarily, which you can't control.

Microsleep is kind of embarrassing, but it's also dangerous.

By one estimate, 31 percent of drivers will fall asleep while driving at least once in their lifetime. In the United States, the stats are staggering. 100,000 highway accidents are said to be related to fatigue, distraction and falling asleep. 100,000 a year.

There's another kind of terror, like the Chernobyl tragedy, the Space Shuttle Challenger tragedy.

Investigations after these accidents attributed poor judgment, distraction, and fatigue to heavy shift work.

When you're tired and out of sleep, you have poorer memory, poorer creativity, more impulsive behavior, and generally poorer judgment.

But I'm sorry about that

(Laughter) When your brain is tired, it wants something to wake it up.

This is where drugs and stimulants come in, caffeine.

It represents the stimulant of choice in much of the West.

I can't work without caffeine, and nicotine when my brain is really tired.

Of course, even with all these stimulants to keep you awake, of course, when it's 11:00 p.m., your brain says, "Oh, I need to go to bed now."

What would you do if you were agitated?

alcohol of course

Alcohol is very useful to use for short-term calming down.

Helps you fall asleep easier

But you have to remember that alcohol doesn't sleep

It doesn't even come close to that. It just calms down.

Rather, it can harm the neural activity that occurs during memory consolidation and retrieval.

Alcohol is a short-term curse. Please, don't rely on alcohol to get you to sleep every night.

Another thing associated with sleep deprivation is weight gain.

If you sleep less than five hours each night, you have a 50% chance of being obese.

What kind of relationship do you have?

Lack of sleep apparently releases an appetite-stimulating hormone called ghrelin.

When ghrelin is released and reaches the brain

Your brain says, "I need carbs," and it starts craving carbs, especially sugar.

You crave carbs, especially sugar, so it has something to do with metabolic tendencies that lead to fatigue and weight gain.

stress tired people have a lot of stress

As a result of stress, of course, there is forgetfulness.

But the stress doesn't end there.

Momentary stress isn't a big problem, but when the stress persists, it causes sleep deprivation and it becomes a problem.

Because stress weakens the immune system

Tired people are more susceptible to infections, and there's even a very good study that shows that shift workers and others have higher cancer rates.

Higher stress levels increase glucose in the blood

Blood sugar levels rise, resulting in glucose intolerance.

I have type 2 diabetes

Stress makes you more susceptible to cardiovascular disease because it raises your blood pressure.

There's a lot that happens when you don't get enough sleep. It's not just that your brain doesn't function a little bit normally.

Now let's take a moment to think, who do you think gets enough sleep all the time?

please give me a hand

Who do you think sleeps enough?

oh that's great

We'll talk about the secret later.

Of course, you're going to have questions like, "How do you know if you're getting enough sleep?"

it's not difficult

If you need an alarm clock to get out of bed in the morning If it takes you a long time to wake up If you need a lot of stimulants If you're irritable or your coworkers tell you you're tired and grumpy If your co-workers tell you you're tired and grumpy, you're probably not getting enough sleep.

Listen to your surroundings and yourself

So what should we do?

Well, it's a bit of a bad word, but here's how to sleep that even a monkey can understand.

Make your bedroom a sanctuary for sleep

The first thing is to make it as dark as possible, to make it a little cooler, which is very important.

In other words, cut down on light exposure for at least 30 minutes before bed.

Light wakes me up and I fall asleep later.

What do most people do right before going to bed?

You stand in a brightly lit bathroom and brush your teeth while looking into the mirror.

Worst thing to do before bed Worst thing to do before bed

Let's turn off the cell phone, too, the computer.

Get rid of anything that stimulates your brain

Also, avoid caffeine late in the day, ideally after lunch.

Now, I said reduce light exposure before bed, but light exposure in the morning is very effective in regulating the light-dark cycle of your body clock.

So let's bathe in the light in the morning

Basically you should listen to yourself

let's calm down

Surrender yourself to a sleep as sweet as honey

So much for the facts, but what about the superstitions?

Teens say they're lazy. Poor thing.

Those children's biorhythms are set so that they go to bed late, wake up late, and rest.

I need 8 hours of sleep every night

That's average, some people need more, some need less.

you have to listen to your body

How much sleep do you need? Need more? and

it's easy

It's not true that we sleep less as we get older.

Older people don't need less sleep

It spreads out your sleep so it's harder to sleep in chunks, but it doesn't reduce the amount of sleep you need.

And the fourth myth is that early to bed and early to rise will make you healthier, richer and smarter.

wrong in many ways

(Laughter) There's no proof that going to bed early and waking up early will make you rich.

There is no difference in socioeconomic status.

In my experience, the difference between a morning person and a night person is that, in my experience, the difference between a morning person and a night person is that early risers tend to be arrogant.

(Laughter) (Applause) In the last few minutes

Let's switch gears and talk about the latest research in neuroscience, which is the relationship between mental health, mental illness, and sleep disorders.

For 130 years, we've known that severe mental illness is always accompanied by sleep disturbances, but it's been largely ignored.

When the issue was revisited in the 1970s, people said, "It's no surprise that people with schizophrenia have trouble sleeping because they're on antipsychotics.

Antipsychotic drugs cause sleep disorders," and for 100 years, reports of sleep disorders before antipsychotic drugs were ignored.

What's going on?

Many -- several groups are studying how sleep disorders are involved in depression, schizophrenia, manic-depressive disorders, and so on.

Last year, we published a big study on schizophrenia, and the data was spectacular.

People with schizophrenia are usually awake at night and sleep during the day.

Another group had no 24-hour cycle, and their sleep was completely shattered.

Some people can't control their sleep through the light-dark cycle.

Every night I wake up later and later until I can't sleep.

What's going on?

And what's really interesting is that mental illness and sleep aren't just correlated, they're physically linked to the brain.

The neural network that induces normal sleep guides us to normal sleep, but it also overlaps the network that drives our mental health.

What is the rationale?

If the genes that are most important for normal sleep are mutated and changed, it can lead to mental health problems.

Last year, we published a study that showed that when a gene associated with schizophrenia is mutated, it disrupts sleep.

So we have real mechanistic overlap between these two important systems.

Various results were born from here

First, we showed that sleep disturbances are precursors to certain mental illnesses, and are found among young people at high risk of manic-depressive illness.

Other data show that sleep disorders actually have a negative impact on psychosis, and can make the condition even worse.

My colleague, Dan Freeman, used a variety of substances to stabilize sleep, and improved symptoms in paranoid patients by 50 percent.

So what did we find out?

I found this relationship very interesting.

Understanding the neuroscience of these two systems is beginning to reveal how sleep and mental illness originate and are regulated in the brain.

Second, if we can use sleep and sleep disturbances as early warning signals, we might have a solution.

It also makes it possible to help vulnerable people early.

And third, and best of all, is the ability to target new areas of the brain that are responsible for sleep.

Stabilizing the sleep of people who are unstable can make them healthier and lessen the dreaded symptoms of mental illness.

Summarize at the end

I first told you to take sleep seriously.

When it comes to sleep, our consciousness has changed. Before the Industrial Revolution, we wrapped ourselves up in duvets.

I knew instinctively the importance of sleep.

this is not a silly joke

It's a practical approach to getting healthy.

Good sleep improves focus, attention, decision making, creativity, social skills and health.

Good sleep reduces mood swings, stress, anger, impulsivity, and alcohol and drug addiction.

And finally, I said that understanding the neuroscience of sleep could help us understand some of the causes of mental illness.

Fantasy writer Jim Butcher said, "Sleep is God, worship it."

I encourage you to do the same

Thank you. (Applause) Thank you. (Applause)

It was great when I was in college, the euphoria of mixing pure mathematics at the PhD level with the World Debating Championships...and saying "Hey ladies!"

I was the sexiest me in college I was the sexiest me in college

For a humble morning radio host from Sydney, the TED stage on the other side of the world is nothing but excitement.

Listen, the common rumors about Australians are mostly true.

From an early age, we have shown extraordinary athletic talents,

A brave and noble warrior on the battlefield, all true.

A brave and noble warrior on the battlefield, all true.

Australians don't mind drinking a little -- drinking too much and being embarrassed. (Laughter) It's my father's Christmas party at work in 1973.

Before I turned 5, I was much more frolicking than Santa.

But I'm here today not as a morning radio host or a comedian, but as a mathematician.I was, was and will be a mathematician.

If you're obsessed with numbers, you'll know that numbers take deep roots at an early age.

When I was in 2nd grade, I went to Bolonia Park Elementary School, a small and beautiful state school in the suburbs of Sydney.

The teacher hasn't decided yet."

It was a school that practiced democratic education. Now, I'm in favor of democratic education, but at the time, I was only seven years old.

In the end, all the suggestions for the afternoon class were a bit unreasonable, and eventually someone started saying something weird, and the teacher gently rebuked him, "That's not going to work.

It's like putting a square stake through a round hole."

At that time, I didn't pretend to be smart or play around—

At that time, I didn't pretend to be smart or play around—

I just quietly raised my hand. My teacher noticed, and in front of my friends, I started, "But teacher, if the diagonal of a square is less than the diameter of a circle, a square peg can easily fit through a round hole."

(Laughter) "It's like running a piece of toast through a basketball goal, isn't it?"

Awkward silence spread over the class Awkward silence spread over the class And my friend, Stephen, who was sitting next to me, the class favorite, hit me hard on the head.

(Laughter) And then Stephen said, "This is the big turning point in your life.

will you stay with us

Continue talking nonsense and go over there."

After I think for a nanosecond

I glanced at the road map of my life and started running on my chubby, asthmatic legs towards the "otaku" sign.

I woke up to mathematics at an early age

I kept explaining it to my friends Mathematics is beautiful

Natural and ubiquitous ―

Each number is a note and the cosmic symphony is written in that note

Descartes also said

The universe is 'written in a mathematical language'

Today I'd like to introduce you to one of those notes.

I'm talking about prime numbers.

You probably remember that 6 is not prime, because 6 is 2 x 3.

7 is a prime number because it's 1 x 7, but it can't be divided into smaller parts or factors.

Let's introduce some trivia about prime numbers

First, 1 is not prime

That proof is like a magic trick, and you can only get it at certain parties.

(Laughter) Moreover, the last prime number, which is the largest, does not exist.

there is no end

We owe it to Euclid, the genius mathematician, to discover that prime numbers are infinite.

Thousands of years ago he proved

And the third thing is that mathematicians have always wondered what the largest prime number that they know at any given time is.

Today, I'm going to take you on a hunt for giant prime numbers.

Do not be afraid

There's only one thing you need to know, and that's the only part of the math that you learned, didn't learn, was stuffed in, or forgot -- that you didn't understand in the first place -- and that's all you need to know.

So 2 to the 5th power is 2 x 2 and 4 -- double that and it's 8 16 32.

If you understand even this, you can follow the story

2 to the 5th power is 2 multiplied 5 times

2 to the 5th power minus 1 is 31

31 is prime and the exponent 5 is also prime

Most of the large primes discovered so far are of this form: 2 raised to the power of a prime minus 1.

I'm not going to give you the exact reason, but I'm sure your eyes will pop out when I explain it to you, but it's very easy to test whether a number in this form is prime or not.

For random odd numbers it's much harder to find out

On the other hand, if you look for large primes, you'll quickly find that, on the other hand, if you look for large primes, you'll quickly find that you can't just turn primes into exponents.

2 to the 11th power minus 1 is 2,047, which, as you all may have noticed, is 23 x 89.

(Laughter) But 2 to the 13th power minus 1, 2 to the 17th power minus 1, and 2 to the 19th power minus 1 are all prime numbers.

After this point, the number of primes is getting smaller and smaller.

The reason I love the search for giant primes is that some of the greatest mathematicians in history have worked to discover them.

The great Swiss mathematician, Leonhard Euler.

In the 1700s, mathematicians looked up to him as their teacher.

It was so well respected that it became paper currency in Europe, back when it was a sign of respect.

(Laughter) Euler discovered the largest prime number at the time, 2 to the 31st minus 1 --

more than 2 billion

He proved that this number was prime using just a quill, ink, paper and mental strength.

that's a big number

We know that 2 to the 127th power minus 1 is also prime.

this is pretty annoying

Look, it's got 39 digits, and in 1876, a mathematician named Lucas proved it to be prime.

great luca

(Laughter) But there's more to the wonders of finding giant primes than finding them.

Sometimes I get excited about proofs that numbers aren't prime.

Lucas, who was mentioned earlier, proved in 1876 that the 21-digit number 2 to the 67th power minus 1 is not prime.

I just didn't know the factor.

Even if we knew it wasn't prime, we didn't know what to multiply to get that huge number.We didn't know what to multiply to get that huge number.

It's been a mystery for about 40 years, and then Frank Nelson Cole comes along.

During a presentation at a prestigious American academic conference, he walked over to the blackboard, took a piece of chalk, and began writing down powers of two, one after another: 2 4 8 16 -- come join us 32 64 128 256 -- 512 1,024 2,048...

It's a math geek's paradise let's stop here

the call didn't stop here

Continue to calculate up to the 67th power of 2

I subtracted 1 from that number and wrote it on the blackboard.

A trembling excitement ran through the venue

The crowd roared as he wrote out a multiplication formula with two large prime numbers, and for the rest of his presentation, Cole crunched through that formula.

He discovered the prime factors of 2 to the 67th power minus 1.

In the midst of the excitement in the room -- (Laughter) -- he went back to his seat -- this is the only time in the history of mathematics that he didn't say a word at a presentation.

He later said the problem wasn't difficult.

All it took was focus and tenacity -

And he estimated it to be "three years' worth of Sundays."

Meanwhile, the world of mathematics, like most of the other fields on TED, has exploded in the computer age.

On your screen, you're seeing a series of updates -- the largest prime numbers every decade -- and computers have taken over, and our computing power has skyrocketed.

This is the largest prime number in 1996, a year that I personally remember.

I graduated from college this year

I was torn between mathematics and media.

It was a difficult decision because I love college.

It took me a good nine and a half years to get my degree.

(Laughter) But eventually I realized my limits.

Among random people, I'm a math genius.

But among people with PhDs in mathematics, he's just as dumb as a hammer.

to me more than mathematics itself

I'd rather talk about mathematics

Right around the time I was graduating -- I was graduating -- every giant prime number was being discovered, and records were being broken.

That Curtis Cooper took back the record.

It wasn't years ago or months ago, it was just a few days ago.

This wonderful moment of discovery -- I've replaced the slides I was planning to use at TED to showcase his success.

(Applause) I still remember what it was like.

during the morning radio show

I got a tweet saying, "I found the largest prime number."

My body was shaking (laughs).

I won't talk politics today

no sports

A new giant prime number has been found

They held their heads, but they let me do what I wanted.

Thanks to Curtis Cooper, the largest known prime number is 2 to the power 57,885,161 —

don't forget minus one

This number is approximately 17.5 million digits long

If you type it into your computer, it's 22MB even in text format.

If you're not a math buff, think of the Harry Potter novels.

Volume 1 was about this thick

This is about all 7 volumes, because near the end it's padded

(Laughter) If you put this prime number into a book, it would be one-and-a-half times as long as the entire Harry Potter book.

What's on the screen is the first 1,000 digits of this prime number.

TED started at 11 o'clock on Tuesday, but it would take five hours to show the whole thing, even if you were to show one second per screen.

I wanted to show you, but Bono wouldn't let me.

well of course

So if you slide that number, it's 17,500 slides, and there's no doubt that this number is prime, as sure as 7 is prime.

What I felt was almost sexual excitement

No, you don't even need "almost"

(Laughter) Of course, some of you may be thinking, Adam, I know what makes you happy, but what do prime numbers have to do with us?

Let me give you three reasons why prime numbers are beautiful.

First, when you want a computer to determine if a number is prime, you enter a short formula, which is just six lines of code and asks a very simple question.

The answer is either "yes" or "no," but it takes a ton of processing power.

That's why giant primes are perfect for measuring the speed and accuracy of computer chips.

And two, Cooper wasn't alone in his search for giant primes.

I was looking at four possible primes on my laptop, and I was participating in a global distributed processing network.

This discovery of giant primes is analogous to RNA sequencing and data analysis for astronomy projects like SETI.

In our time, great discoveries are not made in labs or universities, but in laptops and desktops and devices of the people who support them.

But I think it's really amazing because it represents the era we live in, the era where the human mind and machines work together.

Robots come up a lot at TED,

I understand the possibilities and limitations

In fact, you can have an app on your smartphone that outperforms a chess master.

don't you think it's amazing

This is also a great machine -

Cube Stormer II

Put the shuffled Rubik's Cube

You can use the processing power of your smartphone to examine and solve the cube in just five seconds.

(Applause) Some people are scared, but I'm thrilled.

How lucky are we to live in an age where mind and machine work together?

Last year, I was interviewed as a local celebrity, and was asked what was my biggest news story of 2012.

Some people predicted that I'm a big fan of the Sidney Swans.

We won a Super Bowl-sized tournament in Australian football.

I was there, too.

But it's not the biggest news

It was a program, even an interview

about politicians and new inventions

It's not about books or art

It's not even about two pretty girls

By far the top news story of 2012 was the discovery of the Higgs boson.

Giving Mass to All Other Elementary Particles - Big Applause for the Ultimate Particle

(Applause) Let me explain what's so great about this discovery. Fifty years ago, a team of researchers led by Peter Higgs asked the ultimate question: Why is it that the things that make us have no mass?

Obviously I have mass, but where did that mass come from?

He hypothesized that there are a myriad of tiny fields pervaded throughout the universe that gain mass when other particles pass through them and interfere with them.

The reaction of the scientific community is, "It's a great idea.

Can you prove it?

It's beyond my comprehension."

Exactly 50 years later, in his lifetime, in front of his own eyes, we designed the greatest machine in history, demonstrating a grandiose idea that the human mind could invent.

It's the same reason why I'm so excited about this prime number.

I actually found what I expected to exist.

this is human nature

As a human being, it's more important than anything

As my friend Descartes says, we exist because we think.

Thank you very much

(applause)

I'm from Lebanon I believe running can change the world

Even if I say that, it won't come to mind

Lebanon was ravaged by a long and devastating civil war.

To be honest, I don't know why this is called a civil war, because the cause was brought in from abroad.

With Syria to the north and Israel and Palestine to the south, our government is fragmented and unstable, even at this very moment.

For a long time, Lebanon was divided by politics and religion.

But there's one time in the year when we're all together, when we have a marathon.

i was a marathon runner

Running long distances not only helped me stay healthy, but it also helped me calm down and dream big.

The longer I ran, the bigger my dream

Until one morning, when I was training, I was run over by a bus.

I was in a coma, spent two years in the hospital, had 36 surgeries, and was finally able to walk.

As soon as I came to my senses, I realized that I couldn't run like I used to.

From my hospital bed, I enlisted my husband, and a few months later, the Beirut Marathon was born.

It may sound strange to organize a marathon after an accident, but even in the darkest of times, I needed to dream big.

I needed something to make me forget my pain, a goal that made me feel positive I needed something that made me forget my pain, something that made me feel positive

I didn't want to feel sorry for myself, I didn't want to feel sorry for myself, and I thought that by organizing a marathon, I could give something back to society, build a bridge to the outside world, and bring runners to Lebanon to run in peace.

Organizing a marathon in Lebanon is very different from organizing it in New York.

How do you introduce the meaning of running to a country that is always at war?

How to make people who once fought and killed each other run together How to make them run together

And how do you convince people who don't even know the word "marathon" to run 42.195 kilometers to people who don't even know the word "marathon"?

had to plan from scratch

For a couple of years we traveled all over the country, even visiting rural villages.

I've spoken to everyone - mayors, people from NGOs, students, politicians, soldiers, Muslims, Christians, housewives to presidents.

And I've learned one thing: if you do what you say, you can earn credibility.

By sharing my honest feelings, many people were touched by my story.

each told their story

We talked to each other heart to heart We talked to each other heart to heart

Once trust was built, they all said they wanted to get involved in the marathon and show the real character of Lebanon and the Lebanese people and their desire for peace and harmony.

In October 2003, more than 6,000 people from 49 countries stood at the start line with determination, and gunshots rang out, and the gunshots were the signal that we were all coming together and running for change.

Marathons are getting bigger

political problems have grown

But no matter how difficult the situation, the marathon brought people together.

In 2005, the prime minister was assassinated.

More than 60,000 people stood at the start line wearing white t-shirts with no political statements.

That was the turning point of the marathon. People began to see it as an opportunity for peace and unity. People began to see it as an opportunity for peace and unity.

From 2006 to 2009, Lebanon was in a state of instability, with invasions, assassinations and the brink of civil war.

The country split again, and as a result, the National Assembly was dissolved, and for a year there was no president or prime minister.

But there was a marathon

(Applause) The marathon taught me that political issues can be overcome.

When the opposition decided to close the city center When the opposition decided to close the city center We negotiated alternative routes.

Those rebelling against the government began cheering along the roadside.

People rebelling against the government started cheering us along the road, and they even set up a supply depot.

Marathons have become truly irreplaceable

The marathon has become truly irreplaceable. It has earned the trust of both the Lebanese and the international community. It has earned the trust of both the Lebanese and the international community.

November 2012 More than 33,000 runners from 85 countries took to the start line More than 33,000 runners took to the start line, but this time a storm was coming to town.

The streets were flooded, but people didn't want to miss this national day People didn't want to miss this national day

The Beirut Marathon Association (BMA) has grown and has a diverse membership, from young to old.

The Beirut Marathon Association (BMA) has grown to include members ranging from young to old, physically and mentally handicapped, blind, elite amateur runners, even babies and their mothers.

The themes of the competition are varied: the environment, breast cancer, love for Lebanon, peace and just to run.

The region's only regular race for women's rights was held for the first time a few weeks ago. It was held for the first time a few weeks ago.

thank you

(Applause) BMA uplifts everyone, rebuilding Lebanon BMA uplifts everyone, rebuilding Lebanon Supports charities and volunteers Supports charities and volunteers

the habit of doing good

It's going to be contagious to people.

Transformers and future leaders were born

Innovators and future leaders have been born, and I believe that the accumulation of these things will lead to the creation of peace in the future.

The BMA has a good reputation in the region, and government officials from Iraq, Egypt, Syria, and elsewhere come to us asking for help in organizing similar sporting events.

It's now one of the largest marathons in the Middle East, but what's important is that it's a platform of hope and cooperation in a volatile part of the world.

From Boston to Beirut we are one

(Applause) I've been running marathons in Lebanon for 10 years, and from national marathons or events to small regional races, I've seen people run for a better future.

After all, building peace isn't like sprinting.

it's more of a marathon

thank you

(applause)

Steve Ramirez: In my first year of graduate school, I was sitting on my bed in my room bingeing on ice cream and watching a boring TV show, I think I was listening to Taylor Swift.

I just broke up with my girlfriend

(Laughter) And then, over and over again, every time I thought of her, I wished I could get rid of this gut-wrenching feeling.

In fact, being a neuroscientist, I knew that her memories, and the hidden emotions that embellished them, were largely controlled by different circuits in her brain.

So what if you could go inside her brain and leave her memory alone and delete the bad feelings?

But I realized that it's kind of impossible right now.

So let's start by looking inside the brain -- find a memory --

I wondered if I could jump-start those memories and relive them and manipulate them.

Having said that, there's only one person in this world who doesn't want you to see this talk.

(Laughter) Well, it's not that easy.

Maybe this idea reminds me of the movies "Total Recall," "Eternal Sunshine," and "Inception."

But the stars that work with us are the stars of the lab.

Shu Liu: It's a lab mouse

(Laughter) As a neuroscientist, I use mice in my training room to study how memory works.

What I want you to know today is that we can actually activate memories in our brains in an instant -- at the speed of light.

It only takes two steps

You start by finding the memories in your brain, labeling them, and then all you have to do is flip a switch and activate the memory.

it's the length

(Laughter) Did you convince me?

Searching for memories in the brain is not so easy.

Really, it's a lot harder than finding a needle in a haystack, because at least the needle is something you can actually touch.

but memory is not

Plus, the brain has far more cells than straws in a haystack.

This job seems to be really persevering

But fortunately, the brain itself helped me.

It turns out that if you basically just have your brain remember something new, basically just have your brain remember something new, the brain itself will tell you where the cells involved in that particular memory are.

So what's going on in my brain when I'm reliving memories of my ex-girlfriend?

Leaving ethics aside, if you take a slice of your brain and you'll find that when you're remembering it, every part of your brain is surprisingly active.

In particular, a part of the brain called the hippocampus is very active, and it's a place that's been said to be involved in many of the memory processes we hold dear.

If you zoom in on the hippocampus -- you can, of course, see a lot of cells -- but you can find out which cells are involved in a particular memory, because, like when a cell is forming a memory -- whenever it's active -- it leaves clues that you can later find out that the cell was active.

It's like knowing that someone is working in a building at night when the lights are on. The biological sensors inside the cells are also turned on only shortly after the cell's activity.

So if you have a light on your biological window, so to speak, you know that cell was active just before.

So we cut out this sensor piece -- and glued it to a switch that controls a cell -- and we genetically engineered this switch into a virus -- and injected it into the brains of mice.

When a memory is formed — the cells responsible for that memory are also set up with this switch.

This is what the hippocampus looks like after it forms a fear memory.

The sea of ​​blue that you see here is a densely packed brain cell. Look at the green brain cells.

This is a brain crystallized with instant fear.

This is a cross section of memory

The switch we're talking about here needs to be actuated instantly.

Not minutes or hours —

Brain speed of 1/1000th of a second is required

shu what do you think

Can we use, say, drugs to activate or deactivate brain cells?

No, drugs spread everywhere and cause problems.

Because it takes time to act on cells

I can't control my memory in real time.

Steve, what if we put an electric shock to your brain?

Electricity is fast, but you can't just target cells with specific memories, and it might burn your brain.

You know, we need to find a better way to affect the brain at the speed of light.

The speed of light is, of course, the speed of light

So maybe we can use light to activate and deactivate memories, and that's pretty fast, isn't it?

Brain cells are normal — they don't respond to light pulses, because the only cells that respond to light pulses are those that have light-sensitive switches built into them.

Manipulate brain cells to respond to laser light Manipulate brain cells to respond to laser light

As you just heard, they're going to shoot lasers into your brain.

As you just heard, they're going to shoot lasers into your brain.

(Laughter) Optogenetics makes that possible.

It allows you to turn your brain cells on and off with the push of a switch. It's called channelrhodopsin, which allows you to turn your brain cells on and off with the push of a switch.

You can think of channelrhodopsin as a light-sensitive switch. You can engineer channelrhodopsin into a brain cell -- just click on it -- and you can activate or deactivate the brain cell, in this case clicking with a light pulse.

We're going to put this channelrhodopsin light-sensitive switch on the sensor, and we're going to inject it into the brain.

Once a memory is created -- the cells responsible for that particular memory -- have photosensitive switches installed in them -- we can control these cells with lasers like the one you see here.

Let's experiment

We're going to do it with a mouse. You put the mouse in a box that looks just like this one, and you give it a slight jolt to your leg -- it creates a fearful memory of this box.

The mouse learns that something bad happened here.

Now, in our system, only those cells in the hippocampus that were activated during this memory creation would contain channelrhodopsin.

If you're as small as a mouse, I think you're feeling cornered.

In such a case, the best way to protect yourself is to try not to be detected.

Here's what a mouse typically does when it's frightened: it stops moving in the corner of the box, and it's called freezing.

If the mouse remembers that something bad happened in this box, it freezes when you put it back in the same box, because it doesn't want to be exposed to any kind of threat in this box.

Here's what frizzing looks like: You're walking down the street, and you run into your ex-girlfriend or boyfriend, and you run into that two seconds of terror.

Turn your back and run away? pretend to be someone else? ”

start thinking like

Anxiety comes and goes and I can't even move I'm like a deer in front of a car standing in the headlights

But if you put that mouse in a box that's like this -- a brand new box, the box won't be afraid, because there's no reason to be afraid of a new environment.

But what happens if you put a mouse into this new box -- and at the same time activate your previous fear memory -- with a laser?

In this whole new environment — can we bring back the terrifying memory of the first box?

Yes, this is a high-value experiment.

I remember that day -- the Red Sox won -- it was a green spring day, and it was a great day to play in the river -- to go to the North End -- to drink tea.

Meanwhile, Shu and I were in a dark, windowless room, eyes fixed on a single point, not even blinking, glued to the computer screen.

For the first time to activate memory in this way, we were looking at mice.

this is what we saw

When we first put the mouse in this box, it explored, it sniffed, it wandered, it roamed around on its own.

I want to know what's going on with this new box.

it's funny

But as soon as I turned on the laser -- and it went into this very sudden freezing state.

I didn't startle on the spot and stayed still

it's obviously freezing

It seems that I was able to recall the horror of the first box in this completely new environment.

Seeing this, Steve and I were just as shocked as Mouse was.

(Laughter) After the experiment, we didn't say a word -- we left the room.

There was an awkward silence for a while, and then Steve spoke up.

"It went well, didn't it?"

"Yeah, looks like it worked!"

we were really excited

And they published their findings in the academic journal Nature.

Ever since our work was published -- we've been getting all kinds of comments all over the internet.

let's see some of them

[At last! The world of virtual reality... ] [ Neural manipulation, Visual dream imitation, Neural coding ] The first thing I notice is ["Rewriting memories" A great future! ] Studies like this are controversial.

I totally agree with this first optimism. I totally agree with this first optimism.

(Laughter) But it's not just that optimistic opinion.

[It's horrible. This is easy—] [If only people could do it! ? God, mankind is finished! ] Certainly, if you look at the second one, you'll see that it's not positive in anyone's eyes.

But what I think about this is that while the research is still in the mouse stage, it's time to start discussing the ethical issues of memory control.

And then we also have a project called "Inception."

[Perfect for movie material. Implanting and using memories in people... The title is "Inception". ] I understand that you're able to bring back memories, but what would happen if you tampered with those memories?

Can you turn it into a false memory?

All memories are sophisticated and ever-changing, but if we simply assume a memory is a cut of a movie -

What I've been talking about is that you can hit the "play" button -- you can watch the same scene anytime, anywhere.

Is it possible to actually go into your brain and edit a scene from this movie to make something different?

it's possible

Just like last time, we're going to use the laser to restore the memory, and this time, if we can incorporate the new information into the old memory, the memory will be different.

It's like making a remix tape.

how does it do

Instead of finding fear memories in the brain, you put your experimental animals in blue boxes like this -- find the brain cells that represent the blue boxes -- and make them respond to light pulses, just like I said earlier.

The next day, we take the animal out — this time we put it in the red box.

In order to evoke the memory of the blue box — we send light pulses into the brain.

And at the same time as it's evoking the memory, you give your foot a few light jolts, and see what happens.

What I'm trying to do here is artificially connect the stimulus I gave my leg to the memory of the blue box.

It connects two pieces of information.

To verify the results, we take the animal out again — put it back in the blue box.

I was giving my leg a light jolt while I was reliving the memory of the blue box — and suddenly it stopped working.

It's as if I remembered that I was given an electric shock here, something that hadn't actually happened.

So you've created a false memory, where the mice didn't actually do anything bad -- the mice actually didn't do anything wrong -- and they're afraid of the environment.

So far, I've talked about light control -- the "on" switch.

In fact, it's easy to imagine that there is also a light control "off" switch -- by installing that switch -- you can erase your memory anytime, anywhere.

Everything I've talked about today is grounded in the philosophical principles of neuroscience, and that the mind, which seems to have mystical qualities, is actually a physical entity that we can manipulate.

Personally, I think everyone likes it — a world that can evoke memories,

I can see a world where unwanted memories can be deleted

Now, even a world where we can edit memories is becoming a reality, because we're in an era where science fiction can take all the inspiration, and you can experiment with it and make it a reality.

And not just in laboratories -- all over the world, all over the world -- all kinds of data are recovered and edited in similar ways, no matter how old they are or what they're used for. That's how we understand how memory works.

For example, our research group has successfully identified the brain cells responsible for memories of fear and converted them into memories of joy.

This is exactly what editing is about.

In some cases, male mice have been successful in recalling the memories of female mice.

We are in an exciting time. The speed of scientific progress knows no bounds. The rest is up to our imagination.

Lastly, what do you think after hearing the story so far?

How should we proceed with this technology?

These questions shouldn't just be kept in the lab. The purpose of today's talk is to introduce you to what's possible in neuroscience today.

What does this research mean? Let's work together to see what's possible -- and what paths we can take, because Shu and I believe there are some really big challenges ahead.

Thank you very much

(applause)

please look closely

This painting hides more than meets the eye

As you can see, it's an acrylic painting of a man, but it's not on canvas.

painted directly on the man

The art I do doesn't use a canvas. If I were to do a portrait of you, I would paint directly on your body.

Get ready for a lot of paint in your ears Be prepared for a lot of paint in your ears 'cause you'll be painting ears on top of ears

In this scene, the people, the clothes, the chairs, the walls, everything is covered with paint, and you can see what's underneath, and that's how you can make a three-dimensional scene look like a two-dimensional painting.

It looks 2D from any angle.

I don't use Photoshop

Here's a photo of another 3D painting.

I'm going to tell you how I came up with the idea of ​​turning a person into a painting.

Originally, it had nothing to do with people or paintings.

started with shadows

Fascinated by the lack of light, I wanted to materialize shadows and save them before they disappeared

So I came up with the idea of ​​drawing shadows.

What I love about it is that the shadows you draw are hidden behind real shadows, so you can hardly see them, but when the sun goes down, all of a sudden -- in the light, you see your shadows.

I thought about what other shadows I could draw, and I thought of my friend Bernie.

But we don't just draw shadows

I also wanted to draw the highlights, so I drew them on the body in grayscale.

When I was drawing my friend, I had a very clear image of how I wanted it to look, and I tried to get as close to that image as possible.

But something is blinking in front of my eyes

i didn't know what it was

The moment I took a step away - the magic happened

I turned my friend into a painting

When I wanted to paint shadows, I didn't think about it, but when I wanted to paint shadows, I didn't think about it, but what I mean is that you took a whole dimension and squashed it down and made the picture into your friend, and you pulled your friend into the picture.

I had a little bit of a conflict. I was so excited about my discovery, because I was just graduating from college, and being a political science major, I always dreamed of going to Washington, D.C. -- sitting at a nice desk and working for the government!

(Laughter) How did you come up with this idea?

I made a difficult decision. After graduating, I decided to move back home and instead of going to the Capitol, I would hide in the basement of my house and study painting.

I didn't know where to start

I learned painting when I was 16 -- at summer camp. I didn't want to practice copying old masters, stretching canvases and painting over and over again, because it just didn't make sense for this project.

My theme was space and light.

In the early days, we didn't use canvas as you might think, but food like this.

It's almost impossible to put paint on a greasy fried egg, isn't it?

(Laughter) The more difficult part was the grapefruit acid.

It erases the paint like invisible ink

As soon as you put color on it, it disappears

When I wanted to make people my canvases, one of the things I was a little embarrassed about was bringing them into my studio and seeing them painting on toast in my basement.

So I decided to practice by painting myself.

One of my favorite models is a retired old man. He sits still and doesn't mind if he gets paint in his ears.

I really enjoyed this process

I wanted to learn how to draw in different styles myself and see what else I could do.

Together with my collaborator Sheila Vand, I came up with the idea of ​​painting something even more unexpected: milk.

Get a pool and fill it with milk

I put Shayla in and started drawing.

The resulting image has always been very unexpected. I have a specific image of how it will look, and I paint to match it, but the moment Shayla dips in the milk, everything changes.

There's always a lot of fluidity in the pool. Instead of working against it, you accept it, try it out, and adjust it to make it better.

Sometimes, when Shayla lies down in milk, the paint on her arm is washed off.It might be a little brute force, but our solution is to hide the arm.

One time my hair was covered in milk and I washed off all the paint on my face.

Then hide your face

And it turned out to be more elegant than we could have imagined, though the way it was done was like a frustrated kid hiding his hand in his pocket because he couldn't draw his hand well.

When I started the "Milk Project" -- when I graduated from college -- I never dreamed of going into politics and working at a desk, and I never thought I'd be drawn to shadows and turn people into paintings and paint people in a pool of milk.

But finding the unknown in the familiar isn't unpredictable. Look beyond what's illuminated by the light, and you can see what lies beneath in the shadows, and there's more than meets the eye.

thank you

(applause)

I have to confess

But first, I want to confide in you a little bit.

Raise your hand if you haven't experienced much stress in the last year.

Is \_\_\_\_\_ in?

Who was somewhat stressed?

Have you ever been under a lot of stress?

yeah me too

But this is not my confession

My confession is that I'm a health psychologist, and it's my job to help people stay healthy and happy.

For the past 10 years, I've been teaching people that they're doing more harm than good to people's health, and it's about stress.

I've been saying for years that stress causes illness.

Stress increases your risk of everything from the common cold to cardiovascular disease.

Basically, I've been an enemy of stress.

My thoughts about stress have changed, and today I want to change yours.

I'll tell you about the research that made me rethink my approach to stress.

This study tracked the behavior of 30,000 adults in the United States for eight years.

Ask participants to answer questions such as, "Do you believe that stress is bad for your health?"

We used public death records to find out who of the participants had died.

(Laughter) Let's start with the bad news.

People who had experienced severe stress in the previous year had a 43% higher risk of dying.

But this was true only for those who believed that stress was bad for their health.

(Laughter) People who experience severe stress and believe that stress is harmless do not have an increased risk of death.

It was the lowest among study participants, even compared to the least stressed group.

Researchers tracked deaths over eight years and determined that 182,000 Americans died prematurely, not because of stress, but because they believed stress was bad for them.

That's more than 20,000 deaths a year.

If this estimate is correct, last year believing stress to be unhealthy was the 15th leading cause of death in the United States, killing more people than skin cancer, HIV/AIDS and homicide.

(Laughter) You can see why I was horrified by the results of this study.

Because I've worked hard to teach people that stress is bad for your health.

What this study made me think about is changing the way we think about stress.

The question was, can we get healthier, and science says yes.

If you change the way you think about stress, you can change the way your body responds to stress.

So to explain how it works, imagine that you're participating in a stressful experiment.

This is called a social stress test.

Once you enter the experimental room, you're asked to give a five-minute impromptu speech about your weaknesses in front of a group of highly trained judges, with glaring lights and cameras pointed in your face to ensure pressure, just like this.

And the judges react in a deliberately depressing way, something like this.

(Laughter) And when I'm totally down, I'm ready to take the next step: a math test.

It's a secret to you, but the examiners are trained to annoy you.

Let's do this test together

it's interesting

to me

So the number that is subtracted from 996 in steps of 7

say one after another

Please do it as fast as you can from 996

Please start!

AUDIENCE: (counting) Could you make it faster, please?

too late

Stop it, stop it, it's no good

because that person made a mistake

It would have been useless if I didn't start over (laughs).

not very good at all

Now you know how I feel

If this were a real experiment, it would probably be a little stressful.

Your heart is pounding, your breathing is quick, and you may be sweating.

These physical changes are usually thought of as signs of poor coping with pressure or signs of anxiety.

What if, instead, it was this response that energized the body and prepared it to face the challenge?

This is exactly the idea that was taught to the participants in the study at Harvard University.

Before the social stress test, we were taught to rethink our stress responses as useful.

For example, a throbbing heartbeat is preparing for action

It doesn't matter if your breathing speeds up

They told me it was pumping more oxygen to the brain.

Participants who began to perceive their stress response as helping them perform at their best were less stressed, less anxious, and more confident.

In a normal stress response, your heart rate increases and your blood vessels constrict like this.

This is one reason why chronic stress is associated with heart disease.

It's really not good for your health to be like this all the time.

But in the study, once participants began to view the stress response as useful, the blood vessels remained relaxed in this way.

My heart was pounding, but if your cardiovascular system is in this state, it's much healthier.

This state is actually quite similar to what happens when you feel joy or courage.

In a stressful life, this one biological change could make the difference between having a stress-induced heart attack in your 50s or staying healthy in your 90s.

This is a new scientific discovery about stress that how you think about stress can affect your health.

And my goals as a health psychologist changed.

no longer remove stress

We aim to help you cope with stress

What we're doing here today is a little precaution.

It might even save the life of someone who raised their hand last year to say they had a lot of stress, because in the future -- if your heart is pounding with stress, you might be able to remember this talk and remind yourself that your body is helping you meet this challenge.

When you look at it this way, your body trusts you and your stress response is healthy.

Let's take one more precaution to make up for the mistake of demonizing stress for more than a decade.

I want to talk about one of the most underappreciated aspects of the stress response, and it's this: Stress makes you social.

To understand that, we have to talk about a hormone called oxytocin, which got as much attention as oxytocin.

It's not a hormone, is it? It's released when you hug someone, so it's even got the cute nickname of the "cuddle hormone."

This is just a small part of how oxytocin is involved.

Oxytocin is a neurohormone

It fine-tunes the social instincts of the brain.

Oxytocin promotes behaviors that strengthen intimate relationships with other people.

Oxytocin makes us crave physical contact with friends and family,

Increase empathy with people

It also makes us more willing to help and support the people we care about.

Some of them have stronger sympathy and compassion

Some people say we should inhale oxytocin.

But there's a little-known fact about this hormone.

it's a stress hormone

As part of the stress response, the pituitary gland secretes this hormone.

It's part of the stress response, just like adrenaline makes your heart race.

When oxytocin is released as a stress response, it makes us want someone to support us.

The biological response that arises from stress encourages us to talk to someone about what we're feeling and not keep it to ourselves.

The stress response is what makes you aware when someone needs help and helps each other.

During difficult times in life, the stress response makes us want to be with our loved ones.

So how can knowing this side of stress make us healthier?

In fact, oxytocin doesn't just work in the brain.

It also works in other parts of the body, and one of its main roles is to protect the cardiovascular system from the negative effects of stress.

is a natural anti-inflammatory

Keeps blood vessels relaxed under stress

A particularly welcome positive effect on the body occurs in the heart.

Receptors for this hormone are found in the heart, and oxytocin regenerates heart cells and heals damage caused by stress.

This stress hormone makes the heart stronger.

The amazing thing is that all of the bodily benefits that oxytocin brings are social connections and support.

It's reinforced. When you reach out to someone under stress and you help or are helped, you release more of this hormone, your stress response becomes healthier, and you actually recover from stress faster.

I think it's wonderful that the stress response has a built-in function for recovery from stress, and that that function is a connection with people.

I'll end with another study result.

Listen carefully, this may also extend your life.

It tracked about 1,000 adults in the United States between the ages of 34 and 93. First, they asked participants, "How stressed have you been in the last year?"

We also asked questions like, "How much time have you spent helping your community, your neighbors, your friends?"

For the next five years, we used public death records to see who died among them.

Let's start with the bad news: Experiencing significant stress, such as a financial disaster or family crisis, increases your risk of death by 30%.

But -- I hope you can guess that I'd say "but" here, too -- but not everyone increased.

People who spent their time caring for others had no increase in stress-related deaths -- zero.

Compassion builds resilience

Again, it turns out that the negative effects of stress are not inevitable.

How we think and respond can change the way we experience stress.

When you learn to think that your stress response is helping you, you get a biological response that gives you courage.

And when you reach out to someone under stress, you build resilience within yourself.

That said, I didn't go out of my way to want more stress myself, but this scientific discovery has given me a whole new and completely different view of stress.

Stress connects us to our hearts and minds.

Trying to find joy and meaning in human connection, both in the compassionate heart and yes, in that beating heart of yours, that heart that is working hard to give you strength and energy.

When you try to look at stress this way, you're actually making a pretty big statement, not just better at dealing with stress.

You are saying that you believe in yourself and that you can meet life's challenges.

It means remembering that you don't have to face it alone.

Thank you very much

(Applause) Chris Anderson: I was blown away by this story.

It's amazing how your perception of stress can affect how long you live.

What advice would you give in this situation? If someone were to make a life choice, well, would there be any difference between choosing a stressful job or a non-stressful job?

In some ways, as long as you believe you can do it yourself, is it wise to choose a stressful job?

What I can say for sure is that it's better for your health to seek meaningful things than just trying to avoid discomfort.

That's the best way to decide, and to pursue what you find meaning in life, and trust yourself that you can handle the stress you experience there.

CA: Thank you very much. It was wonderful.

KM: Thank you. (Applause)

As a young man, I spent six years as an investigative journalist exploring the wilderness of the tropics and spending time in some of the world's most enchanting regions.

In youthful ingenuity I was reckless and stupid

It's as strong as it would be in a war

But most of all, I felt worth living

When I returned to my home country, the meaning of my existence became increasingly obscure, and I found using the dishwasher an interesting challenge.

It was as if I was tearing through the walls of my life, trying to find my way out into the open space beyond.

Apparently I was bored in this environment

Humans evolved in a world of horns and fangs and claws in a much more difficult time than we do now.

I still have the aggression to survive in those times of fear and courage.

In a comfortable, safe, populated land, there is no opportunity to exercise these without harming others.

I realized that it was this kind of constraint that I was running into.

Overcoming uncertainty and knowing what was coming next was a major goal of industrial society, and just as we were about to get there, we were confronted with new unfulfilled desires.

We've prioritized safety over experience, and so much has been achieved, but we've also lost something.

I'm not glorifying the primitive age.

I'm already past the lifespan of most hunter-gatherers, and it's easy to predict the outcome of a deadly battle between me, staggering with a stone spear, and a giant, furious bison.

Were you looking for something 'real'?

I've learned that authenticity is neither a useful nor a clear concept.

I just wanted a rich, natural life rather than living in England or many industrialized countries.

And I started to understand what I was looking for when I encountered certain unfamiliar words.

When I found that word, I decided to bet the rest of my life on it.

The word is "rewilding." "Rewilding" is a new word, but it already has a definition.

There are two definitions that particularly fascinate me.

The first is the large-scale restoration of ecosystems.

One of the most exciting scientific discoveries of the last half-century has been the pervasive trophic cascade.

It's an ecological process that starts at the top of the food chain and affects all the way down, exemplified by what happened in Yellowstone National Park, where wolves were reintroduced in 1995.

Wolves kill many animals, but what many people don't know is that they also keep many animals alive.

It's strange, but hear me out

wolves disappeared for 70 years

Because there were no animals to catch them, the parks were overwhelmed with deer, and when humans tried to control the deer population, they devoured most of the vegetation.

It started out as a few, but when the wolves showed up, it started to have a remarkable effect.

Killing a few deer is no big deal.

What's far more significant is that wolves completely changed deer's behavior.

As the deer began to avoid easily cornered areas of the park, vegetation began to regenerate quickly, especially in valleys and ravines.

In some areas, trees have grown fivefold in just six years.

The bare land along the valley soon became a forest of aspen, willow and cottonwood.

Then the birds began to visit

The number of songbirds and migratory birds began to increase greatly.

The number of beavers that like to eat wood has also started to increase.

Like wolves, beavers are ecological engineers.

create habitat for other animals

The dams they built on the river provided habitat for otters, muskrat ducks, fish, reptiles and amphibians.

Wolves killed coyotes, resulting in more rabbits and mice, which means more hawks, more weasels, more foxes, more badgers.

Ravens and bald eagles come to pick up the leftovers of wolves

The bears also fed on it, and their numbers increased because the shrubs were regenerating and the berries were abundant, and the bears reinforced the wolves' influence by killing the fawns.

more interesting

wolves changed river ecosystems

Reduced meandering of rivers

Less erosion along rivers, narrower waterways.

It created many puddles and shallow waters that were perfect habitats for wildlife.

The reason the river changed in response to the wolves is that the regenerating forest stabilized the slopes, making landslides less frequent and the river flowing more steadily.

Similarly, driving out deer restored riverbank vegetation, stabilized the soil, and reduced erosion.

Wolves were few in number, but they changed not only the ecosystem, but also the landscape, of the vast expanses of Yellowstone National Park.

Whales in the Southern Ocean have a similarly widespread impact.

One of the many outdated excuses about whaling by the Japanese government is that there will be more fish and krill so people can eat more.

It's a silly explanation, but it makes sense. Whales eat a lot of fish and krill, so if you catch whales, you get more fish and krill.

but the opposite happened

Hunting whales reduced krill populations.

why did that happen

Whales are important to sustaining entire ecosystems. One of the reasons is that whales feed in the deep ocean, and when they come to the surface -- what biologists call dung updraft -- they scatter large amounts of dung over the surface. You're feeding the fish, the krill, and so on, by encouraging the growth of

Another thing whales do is move up and down in the water, kicking them up to the surface so that the phytoplankton can survive and reproduce.

Interestingly, phytoplankton in the oceans absorb carbon from the atmosphere, and the more phytoplankton there are, the more carbon they absorb, and eventually they sink into the deep ocean, removing carbon from the atmosphere.

When whale populations were as high as they were in the past, they would have removed tens of millions of tons of carbon from the atmosphere each year.

When you know things like this, wait a minute, you realize that this is the same wolves that are changing the landscape of Yellowstone.

Here whales are changing the composition of the atmosphere.

Support for James Lovelock's Gaia hypothesis that the world is a coherent, self-regulating creature is beginning to accumulate, at least at the ecological level.

The "trophic cascade" shows us that the natural world is much more fascinating and complex than we think.

It shows that when you remove the big animals, you end up with a completely different ecosystem than when you had the big animals.

I think these examples strongly support the value of reintroducing lost animals.

To me, "rewilding" means bringing back lost plants and animals.

To get rid of the fences, to get rid of the drainage ditches, to stop commercial fishing in the big oceans, but that's kind of a setback.

It's not about what kind of ecosystem is right or what kind of species combination looks good.

We're not trying to create shrub wastelands or grasslands, or we're not trying to create rainforests, seaweed forests, or coral reefs.

It's about letting nature take it's course.

I said there are two definitions of "rewilding."

The other is the rewilding of human life.

I don't think that's an alternative to civilization.

We could always choose to live a richer, wilder and more adventurous life, while still enjoying the benefits of cutting-edge technology that we have today.

Opportunities like this are developing far more rapidly than we ever imagined.

By one estimate, two-thirds of the United States was once covered by forest, which has since been cleared, but reforestation is progressing as forestry and agriculture retreat, especially in the eastern half of the country.

Another estimate is that 300,000 square kilometers of Europe, the size of Poland, will be devoid of farmers between 2000 and 2030.

In the face of this situation, if we only think about bringing back wolves, lynxes, bears, beaver bison, wild boars, moose and other wild animals, it's not very ambitious, because these animals have already started to migrate across Europe.

Maybe we should start thinking about restoring some of the large extinct animals.

What about large animals? would say

I've been on each continent, except for Antarctica.

When London's Trafalgar Square was dug up, the river gravel was a treasure trove of bones of hippos, rhinos, elephants, hyenas and lions.

That's right, everyone! Before Nelson's Column, there were lions.

During the last interglacial, these animals lived and temperatures were very similar to today.

The climate didn't drive out the big animals.

Humans hunted, destroyed habitats and drove them out.

Nevertheless, we can still see remnants of these majestic beasts in today's ecosystems.

When the trunk of a deciduous tree breaks, why does it sprout?

How can you survive without so much bark?

The trees in the understory are less wind-forced, carry less weight than the larger canopy trees, and are much stronger and less likely to break.

it's an elephant

it was adapted to elephants

In Europe, they evolved to withstand giant animals, such as the ancient straight-task elephant.

It was a temperate forest animal similar to the Asian elephant.

was much larger than an Asian elephant

There are shrubs with thorns, but they're certainly over-engineered to withstand deer feeding.

It probably evolved to withstand the feeding of rhinos.

In the parks, on the boulevards, in the tree-lined streets, you can see the remnants of great beasts and wonder. Isn't that amazing?

Paleoecology, the study of past ecosystems, is crucial to our understanding of ourselves, and its doors seem to lead to an enchanted kingdom.

Given the amount of land available that I mentioned earlier, I wondered if we could try to reintroduce lost megafauna, or related animals to species that have gone completely extinct.

Let's have the Serengeti in front of our home

Hope is what's missing from our lives, and perhaps the most important thing that rewilding has to offer.

Even if there is great despair in motivating people to love and protect the natural world, even a little bit of hope is important.

What the "rewilding" story tells us is that ecological change doesn't always have to go in one direction.

There is also hope that our Silent Spring may be replaced by a Mayhem Summer.

thank you

(applause)

this is charlie williams

I was 94 when this photo was taken.

In the 1930s, President Roosevelt restored jobs for many Americans by building bridges, infrastructure and tunnels -- while also doing the funny thing of hiring hundreds of recorders to record the stories of ordinary Americans.

Poor sharecropper Charlie Williams wouldn't normally be the subject of a serious interview, but the truth is that Charlie was a slave until he was 22.

The recorded story of his life is one of history's most valuable records of the real-life experiences of former slaves.

As Anna Deaver Smith famously said, "There's literature for each of us." After three generations, I was involved in a project called "StoryCrops," which collected stories from ordinary Americans and set up soundproof booths in public spaces.

The idea is very simple

You walk into a booth and interview your own grandmother and other relatives, and the transcripts of the interviews are sent to the Library of Congress.

Every interview becomes a national oral history. Every interview becomes a national oral history.

Now the question is, if you could spend 45 minutes with your grandmother, who would you like to remember?

One of the funniest things about my conversations with the founder, David Isai, was that he always said that this project was a little bit dangerous, because when you think about it, it's not really about what's being said, it's about how you hear it.

Let me show you part of this project.

[ Jesús Meléndez narrates the end of the poet Pedro Pietri ] Jesús Meléndez: Our plane took off and leveled off Before it reached 14,000 meters Before it reached 14,000 meters Pedro left this world little by little The beauty of it is that I was made to believe that there was something even after I left this world.

I found it in Pedro

[From Danny Pelasa to Annie Pelasa after 26 years of marriage] Danny Pelasa: Actually, I feel bad when I always say "I love you" to you, but I want you to always remember me These words come out of me so worn out It's like listening to a beautiful song on a broken radio But it's kind of you to leave such a radio at home

(Laughter) [Michael Walmetz and his girlfriend Deborah Brackers] Michael Walmetz: This is the ring my dad gave my mom.

My father saved money to buy this and proposed to my mother with this ring I want to give this to you so he can stay with us

Come on over to the mic, Deborah.

Which finger should I wear it on?

Deborah Brackers: (tears) Deborah, will you marry me?

yeah of course i love you

(Kisses) Children, this is how I married your mother At the booth at Grand Central Station, with Grandpa's ring

My grandfather was a taxi driver for 40 years

I used to pick people up here every day.

I feel like it's fitting here

I'll tell you, I didn't choose all the stories that made me cry, they're all touching.

This project is based on the love act of listening.

The act of extracting and listening to certain parts of a conversation is something that my company, Local Projects, actually does a lot.

I'm a media design company that works with various institutions to create media installations in museums and public spaces.

My most recent job was at the Cleveland Museum of Art, where I created something called "Gallery One."

"Gallery One" is an interesting project, and we started it with the Cleveland Museum of Art's $350 million expansion project, so we hoped that our project would open up new possibilities, increase the number of visitors, and at the same time grow the museum.

Glenn Rowley, director of the Museum of Modern Art (MoMA) in New York, put it so well, "Visitors don't want you to stay.

I want people to feel like they are their own place, not just an occasional visitor.”

So what we're doing is giving people a lot of different ways to actually interact with the work in the gallery. There are old-school galleries, but if you're interested, you can focus on one piece of art and see where it's been used, or play with it.

For example, you can click on this lion's head, which is a recreation of 1,300 B.C.

This piece is a peek into the bedroom that will change the way you think about tempera painting.

This is one of my favorites because you can see the studio

It's a bust of Rodin. You can feel the splendid workshop.

It makes you think about literally hundreds of thousands of years of human creation history and tells you how the work became part of that story.

This is Picasso, the very embodiment of 20th century art.

The interface that I'm going to show you next uses this kind of creativity.

It's thanks to the algorithm that facial recognition allows us to browse the museum's archives.

This person makes various facial expressions, and he shows us various works from the museum's collection that are connected to those expressions.

As you can imagine, when visitors perform inside the museum, you can feel the emotional connection, and this is how our faces connect with history for thousands and tens of millions of years.

This interface finds works that have the same shape from the shape you draw.

We're trying to increase the number of ways that people can see and understand what each other is doing in the building, and be able to create something creatively.

You can see 3,000 works on the walls of this exhibit, all at once. You can design your own tour of the museum, and you can share it with others, so you can have the curator take you around, or you can take a relative's child.

While we're working in Cleveland, we've also been working on one of the most ambitious projects to date: the 9/11 Memorial Museum.

In 2006, as part of the Thinc design team, I drafted the museum's master plan and did all the media design and media production for the museum and monument.

The monument will open in 2011 and the museum will open next year in 2014.

As you can see from this picture, it tells a vivid history.

Of course, this tragedy is recent, it's somewhere between history and the present, and it was a big challenge just to imagine how to respond to this space, how to communicate a tragedy like this.

So, in 2009, I started a project called "Make History," and I started with a new idea to build a memorial and a project around it.

One-third of the world saw 9/11 live, and one-third of the world learned of the event within 24 hours.It was an unprecedented moment when people all over the world realized the same thing.

So we started collecting stories about this from all over the world, through videos and photos and documentation, and what people were going through that day, the first step was to make it an open platform, and it was actually a big risk for us.

But I made it very simple by connecting it to the oral history booth, where you can see where you are on the map.

I can talk about what happened to me that day in six languages.

When the amazing photos and stories came pouring in from all over the world -- this is part of the landing gear -- we were beginning to see the striking parallels between what happened and how people said it had to be told, how people had to tell it, and the need to tell it.

This photo in particular caught our attention at the time, because it really tells the story.

In a photo from the Brooklyn Battery Tunnel

A firefighter stranded in a traffic jam runs about two kilometers to the scene with 30 kilos of equipment on his back.

Then I got an amazing email saying, "Browsing through thousands of photos on this site, I stumbled across a picture of my son.

I was heartbroken, but lucky to have found it." Because he wrote, "Thank you to the photographer who posted this. Words can't express how I feel when I think this is probably the last picture of my son."

Telling this history made me think about what we should be building.

People who stand on the witness stand of history actually visit this museum, but these events cannot be told only by a third party, historians and people involved in the exhibition.

So, together with our creative team members and our curators, we began an initiative to resonate with the first voices that visitors hear inside the museum.

I designed an opening gallery that says, "We remember."

I'm going to show you the prototype, but when you actually step inside it, you realize the feeling of being transported back to that moment in history.

(Video) Voice 1: I was in Honolulu, Hawaii Voice 2: I was in Cairo, Egypt

Voice 3: I was on the Champs Elysees in Paris Voice 4: I was at the University of California, Berkeley

Voice 5: I was in Times Square Voice 6: I was in São Paulo, Brazil

(multiple voices) VOICE 7: It was probably around eleven o'clock at night.

VOICE 8: Driving to work, it was 5:45 in the morning.

VOICE 9: I was in a meeting and someone jumped in and said, "Oh no! A plane just crashed into the World Trade Center."

VOICE 10: I was in a hurry to turn on the radio

VOICE 11: Heard it on the radio... VOICE 12: Heard it on the radio

(multiple voices) VOICE 13: I heard from my father on the phone. VOICE 14: I was woken up by a phone call.

My business partner told me to turn on the TV.

VOICE 15: So I turned on the TV

VOICE 16: All Italian TV programs were showing the same footage.

Voice 17: Twin Towers Voice 18: Twin Towers

From here you are invited to a large cave-like space.

This is what is called a waterproof wall.

It's a wall dug out from under the World Trade Center that has withstood the water pressure of the Hudson River for a year since 9/11.

So, by displaying this, we made it possible for you to feel that that moment actually happened.

We used the same audio collage to show what was happening inside the building, where you could hear people talking about planes crashing and people going down stairs.

As we progressed further into the exhibition, we showed what was actually excavated, such as twisted iron on top of the rubble, as a scene representing the state of subsequent reconstruction.

You can hear oral history here, and this is how people were doing bucket relays to put out fires and thousands of other rescue efforts at the time.

By the time we're out of the people's stories, we're going to get them to understand 9/11 better, and then we'll bring the museum back to the time of "listening," and we'll ask individual visitors about their actual experiences with 9/11.

The question here asks a question that can't really be answered, such as the one elicited by 9/11.

The question is something like, "How can a democracy balance freedom and security?"

"How did 9/11 happen?"

"How did the world change after 9/11?"

The oral history data that I've collected over the last few years has been documented with interviews with people like Donald Rumsfeld, Bill Clinton, Rudolph Giuliani, who had different perspectives, experiences, and ideas about 9/11.

Here we go back to "listening"

I'm going to show you one of them, created by a few voices, and it's poetic to people's memories of 9/11.

(Video) Voice 1: 9/11 wasn't just about New York

VOICE 2: We all came together through the same experience.

VOICE 3: Seeing people rushing to help that day, no matter who they were, seeing people rushing to help, I thought we could get through this.

VOICE 4: The overflowing love and various thoughts that came from all over the country will never be forgotten in my life I will never forget it in my life

VOICE 5: I still pray for those who lost their lives at that time, for those who died to be rescued, and I felt the connection, the love, the compassion, the strength of the American people.

Visitors come out of the museum, immersed in their own experiences and thoughts, and then come up to the ground to visit the actual memorial.

The monument's creator, Michael Arad, indiscriminately and almost randomly named all those who died in the incident, creating a poetic imagery over something of a terror-like nature. It was a big problem for the families and benefactors, especially the first responders.

So this is the actual group of names, which seems to be indiscriminate, but there is an order. So we, with Jar Thorpe, built an algorithm to take a huge amount of data and start looking for connections between each name.

Here's an image of the algorithm in action. I've made sure that the names aren't visible, but what you're seeing are blocks of different colors: four passenger planes, two twin towers, and first responders. You can see what floor they were on at the time.

If you go to Monument Square, you will find information about the time written around the two pools.

You can find 9/11 geographically in Monument Square. You can search by individual name or company name, like "Cantor Fitzgerald." You can see how hundreds of names are recorded on the monument itself.

What's more important at Monument Square is that you can see people's relationships.

I understand the relationships of the victims.

All of a sudden, random rows of strangers suddenly come alive as real people.

This is Harley Ramos, head trader at an investment bank, who stopped by on the 55th floor of the South Tower to help Victor Wald.

According to eyewitnesses, Mr. Ramos told Mr. Wald, "I'm not leaving you."

Mrs. Wald asked me to put their names next to each other.

Three generations ago, you had to hire people to listen to stories from the public.

Today, we have more stories to tell for future generations than ever before.

We hope that each story has a poem.

Thank you very much

(applause)

When I was three or four years old, my mother would read a story to my two older brothers and me, and I would reach out and try to feel the pages and feel the pictures they were looking at.

Mother said you're blind You can't feel pictures You can't feel letters

So I thought, "But that's what I want to do."

"I want to read books because I love stories"

I had no idea at the time that technological breakthroughs would make my dreams come true.

Born prematurely some 64 years ago, I went blind shortly after birth.

It's called retinopathy of prematurity, and it's rare in developed countries these days.

Little did I know, curled up in an incubator in 1948, that I was born in a good place at a good time.

There are 37 million blind people in the world, but it's only people living in developed countries like North America, Europe and Japan who can benefit from technological innovation.

Computers have changed the lives of many people, including yours, but I think they have changed the lives of us blind people more than anyone else.

Today, I'm going to talk to you about the many volunteers who have helped me get here over the years, and their connection to computer assistive technology.

It's an interaction between volunteers and technology and passionate inventors, and I'm sure other blind people have had similar experiences.

Let me talk a little bit about that today.

At age 5 I learned Braille at school

It's an ingenious system of six dots on paper that you can feel at your fingertips.

Let me show you my 6th grade report card.

Where did you get Julian Morrow?

(Laughter) I was good at reading, but apparently I was bad at religion and listening to music.

(Laughter) As you exit the opera house, you'll notice the Braille in the elevator.

Please look for it Did you know?

i knew i was always looking for you

(Laughter) When I was in school, books were translated into Braille by volunteer transcribers, point by point, so that I could read the books, and since the end of the 19th century, the work has been done mainly by women, and that was the only way I could read.

When I was in high school, I got my first tape recorder, which became the main reading medium before computers came along.

I could record what my family and friends read to me, and later read it again as many times as I wanted.

This gave me an opportunity to connect with the volunteers.

For example, while I was studying at Queen's University in Canada, inmates at Collins Bay Jail pledged their cooperation.

I gave them a tape recorder and let them record it.

One said, "Ron, we're not going anywhere for a while anyway."

(Laughter) But think about it, even though they weren't given the opportunity to get an education like I did, they were very dedicated to helping me get my master's degree in law.

I returned to my studies at Monash University in Melbourne, and for the next 25 years, the tape recorder was everything to me.

In 1990, I had 29 kilometers of tape in my office.

read by students, family and friends

Mrs. Lois Doery, who I later called my second mother, read thousands of hours on tape.

One of the reasons I chose to speak here is that I wanted to introduce you to Lois and thank you again for coming here.

Unfortunately, her health didn't allow it.

I hereby express my gratitude to Lois

(Applause) In 1984, I came across an Apple computer.

what a mistake

In 1987, the month my oldest son Gerard was born, I got my first computer for the blind, and here it is.

can you see it?

yes this computer has no screen

(Laughter) It's a blind computer.

(Laughter) It's a model called Keynote Gold 84k, and 84k means 84 kilobytes of memory.

(Laughter) Don't laugh, it was $4,000 back then. (Laughter) Maybe my watch has more memory.

It was created by Russell Smith, a passionate New Zealand inventor, to help the blind.

Unfortunately, he died in a plane crash in 2005, but his memory remains in my heart.

This was the first time I could read what I typed.

It has a speech synthesis function

When I wrote my first labor law book in 1979, I typed it into a typewriter from memory.

The new machine read out what I typed in, and even with 84 kilobytes of memory, I was able to enter the computer world.

In 1974, an American, Ray Kurzweil, started building a machine that could scan books and read them out loud.

At the time, OCR only worked well with a single font, but the combination of a CCD flatbed scanner and text-to-speech allowed us to create a machine that could work with any font.

His machine, as big as a washing machine, was launched on January 13, 1976.

In March of 1989, when I first touched the commercial Kurzweil Reciter, I was amazed. In September of 1989, when I was appointed as an Associate Professor in the Law Department at Monash University, the Law Department introduced it for me.

For the first time in my life, I could just put a book in the scanner and read it.

No more being nice to people!

(Laughter) I no longer have to worry about anyone censoring me.

For example, in the past, or rather, in the current me, it's embarrassing to have sexually explicit content read aloud.

(Laughter) Now, all you have to do is pull out a book in the middle of the night and you'll understand, right?

it's a smaller one

If you scan the latest novel, before you borrow a book for the blind from the library,

You can talk about novels with friends

Many people have helped me along the way, many of whom I have never met.

One was American inventor Ted Henter.

He was a motorbike racer, but in 1978 he lost his sight in an accident, which was fatal to riding a motorbike.

But he turned to water skiing and became the world's number one disabled water skier.

And in 1989, he teamed up with Bill Joyce to create a program that could read aloud what was written on a computer screen.

It's called JAWS, and it reads like this.

(JAWS voice) Is it a little late?

(Laughter) At this rate, I'm going to sleep.

this is the slow version

I'll let you play it back at my reading speed.

please

(JAWS voice) (laughter) When you're grading a student's report, you want to get it done quickly, right?

(Laughter) (Applause) This technology that fascinated me in 1987 is now in your iPhone.

But reading with a machine can also be lonely.

I grew up in an environment where family and friends read to me, and I love the warmth, the breath, the proximity when they read to me.

Do you like being read aloud?

One of my most unforgettable memories was in 1999 when Marie read "Harry Potter and the Sorcerer's Stone" to me and my children near Manly Beach.

Great book, right?

I still like to have someone read aloud by my side.

But I won't give up my technology because it has given me so much potential.

Of course, handicapped books predate these technologies.

The long-play record was an invention in the early 1930s, and now you can use a mechanism called DAISY to burn the books you've read to a CD.

But the synthesized voice makes me want to go home and listen to a lively novel in real voice.

There are still barriers in front of us disabled people.

Many websites cannot be read by JAWS or other technologies

Websites are visual, full of unlabeled graphs and unlabeled buttons, which is why the W3C, the standards body, set the standards for the Internet.

We want all Internet users and site owners to follow standards, so that the visually impaired can be on the same playing field.

There are also barriers posed by law

For example, in Australia, like the other one-third of countries, we have laws that don't apply copyright to braille braille for blind people.

But these books don't cross borders

For example, in Spain, you have access to 100,000 Spanish-language books.

50,000 volumes in Argentina

No other South American country has more than 2,000 volumes.

But it's illegal to take books from Spain to South America.

Hundreds and thousands of books available in America, England, Canada, and Australia can't be taken to 60 countries where English is spoken.

We talked about Harry Potter

Because books can't cross borders, different versions of the book need to be produced in each English-speaking country, so the United Kingdom, the United States, Canada, Australia, and New Zealand each need a different version of Harry Potter.

So next month in Morocco, there will be a conference that will bring together many nations.

Together, these countries and the World Braille Council are advocating a treaty that, if books are not subject to copyright restrictions and other countries have similar mechanisms, will allow books to be brought across borders, which will open up a lot of possibilities for many people who have never been able to read before, especially for the blind in developing countries.

i want this to happen

(Applause) I can say that my life has been very lucky. I've been married, had children, and have been able to do interesting jobs, such as being the Dean of the Law School at the University of Sydney and my current job in Geneva as the United Nations Commission on the Rights of Persons with Disabilities.

I believe that I am a truly blessed person.

what will the future show

Technology will get better, but I'll never forget what my mother said 60 years ago, "You're blind." "You can't read with your fingers."

I am grateful that the dream of reading for me and for blind people around the world has come true through the involvement of transcribers, volunteer readers and passionate inventors.

I also want to thank Hannah Martin, my research assistant who's paging through the slides. My wife, Professor Marie Kroc, is my light, and she'll be there to pick me up.

thank you

i have to say goodbye

thank you very much

(Applause) Yay! (Applause) Thank you very much (Applause)

Malaria is the most deadly epidemic in human history.

It's probably the oldest scourge of disease contracted by the bite of an infected mosquito.

We may have been associated with malaria since we evolved from apes.

Malaria still takes a heavy toll

Malaria kills 300 million people each year and kills over 500,000 people.

this is really funny

Because we've had a cure for malaria since the 1600s, we've had a cure for malaria since the 1600s.

At that time, a Jesuit missionary in Peru discovered the bark of the cinchona tree, and in that bark was a drug called "quinine," which is still used today to treat malaria.

So, for centuries, we've known cures for malaria.

In 1897, we also learned how to prevent malaria.

British military doctor Ronald Ross discovered that malaria is transmitted by mosquitoes, once thought to be caused by bad air known as miasma.

So malaria should be relatively easy to solve, but hundreds of thousands of people still die from mosquito bites.

I wonder why?

This question has interested me for a long time.

Growing up the daughter of Indian immigrants, I used to visit my cousins ​​in India every summer. Not immune to the local malaria, I was forced to sleep in this hot, sweaty mosquito net each night, even though my cousins ​​could sleep on the terrace, and my cousins ​​could sleep on the terrace, with a nice night breeze.

That's why I hated mosquitoes

But I come from a Jain family, and Jainism is very strict about non-killing.

Jains should not eat meat

Don't walk on the grass either, because you might accidentally step on it and kill the bugs.

Of course you shouldn't hit mosquitoes

So this little bug has been a terrifying threat to me since I was a little girl, and that's why I've spent five years as a journalist trying to figure out why malaria has been plaguing us for so long.

I believe there are three reasons

Together, these three give rise to a fourth cause, which is probably the greatest.

The first reason, of course, is scientific.

This tiny parasite causes malaria, perhaps the most complex and toughest pathogen known to date.

This pathogen spends half its life in cold-blooded mosquitoes and the rest in warm-blooded humans.

These two environments are very different, and both are very aggressive.

Mosquitoes are constantly trying to expel parasites, and the human body is trying to expel them as well.

This tiny creature has survived such a siege and is even thriving.

The parasite spread and learned how to evade attacks.

first change form

Just like a caterpillar becomes a butterfly, the malaria parasite mutates seven times in its life cycle.

At each stage, not only does it look completely different, but it also has a completely different physiology.

So, for example, even if we find a magic bullet for a parasite at a particular stage in its life cycle.

At other stages, it may not be as effective.

Parasites can hide inside us and go undetected and unnoticed for days, weeks, months, years, even decades.

This parasite is a huge scientific challenge, but so is the mosquito that harbors the parasite.

Just 12 species of mosquitoes carry most of the malaria in the world, and we know a lot about where those waters live.

You might be thinking, why don't we just avoid places where there are such dangerous mosquitoes?

You can avoid places with dangerous grizzly bears, and you can avoid places with crocodiles.

But if you live in the tropics and you walk outside your hut one day and you leave footprints in the soft mud around your house, you leave footprints in the soft mud around your house.

Or a cow or a pig leaves footprints, and then it rains, and the footprints become puddles.

Look, we've created the perfect home for malaria mosquitoes right next to our house.

So it's not easy to avoid these insects.

We create places for mosquitoes to live, just by living normally.

So it's a big challenge, not just scientifically, but economically.

Malaria occurs in some of the poorest and most remote places in the world, and there's a reason for that.

The poorer you are, the more likely you are to get malaria.

If you're poor, you're more likely to live in a poorly drained house in a remote area.

That's where mosquitoes breed.

There is often no screen door

Without electricity, many of us will not be able to do indoor activities that require electricity.

more likely to be bitten by mosquitoes

Poverty causes malaria, but what we now know is that malaria also creates poverty.

For one thing, it hits hard at harvest time, exactly when farmers have to go out into the fields and harvest, and they stay home with the heat.

But it also causes death from other causes.

happened historically

We've successfully eradicated malaria in some societies.

But if everything else stays the same, bad food, bad water, bad hygiene will end up making people sick.

But if we eliminate malaria, we also reduce deaths from other causes.

Economist Jeffrey Sachs has actually quantified what this means for society.

They say that if a society has malaria, it reduces economic growth by 1.3 percent each year. Economic growth is reduced by 1.3 percent each year.

So this presents a huge economic challenge, because if you find a silver bullet or a vaccine, how do you get it? No roads, no infrastructure, no electricity for refrigeration, no hospitals, no doctors, but that's where you need these things.

There is a big economic challenge to tame malaria.

But in addition to the scientific challenges, the economic challenges, there are also the cultural challenges, and this is probably about malaria, which people don't want to talk about.

Paradoxically, the people who suffer the most from malaria in the world tend to care the least about it.

This has been confirmed time and time again by medical anthropologists.

In malaria-prone areas of the world, we ask the question, "How do you feel about malaria?"

The answer that comes back is not "It's a deadly disease and it's horrible"

"Malaria is a little everyday trouble"

i have experienced this myself

I told my relatives in India that I was writing a book on malaria, and I told them that I was writing a book on malaria, and they looked at me as if I was writing a book about warts.

It's like, why am I writing about something so boring and mundane?

This is a simple risk perception problem.

A child in Malawi, for example, might get malaria 12 times by the time he's two years old, but if he survives, he'll have malaria for the rest of his life, but he's much less likely to die from it.

For her, malaria comes and goes.

In most cases of malaria in the world, this is indeed the case.

Most malaria appears and disappears spontaneously.

There's a lot of malaria, and only a fraction of the cases are fatal, but it's still this big number.

For people who live in malaria-prone areas, malaria must be what colds and flu are to those of us who live in temperate climates.

Colds and flus are a huge burden on society and in our lives, but we don't take even the most basic precautions because we think it's normal to catch them when cold and flu season comes.

This is a big cultural challenge in malaria control. How do you get people who think it's normal to get malaria to see a doctor? How can I get a diagnosis, get a prescription, get some medicine, take it, put on bug repellent, sleep under a mosquito net?

It's a big cultural challenge in controlling this disease.

Let's summarize

There's a disease that's scientifically, complexly, economically challenging, but also one that the people who should benefit the most pay the least attention to.

All of this creates the biggest problem, which is, of course, political.

How do you get political leaders to tackle these issues?

Historically, the answer is "do nothing."

Most malaria communities have lived with the disease their entire lives.

The fight against malaria has been challenged largely from outside the malaria community, by those who are not bound by cringing politics, by those who are not bound by cringing politics.

But I think this has created a new hotbed of difficulty.

The first salvo against malaria began in the 1950s.

It was the brainchild of the U.S. State Department.

This initiative is a good understanding of the economic challenge.

We saw the need to use tools that were cheap and easy to use, so we turned to the insecticide DDT.

I also understood the cultural challenges

In fact, they condescendingly thought that people at risk of malaria shouldn't be allowed to do anything.

Everything should be done for them

But what we underestimated was the scientific challenge.

I gave up on malaria research just because I put so much faith in DDT.

When they found out that DDT couldn't be used, public opinion turned against DDT, but what did they do? Without scientific knowledge.

The campaign collapsed, and malaria relapsed, worse than before, because malaria was pushed to the most inaccessible places in the most difficult to control ways.

A World Health Organization official at the time called the campaign "the biggest mistake in public health history."

The latest efforts began in the late 1990s

It's also managed and funded from outside the malaria community.

This initiative has a good understanding of the scientific challenge,

Malaria research is also active.

And considering the economic challenges,

We use tools that are very cheap and easy to use.

But I think the dilemma lies in the cultural challenge.

Our current focus is mosquito nets.

Treated with insecticide

It's been distributed in all malaria areas, by the millions.

This mosquito net is some kind of surgical procedure.

For families with malaria, mosquito nets are of little value, they can only prevent malaria.

But I still ask everyone to use the mosquito net every night.

sleeping under a mosquito net every night

because it's the only effective way

You have to do it, even if it blocks the night breeze, even if you have to get up in the middle of the night to go out to do your business, even if you have to move all the furniture to put up the mosquito net, even if you live in a round hut and it's hard to put up a square mosquito net.

It's not a big deal to fight a life-threatening disease.

These are minor inconveniences

But people with malaria don't think so.

They should be operating on a completely different logic.

For example, imagine a well-meaning Kenyan who says to us in a temperate climate, "You guys catch colds and the flu quite often.

I made a great, easy-to-use, inexpensive tool, and I'm giving it away for free.

It's called a mask, but you can just wear it every day during the cold and flu season, even when you go to school or work."

do you guys do that?

I think this is how people in the malaria world react when they first receive a bed net.

In fact, research shows that only 20 percent of the first mosquito nets were actually used.

And that's probably an overstatement, too, because the people who handed out the nets interviewed the people who received them, asking, "Did you use the nets I gave you?"

It's like when Aunt Jane asks, "What about that vase you gave me for Christmas?"

So it's probably overestimated.

But it's not an insurmountable problem.

With more education, we can persuade people to use mosquito nets.

it's actually happening now

We're spending more time and money on workshops and training, on musicals and plays, on school assemblies, all of this to persuade people to use the mosquito nets we distribute.

may have an effect

But it takes time and money.

We also need resources and infrastructure

All of this is not what a cheap, easy-to-use mosquito net should be.

It's hard to fight malaria from within the malaria community, but it's just as difficult to fight it from outside the malaria community.

Because you end up imposing your own values ​​on the malaria community.

That's exactly what we did in the 1950s, and the effort backfired.

What I'm trying to say now is that if you distribute a tool that you've built, but it doesn't necessarily make the other person's life better, then you run the risk of making the same mistake.

It's not that malaria is insurmountable. I think it can be overcome.

Let's take the example of the UK and the US

For hundreds of years, both countries had malaria, but they eventually eradicated it, not because they fought malaria, they didn't.

We fought bad roads, bad housing, bad sewage, no electricity, rural poverty.

We fought the malaria-producing lifestyle, and that gradually eliminated malaria.

Combatting malaria-producing lifestyles is something that makes sense, and it's on everybody's minds today.

Fighting a malaria-producing lifestyle isn't going to be quick, cheap, or easy, but I think it's the only way forward.

thank you

(applause)

I'm always thinking about simplicity, as well as the content of this gathering.

Conciseness seems to refer to a simple character, but take it in the good sense that the word has.

My pursuit is two very simple things: how to live and how to die.

That's all I think about all day long

You have to eat, you have snacks, you yell at your kids, you do normal things, you have to stay strong.

I was lucky enough to be born a dreaming girl

My sister was giving her parents trouble, and my parents had their hands full with my sister.

Luckily, I was completely neglected. Thankfully.

Thanks to you, I can keep daydreaming

In 1967, I entered New York University dreamily, where I met the man who tried to blow up the NYU mathematics building.

I wrote him tasteless poems and knitted him sweaters.

Feminists hate us and the whole thing was miserable from start to finish.

But I kept writing poetry, and he didn't carry out the bombing plan and went to Cuba.

But I gave him money because he was in a privileged position.

(Laughter) It would have been nice to help him in his mission.

When he came back, things changed, and I hated my writing.

But I still wanted to write a story, my own story.

So I decided to draw a picture, it's easy

So what I did was I became an editorial illustrator, starting out of complete ignorance.

we opened a studio

It's a studio called M&amp;Company.

M&amp;Company doesn't have any specialized knowledge, but let's try anyway.

There are some things it's better not to know.

So our start was with no boundaries, no fear.

And I got the best job in the world, which is to fantasize and come up with crazy ideas, and I was lucky enough to have enough people on my team, and some other people with crazy ideas.

But I was myself as a dreamer

M&amp;Company has long clearly had to make a profit, so they decided to make a variety of products.

The clock you see here strives for beauty and humor, perhaps more for success than for effort.

We talked about the content, we pushed the conventional wisdom aside, and we prioritized embracing humor and surprise and elegance and humanity.

Back then, design was impersonal, and what we were trying to say was that content matters.

You have to be a journalist, an inventor, and most importantly, use your imagination.

I have a dog, I don't know if I believe in luck, I don't know what I believe in, but before I go on a trip, I twirl my dog's tail seven times.

In a house where someone is always on a trip and everyone is whirling their tails around, if a suitcase is seen in the house, the dog will go to another room.

I can write books for children and books for adults, because in some ways I'm not an adult.

I'm not going to brag, but I can tell you that I didn't understand 95 percent of the talks I heard at TED this time.

But you did a great job, and in Gelman's lecture, you drew a nice onion.

In Woodham's lecture, I was able to draw a lot of different pictures.

Good things can come out of things you don't understand (Laughter).

So we're embracing what we didn't know and creating something new.

Writing children's books is as easy as it looks

Most stories have to be condensed into 32 pages.

The important thing is to edit only what you want to convey

And don't say it in a way that looks down on children, and don't say it once you read it and you're done with it.

So maybe the books I write are books that everyone can enjoy.

But the pictures I draw, regardless of whether they are children or adults,

We use our imagination, we use our quirky ideas, we use our love of words alike.

many of my friends are cool

And when Andrew Gatz came to visit, I sat him down and took a lot of pictures.

Behind me is my favorite chair

Incorporate whatever you like into the picture.

I think there will be many levels of conversation between adults and children, and there will be many different levels of humor.

A book is a diary of my life

I don't like to envision

I don't know what you mean by synopsis

I can't stand the flow of beginnings, middles, and ends, because my life itself is haphazard and messy, and I enjoy it.

Well, we were in Venice, and this is our room, and I had this dream, and I was wearing a nice green gown, and I was looking out, because it was a nice image.

I've incorporated it into the story of the alphabet, and I think it's going to mutate into something different.

Page C says something different

I was lucky enough to meet the man sitting on the bed, and I drew him to look like he had hair.

I'm a person with thin hair

I have a wonderful project that I worked on with him.

I'm on the cover of The New Yorker, and the terrorist attacks happened, and it was like the end of the world.

When I was heading to the Bronx to party with him, some people said Bronquistan, some people said Faleristan, and that's where this New Yorker cover came from, though I didn't know it at the time.

I wasn't kidding. Actually, I was just having fun.

I thought it would be funny, but I didn't know it was going to be on the cover.

I was able to make a lot of people laugh when I saw what was written here.

I created a fictitious race and named it something like Fatsi or Taxistan, and I used this city to make fun of something that was completely foreign.

who else is there? Say

David Remnick, who was very enthusiastic about the idea, said that Alzheimer's is disrespectful to people with Alzheimer's disease, and that it's best not to do it.

I said to him, "Do you think they'll notice?"

you shouldn't notice

(Laughter) So I ended up going with this idea.

I don't know what's going to happen in my life

On Cape Cod, the best place for inspiration, I went to a yard sale and found a book on English grammar.

I never used it when I was a student, because I was always writing poetry, not studying, and hanging out in cafes.

But when I started reading, this book is amazing!

I should know that this book exists

(Laughter) I thought this book would be better with a few illustrations.

I called the publisher and persuaded them to say that I wanted to do something with this book in a mix of Polish Jews and white Anglo-Saxon families.

You agreed and let me take care of it.

I got samples from them and made 56 paintings.

It says here

"Susan, you're in trouble."

Dealing with grammar is a very dry one, but Mr. Strunk has written a great one, and he's got a page on grammar rules, and there's a lot of notation about grammar.

Even the nuances of changing me to my

For illustrations of auxiliary verbs,

Coco Chanel Mistress and Edith Sitwell August Sander

“He noticed a stain on the carpet.”

(Laughter) My favorite is a picture of a murder mystery with a British style of expression.

“Be plain and ambiguous! Be fun words in a way that we can understand!”

If you look at the rules that Mr. White wrote, you'll either be paralyzed, or like me, you'll be discouraged, or you'll get irrelevant and start eating sandwiches.

I sang while I painted I love to sing I think music is the pinnacle of all arts

We asked the composer, Nico Mury, to use the text to compose nine songs, which we performed, and he wrote music for both amateurs and professionals.

I did a concert at the New York Public Library with cups and toys.

I wrote a column for the New York Times Opinion, because I was in charge of the content.

Last year, I wrote a monthly column called "The Law of Uncertainty." I don't know who Heisenberg was, but now I know what he's saying: the Uncertainty Principle.

I don't have time, so I'll skip it and read a little bit

What was interesting was that I was worried about the character limit and asked

"It's the Internet," they said.

"But how long can you use it?"

said to be unlimited

The first one is very modest, so let's read it.

"How can I reveal my heart?

It's impossible to start, that's enough, start with the unfortunate dodo."

So why did the dodo go extinct, and then I'm going to talk about Spinoza.

“When the last dodo died, Spinoza was looking for a rational explanation for euphoria.

And he died surrounded by the people he loved The last thing he ate was chicken soup

this is true

he died and spinoza died

We don't have stuffed Spinoza, but we do have stuffed Pavlov's dog. I saw Pavlov's dog at the museum in St. Petersburg.

I have an electric box attached to my buttocks. I'm in a beautiful old castle.

“It must have been a very dark day when the Bolsheviks came.

They may have had a good time, but Stalin was more paranoid than my father."

(Laughter) It was really amazing.

"And his top humans were destined to perish."

I also added my coinage

This little drawing represents the person he killed.

People shot, beaten in the head, kicked out

"Nabokov's family fled Russia How could young Nabokov, sitting in a red chair with pure grace Flip through a book of butterflies, imagine such banishment and loss?"

I tell you this is a map

“My dear mother's family also fled Russia.

Because of the frequent Jewish genocide

Leaving the shacks, the blueberries, the geese, the Surch River, they crossed from Palestine to America."

This is my mother's map of America. My genes are here. She raised me, she didn't use facts.

Facts have vanished from our home

Texas and California are directly below Canada, and South Carolina is located north of North Carolina, because I grew up in a family like this.

It's a miracle that I'm here today

That's great too, but...

My mother used to say, except Tel Aviv and Lenin, my mother's family hometown.

I don't know anything.

(Laughter) I called it the impossibilities of February because February in New York is a very uncomfortable month, and I can see these kinds of terrifying events.

It's not that scary, but...

A parcel arrived wrapped in newspaper, and the newspaper contained a picture of a man dead.

"He's not dead, I hope he's enjoying himself buried in the snow, but it says he's dead here."

I'm not sure if it's really dead

“A woman overwhelmed by sadness. February is the season when such things often happen.”

this is a picture of comfort

Man angry that someone left onions on the stairs Onions seem to be the theme here

He said, "You can't lie

It's February, so it's impossible not to lie

I often wonder if we are telling the truth

what story are you telling

are you honest with yourself

How do we know that the sentences we speak are real?

Is it a semblance of text on the surface?

I will briefly introduce

Bertrand Russell said, "Any man's labor, contribution, inspiration, the brightness of human genius at noon, all these are doomed to extinction.

Now, my friend, if this is true, what does it really mean?"

it's a complicated question

I talk with my friends and go to the theater where I listen to Russian songs

That's right

can you play music

This is my aunt's song in Russian.Can you play it for me?

can you play

(music) I recorded the song my aunt played when she was swimming in the ocean every day until she was about 85.

It's a song about how miserable everyone is, because we're from Russia.

(Laughter) 96-year-old Kitty Carlisle Hart, I gave her a book on writing, and she said she would cherish it.

She was talking about Moss Hart, so I told him he was the one

he said yes

(Laughter) I was the one who needed a grammar book, and that's a good memory.

she dated george gershwin

he died at the age of 38

he rests in the same cemetery as my husband

I'll tell you that story another time

“The highlight of this cemetery is the nearby tomb of the Barissini family.

The Barrisini family should open a chocolate shop there.”

(Laughter) I can help you.

I went to see Louise Bourgeois, she's active, and the washbasins in her house were wonderful.

Then I took a picture and drew a sofa on the street.

Lolita who lives on the same street as us

I drank some tea

Before my Aunt Francis died, she tried to buy a bagel with a sugar substitute.

(Laughter) I was wondering what the point was, but I saw Hi Majlowitz, a salesman who ran in and out of dry cleaners, and in 1931, he won the Chaplin look-alike contest.

this is high

A bowl of fruit A dress I sewed for a friend

This is Bach's cantata.

It means that I am satisfied

I live like this Thank you

(applause)

Here's a look at some of the latest and most jaw-dropping cybercrime tactics.

Please don't download the virus I'm showing you here.

I'm sure some of you are wondering what a cyber security professional looks like, so let me start by telling you about my background.

It's a very accurate depiction.

It's almost like we specialize in malware and hacking.

Today, computer viruses and Trojan horses are used for everything from stealing data to spying on webcams to stealing billions of dollars.

Some malicious programs target power, lifelines, and infrastructure

Let me show you a little bit of what you can do with this malicious code.

There are now eight Internet users every second.

And 250,000 new computer viruses are born in a single day.

30,000 new websites infected with virus

Let's break the myth here, when most people get a computer virus, they think it's from a porn site.

But the truth is, statistically, it's much safer to just visit porn sites.

This is where I take notes. (Laughter) In fact, 80% of the sites that get viruses are small businesses.In fact, 80% of the sites that get viruses are small businesses.

Who are today's cybercriminals?

You're imagining a freckled young man hiding in his basement and hacking to gain notoriety.

But real cybercriminals are wonderfully professional and organized.

In fact, there are even product advertisements.

Ask for hacking services online and take your competitors offline.

Look at this

There's only one reason you're here, there's only one reason you're here Your competitors, your rivals, those who get in your way I don't care why or who they're against, it's because you want to bring them down

Then you're right here

If you want to undermine your competitors, you can.

If you want to take your rival offline, so be it.

In addition, we offer short-term to long-term DDOS services, or planned attacks, from $5 an hour to $10 to $50 an hour for small personal sites.

Now, I actually used these services to attack my site.

If you try to pay for it as a company expense, things get complicated.

I couldn't

Anyway, there are now a staggering number of products and services for cybercriminals.

For example, a test site, where cybercriminals can verify the performance of their virus before releasing it to the world.

For a fraction of a dollar, you can upload a virus and be sure it's fine.

That's not all

There is a crime kit for cybercriminals Business intelligence (BI) dashboards to control the distribution of malicious programs

This is the malware market leader, the BlackHole Exploit kit. Nearly a third of the malware distributed in the last six months came from this kit.

There's an installation manual, there's a video guide, and hey, there's even technical support.

If you email a cybercriminal, they can also tell you how to set up an illegal hacked server.

Now let me show you what the latest malicious code looks like.

So here are two screens. One is the attacker's, and I made it look like the Matrix, and the other is the victim's.

Normally these two don't meet on the planet, on the internet, but I put them side by side because it's more interesting.

Now, there are many different routes of viral transmission.

you've all seen

For example, I often get emails like, "Hello, I'm a Nigerian banker and I want to give you $53 billion because you have the type of face."

And then there's funnycats.exe, which is rumored to have played a big role in China's anti-American campaign.

There are many different routes of viral transmission.

I'd like to introduce you to two of my favourites.

this is a small usb stick

How can you use this?

It's one thing to appeal with lovely eyes

ah

In my case, clumsiness earns sympathy

It's like, visiting a company, spilled coffee, résumé, clumsy and pitiful.

With my resume spilled with coffee, I go to the reception desk and ask, "Please print your resume from the USB stick."

Now let's take a look at the victim's computer.

Try plugging in a USB stick

In a matter of seconds, the computer starts working on its own, which is a bad sign.

Of course, usually in seconds, in the blink of an eye.

otherwise malware is boring

This is writing out a malicious program, and after a few seconds, on the left, on the attacker's screen, comes some interesting text.

Hover over and zoom in. This is a "command prompt" that allows you to control the other person's computer.

access documents and data

You can also turn on your webcam

this is embarrassing

As a proof of action, let's launch my favorite program, the Windows calculator software.

It is not great? You can take control of your opponent with something as simple as this.

Show me the most popular malware today Show me the most popular malware today

First, open the website, the site I made.

It's a really terrible site with some ugly images

There's a comment section here, where you can post comments on the website.

I'm sure you've all used something similar.

Unfortunately, the developers got a little drunk when they made this, and apparently forgot all the security etiquette they knew.

Now imagine this attacker -- let's just say it's an evil hacker for fun -- and put in something nasty.

this is the script

So it's code that's read on a web page.

I'm going to post it here, and on the victim's computer, I'll open a browser and go to my website, www.incrediblyhacked.com.

But a few seconds later I was redirected

If you look at the address here, you'll see that it's microshaft.com. This exploit kit crashes your browser and launches a fake antivirus.

It's a virus, but it's disguised as antivirus software, and it reads your system thoroughly.

I'm giving you a serious warning

Look, it's a proxy server for child pornography.

I have to clean up

What's insulting is that not only does the attacker get your data, but once the scan is done, you have to register as a user for this product to remove the fake virus.

I miss the days when viruses were free

(Laughter) It's funny because now we pay cybercriminals to run viruses.

Let's change our point of view

Fighting 250,000 malware a day is a daunting challenge, but that number is only going up, and the wrinkles on my forehead are growing with it.

Now, I'd like to introduce you to a group of hackers that I've tracked down for a year and finally found, which is rare in this line of work.

This was a cross-industry effort, and we had people from Facebook, independent researchers, Sophos.

So here are two documents that these cybercriminals uploaded to cloud services like Dropbox and SkyDrive, the clouds that you use every day.

At the top is the source code

It's designed to send cybercriminals a daily text message telling them how much they've earned that day, so to speak, the cybercriminal's sales report.

If you look closely, you can see a Russian phone number. If you look closely, you can see a Russian phone number.

Interestingly enough, this was the key to tracking down cybercriminals.

Below, in the area circled in red, there is another source code that says "leded:leded".

This is your username, like you would use it on Twitter.

ok let's get on

There are other interesting things uploaded by cybercriminals.

You also take pictures with your smartphone and upload them from the conference hall, don't you?

An interesting feature of modern smartphones is that when you take a picture, it embeds GPS data indicating where it was taken.

I spent a lot of time recently on online dating sites, for research purposes, of course, and then I realized that 60 percent of the profile pictures on these sites had embedded GPS that showed where the picture was taken.

This cybercriminal was doing the same thing.

Here's the photo that told me it was St. Petersburg.

we used advanced hacking tools

It's Google

Using the email address, phone number, and GPS data we've found so far, on the left, we found an ad for a BMW car for sale by a cybercriminal, as well as an ad for a sphinx cat.

one of these looked the most typical

And here are the cybercriminals

Think about it, these are hard-nosed cybercriminals and they're pretty secretive.

It's easier with information from people in this room, but it's easier with information from people in this room

I looked further into their profile, and there was a picture of their office.

It seems that he was working on the third floor.

And then there were pictures from my business associates. And there were more pictures from my business associates.

It looks like he's a member of the Federation of Adult Website Operators of Russia.

But from here the investigation reaches a dead end.

Cybercriminals are pretty good at hiding their identities.

But watch out for social media and mobile devices.

Even if you do your best to protect yourself, your friends, family, and colleagues can still leak your information.

This is MobSoft, one of the holding companies of this cybercriminal group. The funny thing about MobSoft is that 50% of the owners had job openings, and the phone numbers on them matched the numbers in the source code above.

This woman is Maria. Maria is married to one of these criminal gangs.

Hi, Maria seems to have made the security settings pretty lax on social media.

By the end of this research -- and you can see the 27-page report at this link -- I've also got some pictures of the cybercriminals, and I even have pictures of them hanging out at the office Christmas party.

Yes, cybercriminals have Christmas parties Yes, cybercriminals have Christmas parties

What happened to these people?

We'll talk about that later

I'd like to change things up a bit and move on to the last demo. It's a very simple, very basic technique, but it's an interesting one to show you how much information we're risking, and it's relevant to us, the audience at TED.

Usually, when I start this story, people go into their pockets and desperately try to put their phones on airplane mode.

You know scanning for wireless networks You know scanning for wireless networks

Take out your iPhone or Blackberry and scan it when you connect to a network like TEDAttendees.

But what they don't realize is that they are also transmitting information about networks they have previously connected to, and that they are also transmitting information about networks they have previously connected to, even if they are not actively using wireless connections.

I did a little scan

I don't care about the law I'm more moderate than a cybercriminal I don't care about the law I'm more moderate than a cybercriminal Look at my mobile device

May I? I have a list of networks

TEDAttendees or HyattLB Do you know where I am staying?

And my home network PrettyFlyForAWifi nice name

Sophos\_Visitors SANSEMEA The company we work with

And Loganwifi this is in Boston HiltonLondon

CIASurveillanceVan

That's the name we gave it at a conference, because it's fun to scare people.

This is how geeks play

Let's make it a little more interesting

Let's talk about everyone here

23% recently went to Starbucks and used a wireless connection.

the story starts here

46% of people can guess where they work, like the XYZ employee network.

It's not an exact number, but it's pretty accurate.

For 761 people, we can guess the most recent hotel stay with great accuracy.

For 234 people, we know where they live.

You can pinpoint the name of your wireless network, and it's all publicly available on the Internet, so you don't have to hack or do anything complicated.

In addition, some people use their own names, like "James Line's iPhone."

2% of people don't seem to like the way they speak

I want you to think about how much privacy and security we are willing to trade for convenience with these new apps and mobile devices, playing with these brand new toys.

So the next time you install something, check your settings and ask yourself, "Do I want to share this information?"

“Will someone take advantage of it?”

And we have to really think about how we're going to build the workforce of the future.

Technology is changing at breakneck speed. 250,000 pieces of malware will change very quickly.

And there's also a really worrying trend: A lot of people have gone to school, they're tech savvy, they know how to use technology, but more and more people are going further and not knowing how technology works.

In the UK, it's been down 60 percent since 2003, and we're seeing similar statistics around the world.

And we also need to consider legal issues in this area.

The cybercriminal I spoke to stole millions of dollars and still hasn't been caught.

Most laws are territorial, even though the Cybercrime Convention defines the Internet as borderless and international.

Unless countries agree, legally, this area is bound to be very difficult.

But my number one request is this, because when you get out of here, you'll see some amazing stories on the news.

And you're going to see stories of malware doing the most terrifying things.

But 99% of the time it's because you didn't do something basic.

So find some simple best practices on the internet and keep your computer up to date.

a secure password

Please change the password you use for each site and service Please change the password you use for each site and service

Look for information and use it

The Internet is a wonderful thing for business, for political expression, for arts and learning.

Together with the security industry, let's make the world harder for cyber criminals to live in. Let's make the world harder for cyber criminals to live in.

thank you

(applause)

Do you think you can control other people's attention?

And also - can we predict behavior?

Interesting if possible

It would be a real psychic, and it could be abused.

For the last 20 years, I've been studying human behavior in a different way, through pickpocketing.

When we talk about misdirection, we tend to think of it as turning people's eyes away, but in fact, what's most difficult to see is what's right in front of us, and what we normally see is what we tend to lose sight of.

For example, do you have a cell phone now?

Please check if it is correct

Please check if it is correct

I may have just stolen it

I'm sure you've seen it a few times today, so here's a question.

Can you remember the icon on the bottom right without looking at the screen?

Please check if it hits

how is it? Raise your hand if you hit

Now close when you're done

All phones have something in common

No matter how you arrange the icons, the one that stands out is the clock.

Can you tell the time without looking at your phone?

You should have seen the clock just now

It's interesting. Now we need trust.

close your eyes

I dare you to ask, but there are pickpockets here

You looked at me for 30 seconds, right?

Can you remember your clothes with your eyes closed?

think carefully

What color is your shirt? What color is your tie?

open your eyes

Please raise your hand

It's because people have different powers of observation.

you might think

But I don't perceive attention that way.

There are more complicated ways of looking at it, like Posner's attention model.

I think it's more like a simple surveillance system.

Humans have all kinds of sensors, and they have little security guards in their heads.

my name is frank

Frank watches at his desk

He has all the information and the high-tech devices in front of him, the cameras, the audio microphones, all the senses, all the senses.

But it is attention, the gateway to the mind, that determines what we perceive and controls our reality.

If you don't pay attention, you won't notice

But ironically, sometimes we unconsciously pay attention.

It's called the "cocktail party effect." If you're talking to someone at a party, and your name appears in their conversation, you'll know that you didn't hear it.

In my work, I use techniques that take advantage of limited attention.

You can manipulate their attention direction, distract them, and steal their attention.

Instead of misdirection and distraction -- I'm going to use Frank, the little security guard in your head. I'm going to use Frank, the little security guard.

Cause me to trace my memory—

What happened? do you have a wallet

credit card? etc

Frank turns his back when I ask.

he rewinds his memory and checks

Interestingly, you can't process new information while checking your memory.

It's a good theory.

let's go over there and check

you're just sitting

hi hello nice to meet you

your presentation was great

It's a watch that won't come off easily

I have a ring too

I'm still investigating.

There are various things, I'm going to change my mind

Hello

Could you stand there for a moment

you are married

Thank you very much

I don't have much in my pocket. Is there anything here?

Please have a seat

Hello

I have a ring and a watch

do you have a wallet Joe: No

AR: I'll find you now, come over here.

Everyone clap Joe, let's play a game over here.

(Applause) I'll pass.

I don't need a remote anymore

thank you

Joe get up, let's play some games

Do you have anything in your front pocket? Joe: money

AR: Money. Let's try.

could you stand here

Please face forward, I have something to give you, poker chips.

Please put out your hand Please watch carefully

It's your job to keep an eye on this

You have money in your front pocket Joe: Yes

AR: I see. I can't put my hands in my pockets.

I'm not in that relationship yet.

I had a hole in a customer's pocket before, and it's been traumatic ever since.

I was looking for my wallet and he gave me his phone number.

it's easy to do please hold my hand

do you still have the chips? Joe: yes

AR: You'd be surprised if I pulled it out.

Joe: Certainly AR: Fine—

then open your hands

I'll do it if I get the chance

Increase the difficulty and use only your hands

Grab my wrist and hold me tight

Did you find it gone?

Joe: no AR: it's gone

Chip is on your shoulder while you're looking at your hand

please take

come on one more time

Open your hand and stretch it straight

Raise it a little higher, but pay close attention

See, even if I do it slowly, the tip is on my shoulder again.

(Laughter) I'll do it until you get a tip.

You'll get it soon Hold on tight, you're not slow

I'm back on my shoulder

I was so focused on my hands, I got distracted.

I can't pick up my watch while you're watching

By the way, what was in your front pocket?

do you remember?

Joe: money

AR: Check it out. Do you still have it? (smile)

There was

Timing is key in this demonstration

I'll put it in your hand, put your other hand on top of it

It's easy to understand now

Does the watch I'm wearing look familiar?

(Laughter) (Applause) Joe: Really great AR: Thank you.

But that's just the beginning. Let's do something a little different.

put your hands together

Now you're probably looking at the chip, but it's clearly a distraction target.

If you look closely, it looks like it's gone

it's not on your shoulder

Out of nowhere it falls into my hands

Did you see where it disappeared?

It's funny, my buddy's up there all day

Even if you do it slowly, it'll still fit in your pocket. It's here, right?

Don't put your hands in it's not that kind of show

Now- (cries) Everyone's thinking.

Can I show it to everyone? funny is this yours

I don't know what happened I just sent a tip

no problem please help me one more

Please come over here

Don't run away, there's something in your pocket

When I checked mine, it seems that something is missing.

Can I touch it from the outside?

Is this yours?

I wonder why it has shrimp

Joe: I'm thinking of eating later

AR: Everyone had a great time. Thanks to you, without even realizing it.

That's why I'm giving you this lovely watch as a present (laughs).

you'll love it

And there's still some cash, and this

It's all yours, and a big round of applause from all of you (Applause)

Joe, thank you very much. (Applause)

Now let me ask you the same question as before, but this time you don't have to close your eyes.

what's my outfit?

(smile)

(Applause) Attention is powerful.

Attention creates human reality

Let's ask the last question

If you could control someone's attention, what would you do?

Thank you very much

(applause)

it's a robot

Robots do the same thing millions of times with minimal errors, which is very difficult for us, right?

The robot works brilliantly

please look

I can't get tired of watching it for hours

right?

But that impression fades when you take a robot like that out of the factory, where the environment isn't fully known and measured, like here, even when you're doing simple tasks that don't require a lot of precision.

It doesn't take a lot of precision to open the door.

(Laughter) Even if it's just a small error in the measurement, the robot loses track of the valve position.

Why?

Over the years, robots have been designed for speed and precision and built to specific structures.

A robotic arm consists of rigid links with a well-defined shape and motors called actuators that move the rigid links at joints.

This robot architecture needs to be able to perfectly measure its environment, know what's around it, and program each joint to perfection, because a small error can lead to a big failure and break something, or if the opponent is tougher than you, the robot itself will break.

let's talk a little bit about this

I want you to think not so much about the brains of these robots or how carefully you program them, but about the bodies of the robots.

The challenge is clear, because at the same time as making a robot precise and robust, it also becomes ridiculously dangerous and inefficient in the real world, because its body can't morph and adjust to the real world.

So let's take the opposite approach: make it softer than anything else around it.

You may think that you can't do anything if you're soft, maybe

But nature tells us the opposite

For example, in the deepest part of the ocean, under thousands of kilometers of water pressure, extremely soft animals can navigate and handle objects much harder than themselves.

This octopus carries palm shells thanks to its flexible tentacles.

And, of course, you can open bottle lids.

Amazing, isn't it?

But it's clear that it's not just the octopus' brain that can do this, it's also its body. This is probably the most obvious example of embodied intelligence, and this intelligence is something that all living things have.

we all have

Our bodies, their morphology, their materials, their structure, play a fundamental role in any work that involves our bodies, because we are able to adapt to our environment, and we can adapt to a great variety of situations without much planning or prior calculation.

So why not bring this embodied intelligence into our robots and offload the heavy computation and measurement burden?

We can do this by following nature's strategy, because through evolution nature has been successful in designing machines that adapt to their environment.

There are many examples in nature of adopting soft materials, but hard materials are rare.

This is what is happening in the new field of robotics, called "soft robotics," where the goal isn't to build super-precise robots like they already are, but to build robots that can survive the most unexpected situations in the real world.

To make a robot flexible, you first need to make the body flexible. It's made from a material or structure that can be very highly deformable, so you don't need rigid links. Second, to make it move, you have to use distributed actuation to continuously control the highly deformable body.

The process of building a flexible robot is very different from robotics, where links and gears and screws are precisely assembled to make a rigid robot.

In flexible robots, most of the time, you build actuators from scratch, but shape flexible materials to respond to specific inputs.

To give you an example, a structure that needs to be deformed into a fairly complex shape if done with rigid links and joints can be deformed with just one input, such as air pressure.

Let's take a look at some successful examples of flexible robots.

Developed at Harvard University, this cute robot moves by applying a wave of pressure along its body, and its flexibility allows it to maneuver through low obstacles, and then it keeps walking, and then it changes a bit and keeps walking.

It's still just a prototype, but we've also built a powered, more robust version that can be taken out into the world and run in the real world, even if it's run over by a car, for example.

keep moving

It's cute, right

(Laughter) Or a robot fish that swims in water like a real fish, thanks to its flexible tail fin with distributed pneumatic motion.

This was built by MIT, and we built the octopus robot.

It was an early project in the new field of flexible robots.

This is just artificial tentacles, but I also made a robot with multiple tentacles, and when you put it in water, it moves around in the water, and it looks like it's exploring, which is different from a rigid body robot.

But this becomes very important in delicate environments like coral reefs.

let's get back on land

What you're seeing here is a video of a growing robot developed by a colleague at Stanford.

It has a camera on the end

What's unique about this robot is that it uses air pressure to extend from the tip, and the main body fits tightly around it.

This shape was inspired by plants, not animals, by using materials that stretch like plants and are able to adapt to a wide variety of situations.

But I'm a biomedical engineer, so the application area that I'm most interested in is in the medical field, and having a robot actually go inside the body is probably the closest interaction with the human body, for example in minimally invasive surgery.

Robots can help surgeons in these situations because they need to enter the human body with straight instruments through small holes, and such instruments must be safe in contact with delicate tissue in unpredictable environments.

Additionally, a camera placed inside the body allows the surgeon to see inside the surgical field, but using a rigid rod like a traditional endoscope can be difficult.

In my research group in Europe, we developed a flexible camera robot for surgical procedures, which is completely different from traditional endoscopes, because it has a flexible module that can bend in any direction and can extend.

And it's actually been used by surgeons to see other devices in a different way, without having to worry about which organs around them they're touching.

Here's a flexible robot in action, just about to go inside.

It's a human body simulator, not a real human body

move through the body

It also has built-in lighting because normally there is no light inside the body.

I hope so

(Laughter) In some cases, a single needle can do a surgical procedure, but Stanford is currently developing a flexible needle -- a tiny, flexible robot that's mechanically designed to use tissue contact to steer inside solid organs.

This allows it to reach a variety of targets deep inside solid organs, such as tumors, with a single insertion point.

You can also steer by dodging parts you want to avoid before reaching the target.

Today is an exciting time for robotics.

Robots that have to deal with soft tissue pose new challenges for the robotics community, and in fact we're just beginning to explore how to control and attach sensors to flexible structures.

Of course, we're nowhere near what nature has discovered through millions of years of evolution.

But I do believe that robots will become more flexible, safer, and more helpful.

thank you

(applause)

This is life with bees This is life without bees

Bees are very important pollinators. They carry pollen from fruits, vegetables, flowers, and food crops. They carry pollen from fruits, vegetables, flowers, and food crops.

More than a third of global crop production depends on bee pollination More than a third of global crop production depends on bee pollination

But bees don't pollinate our food, but bees don't pollinate our food.

they are eating

Bees get all the protein they need from pollen, bees get all the protein they need from pollen, and all the carbohydrates they need from nectar.

They're eating flowers, they're shopping, they're going from flower to flower, they're shopping, they're going from flower to flower, and they're pollinating.

In areas where there are no bees, or where there are no varieties that bees pollinate, in areas where there are no bees, or where there are no varieties that bees can pollinate, hand pollination becomes a job.

Carrying pollen from flower to flower using a brush Carrying pollen from flower to flower using a brush

These manual pollinations are not so uncommon today These manual pollinations are not so uncommon today

Tomato cultivation often uses portable vibrators Tomato cultivation often uses portable vibrators

I'm tickling a tomato right now. (Laughter) Because the tomato pollen is so tightly trapped inside the anther of the stamen that it's so tightly trapped that unless you shake it, the pollen won't come out.

Bumblebees are one of the few bees in the world that can vibrate flowers.

When the flowers are stimulated by vibration, pollen is released in a hissing and efficient manner, allowing the bees to collect pollen throughout their bushy bodies and bring it back to the hive as food.

In today's tomato farming, bumblebee nests are placed inside greenhouses for pollination, because it's much more efficient to do it in the wild, and it's much more efficient to do it in the wild, and you get better quality tomatoes.

And there are still concerns about bees, and there are still concerns about bees.

There are more than 20,000 species of bees in the world All of them are beautiful There are more than 20,000 species of bees in the world All of them are beautiful

Most bees spend the majority of their lives hidden in the ground and in plants, and most bees spend the majority of their lives hidden in the ground and in plants.

To 19,900 other species, the bee is charismatic To 19,900 other species, the bee is charismatic Because there's something about the bee that draws people in. There's something about the bee that draws people in.

Since recorded history, humans have been fascinated by the bee.

It was pure chance that I fell in love with the bee world It was pure chance that I fell in love with the bee world

When I was 18, I was bored, so I borrowed a book about bees from the library. When I was 18, I was bored, so I borrowed a book about bees from the library, and I spent the night reading it.

I had no idea insect societies could be so complex.I had no idea insect societies could be so complex.

It was like a sci-fi world

And I learned that there are beekeepers who love their bees like family. And I learned that there are beekeepers who love their bees like family.

So I decided to work at an apiary, and a family in New Mexico owned 2,000 beehives.

I'm totally addicted

Bees are truly super-organisms. Colonies themselves are living organisms. Colonies have 40,000 to 50,000 bees. Colonies have 40,000 to 50,000 bees.

Bee societies have no central authority.

there is no leader

So how do we make collective decisions, how do we assign tasks and labors, how do we communicate the location of flowers, and all of the collective social behavior of honeybees is striking.

Out of personal preference, I've been researching the bee health care system for many years.

Yes, bee society also has healthcare.

I'm studying how bees manage their health.

For example, when it comes to hygiene, we keep the hive healthy by keeping the sick bees out of the hive.

Recently, we've been studying resins that bees collect from plants. Recently, we've been studying resins that bees collect from plants.

The bees scrape the very sticky resin from the leaves of the plant, and the bees scrape the very sticky resin from the leaves of the plant and bring it back to the hive to use as glue to build the hive, and it's called propolis.

This propolis has been found to be a natural antiseptic and antibiotic.

This propolis has been found to be a natural antiseptic and antibiotic.

It can kill bacteria, molds, and other organisms within a colony.It can kill bacteria, mold, and other organisms within a colony.This is how the colony's health and immunity are supported.

Man has known the power of propolis since biblical times Man has known the power of propolis since biblical times

We harvested propolis from the hives as medicine for humans, but we harvested propolis from the hives as medicine for humans, and we didn't know how it would be good for the bees.

This amazing defense has kept honeybees healthy and prosperous for over 50 million years.

Seven years ago, it was first reported in the United States that bee colonies were dying in mass.

Common sense tells us that bees are essential to us Common sense tells us that bees are essential to us

What's going on?

There are multiple factors at work, so let's look at them one by one. There are multiple factors at work.

An important factor is the increase in flowerless land and the dysfunction of the food system.The increase in flowerless land and the dysfunction of the food system.

We have good data on bees, so let's take an example. We have good data on bees, so let's take an example.

In fact, bees have been declining in America since World War II. Bees have been declining in America since World War II.

Today, there are only half as many beehives in the country as there were in 1945.

I believe it has decreased to about 2 million.

The reason is that we changed the way we farm after World War II The reason is that we changed the way we farmed after World War II

They stopped planting foliage crops like clover and alfalfa.

They stopped planting forage crops like clover and alfalfa, which are natural fertilizers that fix nitrogen in the soil. Instead, they started using synthetic fertilizers.

Clover and alfalfa were nutritious foods for bees.

Also after the war, herbicides began to be used to kill weeds on farms Also after the war, herbicides began to be used to kill weeds on farms.

Many weeds were flowering plants that were necessary for the survival of bees Many weeds were flowering plants that were necessary for the survival of bees

And then we built up a huge monoculture.

A "food desert" is an area without grocery stores.

The farms that once supported bees are now their food deserts, because they're occupied by just a few species, like corn and soybeans.

Many flowering plants that bees need to survive since World War II Many flowering plants that bees need to survive have been systematically eliminated since World War II

Monoculture extended to bee-friendly crops like almonds Monoculture extended to bee-friendly crops like almonds

Fifty years ago, beekeepers brought very few hives to almond orchards Fifty years ago, beekeepers brought very few hives to almond orchards Almond blossoms are rich in protein and suitable for bees.

Now that almond monocultures are widespread, we have to ship over 1.5 million hives from all over the United States, and over 1.5 million hives have to be shipped from all over America to pollinate the almonds.

After it's been carried as cargo it has to be withdrawn again After it's been carried as cargo it has to be withdrawn again, because once the almond flower season is over, the monoculture almond orchard becomes a vast, flowerless field.

Even though bee numbers have declined in the last 50 years, we're planting more crops that require bee pollination.

Production of crops requiring bee pollination has quadrupled Production of crops requiring bee pollination has quadrupled

And then there's the pesticide problem

After World War II, pesticides began to be used on a large scale After World War II, pesticides began to be used on a large scale.

A recent study from Pennsylvania State University looked at pesticide residues in the pollen that bees bring back as food. In addition to disinfectants, it also contains inactive ingredients and non-labeled ingredients, which may be more toxic than the active ingredients, which may be more toxic than the active ingredients.

And bees are the indicator.

How much will it affect humans?

Neonicotinoids, a type of insecticide, are currently attracting attention around the world Neonicotinoids, a type of insecticide, are currently attracting attention around the world Neonicotinoids, a type of insecticide, are currently attracting attention around the world

As you may have heard, this is a new kind of pesticide.

As you may have heard, this is a new kind of pesticide.

Insects that eat the leaves reach a lethal dose and die because they are taken up by the plant Insects that eat the leaves reach a lethal dose and die Insects that eat the leaves reach a lethal dose and die

When this neonicotinoid is sown in soil at high concentration When this neonicotinoid is sown in soil at high concentration When this neonicotinoid is sown in soil at high concentration When this neonicotinoid is sown in soil at high concentration Many insecticidal components enter the plant and reach the pollen and honey eaten by bees wake up and die

Many farmers only have the neonicotinoids on the seeds, so it's only at low concentrations that they get inside the plant and end up in the pollen and honey.

And importantly, bees have their own diseases and parasites, and importantly, bees have their own diseases and parasites.

This is the biggest enemy of bees

It's called a varois destructor (varois tick).

It's called a varois destructor (varois tick).

It's a large, blood-sucking parasite that destroys the bee's immune system and injects it with the virus.It destroys the bee's immune system and injects it with the virus.

To explain clearly

I don't know what it feels like for a bee to have a big blood-sucking parasite crawling all over you and you're infected with a virus.

If you live in a food desert

So what if you had to travel long distances to get to the grocery store, and what if you had to travel a long distance to get to the grocery store, and even if you got there weak and you got food, and you got a neurotoxic pesticide in there and you couldn't find your way home? What if there's a neurotoxic pesticide inside and you can't find your way home?

This is the identity of the multiple intertwined causes of death This is the identity of the multiple intertwined causes of death

More than just bees

All of our beautiful wild species are endangered, including the bumblebees that pollinate tomatoes.

These bees stand in for bees

It's a form of insurance that co-pollinates with bees.

we need all the bees

So what should we do?

What should we do about the disaster we have caused the bees? What should we do about the disaster we have caused the bees?

there is still hope

2 easy and direct ways anyone can help bees 2 easy and direct ways anyone can help bees

Plant bee-friendly flowers, and don't contaminate bee food flowers with pesticides, and don't contaminate bee food flowers with pesticides.

Search the internet for flowers that grow in your area and plant them Search the internet for flowers that grow in your area and plant them

Please plant it in the flower pot at the front door, the lawn in the garden, the street in front of the house, etc.

Plant it in a flower pot at your front door or on the lawn in front of your house, etc. Plant it in a flower pot at your front door, lawn in your garden, etc.

Public Gardens and Community Spaces Invite to Plant in Meadows Public Gardens and Community Spaces Invite to Plant in Meadows

protect the farmland

I need a beautiful variety of flowers that bloom during the spring-fall growing season I need a beautiful variety of flowers that bloom during the spring-autumn growing season I need a beautiful variety of flowers that bloom during the spring-autumn growing season

Planting roadside flowers isn't just for bees, it's for migrating butterflies, birds, and other wildlife.

You have to think back to intercrops to feed the soil and the bees You have to think back to intercrops to feed the soil and the bees You have to think back to intercrops to feed the soil and the bees

So we need to diversify our farms.

We need to stop agricultural food desertification by building hedge fences with flowering crops, and we need to start fixing a dysfunctional food system.

Just planting flowers doesn't seem like much, but just planting flowers doesn't seem like much, but when bees can get nutrients, they can pollinate us, and we can get nutrients through bee pollination.

When bees get access to nutrition, they can better utilize millions of years of immunity and health care. They can better utilize millions of years of immunity and health care.

The beauty of helping bees in this way is that everyone has to act like a society of bees. Everyone has to behave like a society of bees.

So let the small actions of planting flowers and going pesticides be the drivers for big change.

Thank you very much.

(Applause) Chris Anderson: Thank you very much. May I ask you a few questions?

The latest numbers on bee mortality, are there any signs that the decline is coming to a halt?

What is your outlook?

Marla Spivak: Yes

At least in the United States, an average of 30% of all beehives are lost each winter. An average of 30% of all beehives are lost each winter.

About 20 years ago it was down 15% About 20 years ago it was down 15%

It's getting dangerous

CA: It's not 30% a year it's- MS: No it's 30% a year

CA: 30% per year MS: But beekeepers can divide their colonies so they can keep the numbers consistent.

we are at a tipping point

i can't lose anymore

I am so grateful to all the beekeepers across the country, please plant some flowers.

CA: Thank you

(applause)

Eric Barlow: I'm an ecologist, Sean is a physicist, and we study complex networks.

When we met a few years ago, when we met a few years ago, we both spoke at TED about the ecology of war.

Like TEDx, there are thousands of talk media popping up all over the world.

What would those connections and global conversations look like?

Sean will give you a brief overview of our research.

Sean Gorrey: We've collected 24,000 TEDx talks from 147 countries, and we've found the mathematical structure of the underlying ideas behind these talks, and the mathematical structure of the underlying ideas.

I wanted to know how those talks connected with each other.

Of course, that requires a lot of data.

And that amazing data is YouTube. Basically, you can pull public information from YouTube. Basically, you can pull public information from YouTube.

What's more, you can use speech-to-text to extract the entire transcript of the talk, even if you have an accent like mine.

You can take those manuscripts and do amazing things.

Using natural language processing algorithms, the computer reads key ideas line by line.

And then we take the key concepts and shape them into something like the mathematical structure of the idea.

We call it "Meemom"

"Meemoms" are, in a nutshell, mathematics based on an idea, and you can use it to do some really interesting analysis, and that's what I want to show you here.

Each idea has its own memoms, each of which is unique, but of course we borrow ideas from each other, sometimes we steal ideas from each other, and they are certainly interrelated. So, mathematically, we take a memom from one talk and compare it to what we have from other individual talks.

that's the theory

Let's see how it actually works

So here's a footprint of TEDx talks from the past four years, exploding all over the world, from New York all the way to New Zealand.

We analyzed the top 25 percent of these, and looked at the origin of their connections.

Talking about image and beauty, Cameron and Russell connected in Europe.

The conversation began with stories from the Middle East and spread to a raucous conversation between Israel and Palestine.

And then we got a little bit more of a general chat, and a little more of a general chat, like big data, a truly global trajectory.

What we're running into here is the limitations of map representation, but fortunately, computer technology allows us to work with multi-dimensional space.

We use a network representation and apply a physics engine to this, and like talks collide with each other, and dissimilar talks fly away, leaving behind really beautiful images.

What's important here is that each node represents a talk, and similar ideas are connected. All talk scripts are read and created by a machine. The topics that appear are not created from tags or keywords.

It was born out of a network of related ideas.

That's right, I was in too much of a hurry, so he corrected me.

"Education" and "storytelling" are connected to "social media"

Right next to "medicine," of course, is "brain," which is predictable, but relatively close to where those two spaces connect is "video games."

Let me show you the chunks of "environment" that I hold dearest.

I'll try zooming in to see if I can increase the resolution.

So when you go in here and use the physics engine, what comes out is... this one conversation is a bunch of little things.

What this structure tells us is the fractal behavior of the words and words that we use to describe important topics.

Here, we have "food economics" and "local ingredients" at the top, and "greenhouse gases" and "solar power" and "nuclear waste."

Smaller conversations connect with each other with common language and ideas to build a bigger picture of the environment.

Of course, if you zoom in from here, you can see what young people are looking at.

They're looking at "nuclear fusion" and "energy technology."

These are, so to speak, topics that resonate with their conversations about their environment.

When we break it down by gender, women are very aligned with food economics, and there's also hope and optimism.

You can do a lot of interesting things. Let's ask Eric next.

Well, what I'm trying to say here is that you can't get these perspectives just by doing a simple tag search on YouTube.

Let's zoom out from the "environment" to the whole global topic and take a look at the talk.

Normally, when we encounter this amount of information, we take several steps to simplify it.

You may search for: What's the most popular talk right now?

Then you will see several

Talk about Gratitude

Talk about health and nutrition

And of course about porn

last year was about gratitude

What talks are popular this year? and look at

There's a new top nominee about privacy on the internet.

nice, easy to understand

But there are also more creative things that don't come up in these searches.

How do you bring something like this to the surface? How do you bring something like this to the surface?

You can do this by going back to the network structure of ideas.

I've told you that it's the network structure that makes up the topics that pop up here, and I'm going to pick two of these -- let's say cities and genetics -- and see if there's a talk that successfully bridges these disparate fields.

This kind of creative remixing is also a hallmark of innovation.

This is Jessica Green's about the microbial ecology of buildings.

creating a whole new field

We can go back to those two topics and also see which talks are at the center of each topic.

At the center of the urban clump is Mitch Joaquim's ecological city, and at the center of the "genetics" clump is Craig Venter's synthetic biology talk.

These connect many talks within their respective fields.

Let's go to the other side, what about talks that broadly integrate all disciplines?

In terms of ecological diversity,

For example, Steve Pinker's talk about the history of violence is very synthetic.

Of course, there are talks that are very unique and belong in their own place far, far away, which we call the Colleen Flanagan Index.

Did you know, she's an artist, and I asked her what the "end of the world of ideas" is?

They say it's a place that smells like bacon.

i don't understand

Using patterns in these networks, we can find unique talks, ones that integrate well across different disciplines, that are central to a topic, that successfully connect completely disparate disciplines.

If we had only focused on what was popular, we wouldn't have found something like this.

All of these things were found in complex structures and patterns of connectivity.

That's right at all

We've come to live in a very complex world, and we use different algorithms to simplify the world and adapt to it.

These algorithms are useful, but they're limited, so there must be a better way. Complexity is not chaos.

Once we know we have a mathematical structure, we can use that idea, explore the world of ideas, find out what's being said and what's not being said, and live a little more humanly, hopefully a little smarter.

Thank you very much

(applause)

When my dad and I started a company to 3D print human tissues and organs, some people thought we were a little crazy.

But technology has advanced a lot since then, both in our lab and in other labs.

So I started getting inquiries, "If we can grow human tissue, can we also make animal-derived products -- meat, skin, etc.?"

When I first got the offer, I thought they were a little bit crazy, but I soon realized that the idea wasn't crazy at all.

What's crazy is what we're doing now

No doubt, 30 years from now, when you look back and see that we're raising and slaughtering billions of animals to make hamburgers and handbags, you'll see how futile and crazy this is.

Did you know that today we raise 60 billion animals for meat, dairy, eggs and leather?

In a few decades, when the world's population reaches 10 billion, the need for animals will double to 100 billion.

To maintain this population, the planet is under severe strain.

Animals are more than just raw materials

They are alive, and livestock are the world's largest users of land and freshwater, users of land and freshwater, and one of the largest emitters of the greenhouse gases driving climate change.

Furthermore, overcrowded animals can become breeding grounds for disease and abuse and abuse.

We cannot continue down this path and endanger the environment, public health and food safety.

There's another avenue, where animal products are simple aggregates of tissues, and we're currently breeding animals with highly complex tissues to get relatively simple tissues.

What if, instead of complex, sentient animals, we started with cells, the basic units of life that make up tissues?

So that's biofabrication, a way to use the cells themselves to create products of biological origin, tissues and organs.

In the medical field, biofabrication has already been used to create complex structures of body tissue, such as ears, trachea, skin, blood vessels and bones, which have been successfully transplanted into patients' bodies.

Biofabrication, not only in medicine, is a humane, sustainable and scalable industry.

Leather needs to be revisited for starters

We focus on leather because it's used everywhere.

Leather is beautiful and has been part of human history.

Technically, culturing leather is easier than culturing animal products like meat.

It's mostly made up of one type of cell, and it's mostly flat.

With leather, consumers and regulators will be less likely to disagree.

Until biofabrication is better understood, at least in the early stages, wearing exotic materials will be less of a challenge than eating exotic foods, no matter how delicious.

So leather is the product that will popularize the biofabrication industry.

If we succeed here, it could pave the way for other bio-based products, such as meat.

How do you make leather?

To make leather, we start by taking cells from animals using a simple biopsy technique.

The animal can be a cow, a lamb, or something more exotic.

This process is harmless to the animal and doesn't harm the cow Daisy.

Then you isolate the skin cells and grow them in cell culture medium.

Turn millions of cells into billions

And it makes these cells make collagen, just like they do in their natural state.

Collagen is the substance between cells.

A natural substance that binds tissues together

It's essentially extracellular matrix, but it's the basic building block that makes up leather.

The cells and collagen are then spread out to form a thin membrane, which is then layered up like pie crust to form a thicker membrane, and then allowed to mature further.

Ultimately, this multi-layer skin is tanned in a simpler, less chemical process to create leather.

Look at this, it's just finished cultured leather for the first time. Freshly made.

Real leather No animal sacrifices

Because it's made of leather cells, it has all the characteristics of leather, plus it doesn't need to be treated with fur, it doesn't have scratches, it doesn't have insect bites, and there's no place to throw it away.

This leather can be cultivated into purses, handbags and car seats.

It doesn't have to be the distorted shape of a cow or a crocodile Doesn't have to be the distorted shape of a cow or a crocodile

To create this material, we cultivate leather from scratch, so we can manipulate the properties of leather at will.

This leather has only seven layers, and as you can see, it's almost transparent.

This leather has 21 layers, and it's thick enough to block light.

This kind of subtle adjustment was not possible with conventional leather.

The leather is flexible, breathable, durable, resilient, and even textured, so you can adjust it to your liking.

We can not only imitate nature, but in some cases even improve it.

This kind of leather has the properties of traditional leather, but it can be made even better by your imagination.

What does the future hold for animal-derived products?

It doesn't have to be like this, actually this is the state of the art facility right now.

Rather it will be something like this

For thousands of years, we've been using cell culture to create products like wine, beer, and yogurt.

As for food, we've come a long way in culturing it, and now we grow it in beautiful sterile rooms like this one.

Breweries are really nothing but incubators

where the cell culture takes place

Imagine growing leather and meat here instead of brewing beer.

You'll be able to tour this facility, learn how leather and meat are cultivated, see the manufacturing process from start to finish, and even have a tasting.

The facility is clean, open, and educational. At the other end of the spectrum is the hidden, guarded, segregated leather slaughterhouse of today.

Biofabrication would be a natural evolution of manufacturing technology for humans.

It's environmentally friendly, it's efficient, it's humane.

inspire our imagination

Ideas for new materials, new products, and new facilities

We need to move past the era of slaughtering animals for resources and move to a more civilized and evolved era.

Perhaps we're ready for something more "mature," both culturally and technologically.

Thank you for your attention

(applause)

Democracy is definitely in trouble, partly because of the deep dilemma it faces.

Democracy is becoming more and more irrelevant to the problems we face. For example, a global pandemic that transcends borders. HIV crosses borders. Markets and immigration across borders. War and terrorism.

We live in a 21st century world of interdependence. These interdependencies are violent, and when we try to solve them through politics and democracy, we are confronted with political systems designed 400 years ago: systems of judicial systems independent of each other and sovereign states with territorial sovereignty, each claiming they can solve problems for their own people.

Using a 17th-century political system in an international community full of 21st-century problems and challenges.

In that dilemma lies the heart of the problem of democracy.

Like many of you, I've been thinking about how to solve the challenges of this 21st century and the contradictions between the archaic and increasingly dysfunctional political systems of our nations.

My suggestion is to change the subject, stop talking about nations, nations with borders, and start talking about our cities.

I think you'll realize that when I talk about cities, I'm talking about the political institutions that gave rise to civilizations and cultures.

about the birthplace of democracy

We're talking, and we're talking about public spaces where we gather to create democracy and protest against those who take our liberty.

Think of some of the great places: Bastille Square, Zuccotti Park, Tahrir Square, Istanbul's Taksim Square, which was in today's headlines, and yes, Beijing's Tiananmen Square.

(Applause) These are places where we claim to be citizens, participants, human beings with the right to live our own lives.

Cities are not only the oldest institutions, but also the longest-lasting ones.

Think about it, Constantinople and Istanbul are much older than Turkey.

Alexandria is older than Egypt

Rome has much more history than Italy

Cities survive the times

Cities are where we were born, grew up, learned, worked, married, prayed, played, aged and died.

city ​​is home

This is very different from an abstracted state.

We pay our taxes, we vote occasionally, and we watch the man or woman we choose reign, a reign that more or less ignores us.

The town that is our home and the city that we live in is not like this.

Moreover, today more than half of the world's population lives in cities.

About 78% in developed countries

More than three in four people today live in urban areas, in urban facilities, in cities.

So there is activity in the city.

Cities are us. In the ancient world, Aristotle said that man is a political animal.

I'd say I'm an urban animal

We are an urban species with a city at home.

So back to the dilemma I mentioned earlier, if traditional national politics can't run the world, and if it can't address the global challenges we're facing, like climate change, wouldn't it be better for mayors to run the world? We should be engaged in ruling the world for our mayors and the citizens they represent.

When I said that the mayor will rule the world, and when I came up with the phrase, I realized that it already was.

So many cities are already working together, very quietly, behind the scenes through international agencies, networks of cities, to deal with climate change, to deal with security, to deal with immigration, to deal with the difficult and interdependent problems they face.

These have the odd name UCLG United Cities and Local Government (ICLEI) the International Council [for] Local Environmental Issues.

(Council of Municipalities for Sustainability) And there's more Citynet in Asia, City Protocol, a new organization that originated in Barcelona to share good practices from around the world on the web.

And we all have heard of the US Conference of Mayors, the Mexican Conference of Mayors, the European Conference of Mayors.

The mayor is initiating this partnership.

So the question is, how can we create a world where mayors and the citizens they represent play an important role?

To answer that, we need to understand the peculiarities of cities, and why the mayor is so different from the prime minister and the president, because my argument is based on the fact that the mayor and the prime minister are on opposite ends of the political spectrum.

To be prime minister or president, you need an ideology, you need a metanarrative, you need a theory about things, you need a party affiliation.

Independents are generally not elected

the mayor is the exact opposite

The mayor is a practitioner and a solver.

I have to go ahead with their work or I'll get fired.

Philadelphia Mayor Nutter said that here in Philadelphia, the paralysis, the inactionism, the inaction that is happening in Washington, D.C., is unacceptable.

why? Because we have to fill the holes in the roads, we have to keep the trains running, we have to send the children to school.

That's what we do, and there's only practice.

As capitals of the world, Washington, Beijing, and Paris aren't very practical, but mayors have to be practitioners.

They must solve their problems, they must set aside ideology, religion and ethnicity and pull their cities together.

A good example comes decades ago, when Teddy Kolleck, the great mayor of Jerusalem, had his office besieged for a day in the 80's and 90's by all religious leaders, Christian prelates, rabbi imams.

They talked to each other about entering the Holy Land.

We argued on and on, and Kollek listened patiently, and finally said, "Ladies and gentlemen, please refrain from your sermons. I'll fix the sewers."

(Laughter) This is the mayor's job.

They fix sewers and run trains

It doesn't matter how

Boris Johnson of London calls himself an anarchotory

It's a strange word, but it's true in a way.

he's a libertarian and an anarchist

He bikes to work, but at the same time he's kind of conservative.

The mayor of New York, Bloomberg, was a Democrat, and then he became a Republican and an independent, and he said that the party sign was in the way.

Luzhkov, who served as mayor of Moscow for 20 years, worked with Putin in founding United Russia, refused to join the party, and finally lost his job under Putin, who wanted loyal party followers, not under Brezhnev, not under Gorbachev.

Mayors are practitioners and solvers

do the job

But one more thing about the mayor: they're homeboys.

they are in the neighborhood

part of the community and well known

Ed Koch was walking around New York asking, "Are you happy with my job?"

If David Cameron were to ask the same question all over England...you wouldn't want to hear the answer.

Like Putin, so do other heads of state.

Koch was able to ask this question because he was willing to understand with the public.

The mayor is usually someone from the city.

It is quite difficult for immigrants to become mayor.

You can run for Senate from another state, but it's difficult as mayor.

The results: Mayors, city councilors and local officials are more trusted than national officials This is the third characteristic of a mayor.

U.S. Pathetic Numbers: 18% Support for Lawmakers and Their Policies

Even a relatively popular president like Obama has an approval rating of 40, 45, sometimes 50 percent.

The Supreme Court has lost its authority

But when I asked the city councilor, do you trust the mayor?

The numbers go from 70 to 75 to 80 percent, because they're from the community, and they're working with people in the community. It's a true story, like Mayor Booker of Newark, getting out of his car on the way to work and rescuing people from a burning building.

This is not allowed for a head of state, either for security reasons or because they are not in a position to do so.

This difference has to do with the nature of cities, because cities are very multicultural, open, participatory, democratic and cooperative.

When nations meet, for example, China and the United States look like this.

For city to city it would look like this

China and the United States remain trapped in anger, resentment and competition for the world's greatest power, even after their recent big meeting in California.

I was more interested in being number one than anything else.

Cities don't stick to number one

they have to work together and they do

For example, on the issue of climate change

ICLEI and C40, which I mentioned earlier, have been working together long before Copenhagen.

In Copenhagen, 45 years ago, 184 countries came together to explain why they couldn't deal with the deep crisis of climate change, but when the mayor of Copenhagen invited 200 mayors.

They came and stayed, working together across cities and through organizations, finding solutions and still looking for more solutions.

80% of carbon dioxide is emitted by cities, which means cities have to solve, or almost solve, the greenhouse gas problem with or without international agreements.

and put into action

Los Angeles reduced its carbon footprint by 20% by building a port that accounted for 40% of its emissions.

New York is seeing results by renovating older buildings to improve insulation in the winter and prevent cooling leaks in the summer.

The mayor of Bogota, Mox, has implemented a transportation system that saves energy, allowing buses to run as efficiently as the subway, thanks to specialized corridors.

By improving the flow of people, it's improved employment, and it's done a lot to solve the climate problem and many other problems.

Along with the development of skyscrapers, Singapore has developed wonderful public housing and parks, and when you visit there, you'll find plenty of greenery and lots of parks.

Cities should not undertake these efforts on their own.

We work together

They're sharing their efforts, and they're changing society by sharing good practices.

You know bike-sharing, which started in Latin America 20 or 30 years ago.

It's now installed in hundreds of cities around the world.

Efforts like pedestrian zones, congestion fees, and emission limits in California cities allow cities to act even when opaque, stubborn states do not.

what is the basis of this story

We still live politically in a world with borders, a world with walls, and states that refuse to cooperate.

But we know from real life that borders are disappearing day by day. Disease crosses borders, and so do doctors.

This is the reality. Unless we find a way to globalize democracy, or establish a global democracy, we not only increase the risk of failing to address these international problems, but we risk losing democracy itself.

So what should we do?

Let me tell you, the road to global democracy is not in the state.

located in the city

Democracy was born in ancient polis

I believe that I can be reborn in a global cosmopolis.

On our journey from police to cosmopolis, we'll rediscover the power of democracy on a global level.

We can create a union of cities, not a failed international federation, a global federation of cities, not a federation or a non-confederation.

Create a world parliament of mayors

Good idea, right? This is not just my view of the world to come, but cities around the world, in Seoul, South Korea, in Amsterdam, in Hamburg, in New York.

Mayors are coming up with ideas on how to make this world parliament happen.

If there's ever been a citizen without borders, I think it's the citizens of TED.

I am ready to reach out and embrace the new global democracy. We will take back our democracy.

And the only question is are you guys ready?

Thank you very much, fellow citizens

(Applause) Thank you. (Applause)

Let me tell you about a lawsuit I was involved in, the case of a man named Steve Titus.

Titus is the restaurant manager.

I was 31 years old at the time, living in Seattle, Washington.

One night, they enjoyed a meal at a fancy restaurant.

I was stopped by a police officer on my way home.

That evening, a female hitchhiker was raped by a man, and Titus' car resembled the rapist's car, and Titus himself resembled the rapist in some ways.

So the police took a picture of Titus and showed it to the victim, along with other people's pictures, and the victim pointed to the picture of Titus.

I said, "This person is the closest."

Police and prosecutors proceeded to arrest and indict Steve Titus. When Steve Titus was put on trial for rape, the rape victim took the stand and said, "I'm pretty sure it's this guy."

Titus was found guilty

He claims he's innocent, his family screams at the jury, his fiancée breaks down crying, and Titus is sent to prison.

What would you do at this time?

what should I do?

Titus completely loses faith in the judiciary, but he has an idea.

He called a local newspaper and was successful in enlisting the help of an investigative journalist, who led him to the real killer, who eventually confessed to the rape and is believed to have committed 50 rapes in the district.

This should have closed the case and ended it all.

This should have closed the case and ended it all.

Even Titus must have thought that this was the worst year and that his fight against false accusations was finally over.

but it didn't work

Titus was quite outraged.

I lost my job and can't get it back

I even lost my fiancée

His persistent anger could not be endured by his fiancée.

Titus ran out of money and decided to go to court, against the police and others who should be held accountable for his pain.

That's when I started working on this case, and I tried to figure out why the victim's testimony went from, "This is the closest person," to, "This is the person I'm absolutely sure of."

Titus is obsessed with this trial.

I've been thinking about this in my sleep and awake. Only days before he was due to appear in court, Titus woke up in the morning in excruciating pain and died of a stress-induced heart attack.

was 35 years old

I'm a psychoscientist and I was asked to do the Titus case.

Because I've been doing memory research for decades now.

You know, with people you've met on flights -- and it happened to me when you came here -- people you've met on flights -- "What do you do?"

When I say "research on memory," most of the time I say, "I can't remember people's names," or "I have relatives with Alzheimer's or memory problems." But I'm not researching forgetting.

My research is about the opposite, "remembering" -- remembering something that hasn't happened, or remembering it differently than it actually is.

I study false memories

Unfortunately, Steve Titus wasn't the only one who was found guilty of false memories of others.

We've collected information on 300 people who were falsely accused of a project in the United States.

I've spent 10 years, 20 years, 30 years in prison, and now DNA evidence has proven my innocence.

When we analyzed these, we found that three-quarters of the cases were caused by "false memories" of eyewitnesses.

Why are you doing this?

The jury that convicted these innocents, the jury that convicted Titus, and many others equate memory with a recording device.

People record information as it is, then recall it and play it back to answer questions and perceive images.

But decades of psychological research prove otherwise.

our memories are constructed

is also reconfigured

Memory is more like Wikipedia: it can be rewritten by itself, and it can be rewritten by others.

It was in the 1970s that I started studying this memory construction process.

In that experiment, participants were shown scenes of simulated crimes and accidents and asked questions about what they remembered.

In one study, they showed us a simulated accident and asked, How fast was the car going when it hit?

I asked other people, how fast were the cars going when they crashed?

When you asked a question with the word "crash," the witnesses testified that the cars were going faster, and using the word "crash" increased their odds of getting a testimony that said they saw broken glass at the scene of an accident, when in reality the glass wasn't broken.

Another study showed a simulated accident in which a car drove through an intersection with a stop sign. When questioned to suggest that there was a slow-down sign, many witnesses said the intersection had a slow-down sign, not a stop sign.

You might be thinking, this is a video, so it's not a particularly tense situation.

So wouldn't the same mistake be made in a more dire situation?

The answer can be found in a paper we published just a few months ago, where in this study we gave the subjects an unusually stressful experience.

The subjects in this study were men in the U.S. military who were undergoing horrific training to learn what it was like to be held as a prisoner of war.

During this training, soldiers are subjected to aggressive and rigorous interrogation, including physical abuse, for 30 minutes, after which they are instructed to identify the person who interrogated them.

When we gave them information that implied another person, when we gave them information that implied another person, many people interrogated the wrong person, often choosing someone who looked nothing like the real person.

What these studies show is that it's possible to distort, fabricate, or alter other people's memories by misinforming them about what they've experienced.

The real world is full of misinformation

It's not just when we're being asked leading questions that we're exposed to misinformation. Sometimes we're talking to other witnesses and the information is false, which they say consciously or inadvertently. Our memory can also be distorted by what we see in the media reporting what we might be experiencing.

In the 1990s, we began to see even more dangerous memories.

Patients who went into psychotherapy for one problem -- depression, eating disorders, whatever -- would end up with other problems.

Insane memories of horrific abuses, sometimes with Satanic rituals and really bizarre elements.

After completing psychotherapy, one woman believed she had been ritually abused for years, forced to become pregnant, and even had an abortion.

But there were no scars or other physical evidence to support the story.There were no scars or other physical evidence.

When I started investigating these cases, I wondered, where do these strange memories come from?

And I noticed that in most cases, there was a special kind of psychotherapy.

So I wondered if what's going on in this psychotherapy -- imaginative training, dream interpretation, in some cases, hypnosis and exposure to false information -- is causing patients to create strange and improbable memories. Isn't it making you create strange and impossible memories?

So I designed an experiment to test the processes used in this psychotherapy to study how these rich false memories are formed.

In one of the first experiments we did, we used suggestion, a technique inspired by the psychotherapy in question, where we used some kind of suggestion to implant false memories in subjects.

When I was crying because I was scared

I remember being helped by the elderly and being reunited with my family.

As a result, we were able to implant this memory in a quarter of the subjects.

You might be thinking, it's not a very stressful memory.

But we researchers are also planting false memories that are more extraordinary and more stressful -- richer in content.

In a study done in Tennessee, researchers planted a false memory of drowning as a child and being rescued by an EMT.

In a Canadian study, researchers implanted a false memory that was similar to being attacked by a ferocious animal as a child.

In a study done in Italy, researchers planted false memories of witnessing demonic possession as a child.

It's almost like these experiments are traumatizing subjects in the name of science, but I would like to add that our research has been reviewed and approved by research ethics committees. In order to

To my surprise, when I published the results of this research and began to speak out against one particular type of psychotherapy, I encountered a troubling problem: I was being harassed, mostly by repressed memory therapists who saw it as an attack on themselves, but also by the affected patients.

I was sometimes accompanied by an armed guard to give invited talks, and there was even a letter-attack campaign aimed at getting me fired.

But perhaps the worst part was when I asserted the innocence of a woman who had been accused by her adult daughter of being an abuser.

The daughter accused her mother of sexual abuse on the basis of repressed memories.

The daughter who made the accusation actually told her story on camera and made it public.

I was skeptical, so I started researching and eventually found information that convinced me that the mother was innocent.

Shortly after, my daughter, who had accused me of publishing a revealing article about this, filed a lawsuit.

She completely withheld her name, but she sued me for defamation and invasion of privacy.

After almost five years of turmoil and discomfort, it's finally over and I can go back to my job.

But in the process, I found myself caught up in the nasty trend in America, where scientists get sued for just talking about something that's a big controversy in the world.

When I returned to research, the question came to me: If I planted a false memory in someone's mind, would it have any effect?

Will it influence the way you think and act?

The first false memory I tried was that when I was a kid, I got sick from certain foods, like boiled eggs, pickles, strawberry ice cream.

After instilling this false memory, we found that when subjects were invited to eat outside, they ate less of these foods.

False memories don't have to be bad or unpleasant.

Instilling warm memories about healthy foods like asparagus can make you want to eat more asparagus.

What these studies show is that false memories can be implanted and have long-lasting effects on behavior once the memory takes hold.

Planting memories and controlling behavior in this way naturally raises serious ethical questions, such as when to use this psychological technique.

Should we ban the use of

Ethically, therapists shouldn't plant false memories in their patients, even if it benefits them, but that doesn't stop parents from using this technique on their obese children.

When I publicly announced this, I received another outcry.

“Are you going to encourage parents to lie to their children now?”

how's santa (Laughter) So, to put it another way, it's a matter of choice: Is it better to have a child with obesity, diabetes, a shorter lifespan, and all sorts of problems, or a little bit of false memory?

I know which one to choose for my child

But maybe because of my work, I think differently than other people.

For most people, memories are important, they represent our identity and our essence as human beings.

I understand that, and I feel the same way.

But through my work, I know how much fiction is out there.

If there's anything I've learned from studying these issues over the last few decades, it's this: Even if someone says something to you, and they're confident and detailed, and they're emotional, it doesn't mean it's true.

There is no sure way to detect false memories.

It is necessary to prove one by one

This realization has made me more tolerant of my friends and family's day-to-day memory mistakes.I've become more tolerant of my friends and family's day-to-day memory mistakes

This realization might have saved Steve Titus, and false memories might not have robbed him of his future.

But at the same time, it's important to keep in mind, to keep firmly in mind, that memory, like freedom, is fragile.

thank you

Thank you. (Applause) Thank you very much. (Applause)

There's an old saying that goes, "It's very difficult to find a black cat in a dark room, especially if the cat isn't there."

It's a good proverb to explain science and how it works. If you move in a dark room and bump into something, you try to figure out what shape or what it is.

It's different from what we normally think of as science.

Science is usually described as an orderly mechanism for understanding the world, obtaining facts and data, and it is rule-based. Scientists use what is called the scientific method, which has been applied for 14 generations.

I would like to say that it is not true

Yes, there is a scientific method, but here's the reality (Laughter) <Scientific method or idle time> And then <Scientific method or idle time in the dark> (Laughter)

So what's the difference between what I believe to be the pursuit of science and how people perceive it?

The first time I thought about this difference was when I held two positions at Columbia University. I'm a professor and I'm also leading a neuroscience lab that studies how the brain works.

We work through the study of smell, which is about the sense of smell. In the lab, it's a great joy and a fascinating job. Working with graduate students and postdocs to come up with interesting experiments to understand how the sense of smell works and how the brain works is exciting and, frankly, exciting.

But at the same time, it's my job to teach undergraduates about the brain in large classroom courses. The brain is a big subject, and it takes time to prepare.

What is the difference?

The course I taught and still teach is called Cellular and Molecular Neuroscience, Part 1. (Laughter) It's 25 lectures, full of facts, and I use this thick book in my lectures, called "Fundamentals of Neuroscience," written by three well-known neuroscientists.

The book has 1,414 pages and weighs in at seven and a half pounds.

Or put another way, it's the weight of two standard human brains.

(Laughter) By the end of this course, it occurred to me that students might have accepted that they should know everything there is to know about the brain.

that's obviously not true

They also seem to think that scientists collect data, collect facts, and turn it into this thick book.

the reality is different

When I'm at a conference and after a day of conferences is over and we're all at the bar having a beer, I never talk about "what I know" with my peers.

We talk about what we don't know

We talk about what remains to be done, we talk about what's important to do in the lab.

Marie Curie aptly said, "People don't talk about what's done, they only talk about what's left to be done."

I should add that this was in a letter she wrote to her brother upon completing her second bachelor's degree.

By the way, I love this photo of Madame Curie, because I'm pretty sure the light behind her isn't a photo effect. (Laughter) It's real (radiation).

Indeed, her papers are still kept in a lead-lined concrete room in the basement of the French National Library, and as a researcher, if you want to read these notes, you have to wear a full radiation suit, which is pretty scary.

Anyway, I think this is what our course has been missing, what we've been missing in our interactions with society as researchers.

This is what makes it exciting and interesting

This so-called "ignorance" is what it is

was missing

So I thought, if I'm going to lecture about something great, maybe I should teach about ignorance.

So I started giving a lecture on ignorance, and it was very interesting.

All information is widely available on the web

And it's been a very interesting time for me, too, to meet other scientists and have them talk about things they don't know.

Now, I use the word "ignorant," of course, intentionally and a little provocatively, because "ignorant" has a lot of bad connotations, and that's not what I meant.

It's not about being stupid or being immature and indifferent to facts and evidence and data.

The ignorant are clearly uneducated, careless, and ill-informed.

well that's another matter

Another story of ignorance

This ignorance has little negative connotations, and is perceived as the ignorance of humanity as a whole, knowledge that we should know is missing, knowledge that we don't know, knowledge that we can't predict. Perhaps the best description of ignorance is Maxwell, who was the greatest physicist between Newton and Einstein and said, "Full awareness of ignorance is the prelude to all scientific progress."

I think it's a great idea, thoroughly conscious ignorance.

Today we're going to talk about ignorance, but the first thing I want to deal with is how we think about the facts.

Indeed, scientific knowledge is accumulating at an astonishing rate.

We all feel that science is the accumulation of facts. This is called the accumulation model of scientific knowledge, and it seems impregnable and intractable.

you can't know everything

Indeed, the scientific literature is expanding at an astonishing rate.

1.3 million articles were published in 2006

That's probably a 2.5 percent annual growth rate, and it's estimated that 1.5 million articles were published last year.

If you divide that number by one year and convert to minutes, you get three new publications every minute.

In the ten minutes I've been here, I've already missed three documents.

Now I have to go I have to go read

Now, what do we do? The fact is that scientists have a deliberate disregard for this situation.

I don't care in a way

The fact is important, it takes a lot of knowledge to be a scientist, no doubt.

But knowing a lot doesn't make you a scientist.

It takes a lot of knowledge to become a lawyer, whether you're an accountant, an electrician, or a carpenter.

But in science, it's not that much knowledge matters.

More knowledge helps get there from more ignorance

Knowledge is a big subject, but ignorance is an even bigger subject, if you ask me.

And when you think about it that way, it's going to make you think a little bit more, and I'd like to take a look at some popular models of science, and I'd like to ask you to reconsider your point of view.

The most common misconception is that the scientist patiently puts the pieces of the puzzle together to figure out some big system.

This is clearly not the case. First, it's a puzzle, but the manufacturer guarantees that there is some solution.

we have no such guarantee

In the first place, many people do not even know the manufacturer.

(Laughter) The puzzle model doesn't fit.

The next most common model is that scientists peel an onion and try to figure things out.

It's a model that if you peel an onion piece by piece, you'll come to some core truth.

science is not like that

Icebergs are also a popular idea, where you can see only a small portion of the iceberg, but most of it is hidden under it.

But all of these models are about the idea that even a huge mass of facts can eventually be conquered.

If you shave the iceberg, you'll understand. These days, you can just wait and it'll melt, but eventually you'll finish the whole iceberg, right?

The idea of ​​being able to manage

In my view, science actually is a model of a magic well, where no matter how many buckets you scoop out, there's always water left. I especially like the result, and in many ways, the ripples in a pond.

When we think of knowledge as the endless ripples of a pond, we realize that the limits of our ignorance, that is, the limits of our knowledge, grow along with our knowledge.

So knowledge breeds ignorance.

I think the words of Bernard Shaw are very good.

At the banquet celebrating Einstein's achievements, in his toast and words of praise to Einstein, he said, "Science creates more questions than it answers."

In fact, the philosopher Immanuel Kant had already said this, more than 100 years ago, when he realized that question propagation, that every answer raises more questions.

I like the term "question propagation," and I love the idea of ​​question propagation.

The model we want to choose is not to start with ignorance and gather facts and gain knowledge.

actually it's the other way around

What do we do with this knowledge?

What do we do with the facts we collect?

We use it to create better ignorance, so to speak, to get high-quality ignorance.

Why ignorance ranges from low quality to high quality, and it's not uniform.

Scientists are always debating this

sometimes as a joke

Sometimes as a research budget application

In any case, what is controversial -

That's ignorance. It's something we don't know.

Good questions arise from that

So how do questions arise?

I'm going to show you a graph, like the posters you see at various scientific social gatherings.

This graph shows the relationship between what you know and how well you know it.

What you know can range from "nothing" to "everything" How much you know can range from "little" to "a lot"

So let's plot it. Here's the student.

Little knowledge, but wide range of interests

interested in almost anything

Master's students are a little more educated, a little more knowledgeable, but a little less knowledgeable.

And when you get a PhD, you know an astonishing amount of depth, but you know next to nothing. (Laughter) What worries me the most is the extension of the slanted line, because any further down from zero is, of course, negative territory.

I and others are unfortunately in this position

The important thing is that all this can be changed.

This view can be completely changed by simply changing the label on the x-axis.

Instead of how much you know, you can paraphrase it as "what can you ask about?"

Scientists have to know a lot, but they have to know a lot of them, and the goal is not to know a lot or to be a geek.

The purpose of knowing many things is to be able to ask many questions, to be able to ask well-thought-out and interesting questions, because that's what real research is.

Let me give you a simple example of some of these questions.

As a neuroscientist, how do you get to the questions of neuroscience?

because it's not always easy

For example, what does the brain do? Let's think

Our brains help us move around

we walk on two legs

It's easy to understand

After all, almost everyone walks on two legs when they're 10 months old or older, right?

it doesn't get that interesting

So let's choose a slightly more difficult material, shall we?

For example, what about the visual system?

This is it, the visual system.

We love the visual system, we can do so many cool things.

In fact, there are more than 12,000 neuroscientists studying the visual system, from the retina to the visual cortex, trying to go beyond just understanding the visual system, but at the same time trying to understand how the brain works in general terms.

But here's the problem: our technology is pretty good at replicating what the visual system does.

There's TV and movies, there's animation and photography, there's pattern recognition and everything else.

Sometimes it functions differently than our visual system does, but it's a good technology that works in the same way as our visual system does.

However, with more than 100 years of robotics, we still haven't seen a robot that walks on two legs, because it's not easy for a robot to not walk on two legs.

Even after 100 years of research, it is difficult to develop a robot that can walk more than a few steps.

If you try to make it climb a slope, it will fall over.

Even if you change your direction, you will fall down.It's a difficult problem.

So what's the hardest thing for the brain to do?

What should we study?

It may be a bipedal locomotion or a motor system

Let me give you an example from my lab, and it's a particularly poignant question, because we're studying the sense of smell.

This diagram shows five molecules, a kind of chemical symbol.

These are just simple molecules, but when you sniff these molecules through the two little holes in your face, you can definitely feel the rose.

If you have a real rose, you're going to have these molecules with you, but even if you don't have a rose, you'll still remember the molecules.

How are molecules perceived?

In what process will it become possible?

Here's another example: two simple molecules, using different chemical symbols.

I think this one is easier to understand: the gray circles are the carbon atoms, the white ones are the hydrogen atoms, and the red ones are the oxygen atoms.

The only difference between the two molecules is a single carbon atom and two small hydrogen atoms attached to it.

It seems to me that there are two interesting questions here.

First of all, how is it possible that the perception that such a simple, small molecule brings to the brain is clearly a pear or a banana?

Second, how exactly do we distinguish between molecules that differ by a single carbon atom?

This is absolutely amazing. It must be the best chemical detector on the planet.

Have you ever thought about such things? do you have?

There's a quote I like

I like quotes because the dead can be part of the conversation.

And I also think it's important that this conversation has been going on for quite some time.

Now, as the great quantum physicist and philosopher Schrödinger pointed out, we have to accept ignorance without a time limit.

We should learn how to accept this ignorance.

This is a little difficult, it's not easy

In the end, it's a matter of the education system, so let's talk about ignorance and education, because that's where I think we should play.

For starters, let's look at the reality: in the age of Google and Wikipedia, universities and maybe even secondary schools will have to change their business models anyway.

You can't live by selling facts

You can get it with a click of a mouse. You can listen to it on your [Facebook] wall. It's no use hiding all these sources.

what should i do? We should let students experience the boundaries, think outside the limits, outside the facts, beyond the reach of the facts.

What do you do about it?

After all, one of the problems would be testing.

The current education system, which is very efficient, is efficient in its downside.

In second grade, girls and boys, all children are interested in science.

I like to take things apart. I'm a curiosity.

I also like to do research, and I also go to science museums.

I'll play with anything The second graders are like this

they are interested

However, in the second and third years of high school, only a small percentage of people, less than 10 percent, have any interest in science, let alone pursue it as a career.

We have a wonderfully efficient system that puts science out of everyone's minds.

Is this what we want?

EnglishAnd I think my colleague, a teacher, has called it "the anorexic education."

I can imagine

On the one hand, we choke down our throats with vast amounts of facts, and on the other hand, we spit it out in exams. Knowledge is not flesh or blood.

don't keep doing this

What shall we do? I'm going to tell you a principle that geneticists rely on.

Screening always gives you what you want

this is a word of warning

Screening always gives you what you want. What you screen for is also part of the testing methodology.

Yes, we hear a lot about testing and evaluation, but we have to think very carefully about testing.

Evaluation is a different story. There's a lot of talk about evaluation these days in education journals and elsewhere, but at its core, evaluation means feedback and an opportunity for trial and error.

We need to work on this kind of feedback over time.

It's not sorting. I'm going to complain, but when people talk about assessment, when they rate students, when they rate teachers, when they rate schools, when they rate courses, they are really talking about sorting.

That's not a good thing, because screening gives you what you want, which is what we're facing right now.

The test we need now is "What is X?"

It would be even better if the answer was, "I don't know, because no one knows," or "What is your question?"

Or "I'll look into it, ask someone, call someone, I'll try to figure it out."

If you want this kind of behavior, you should rate it that way.

And maybe for an advanced class, "Here's the answer, what's the next question?"

This is my favorite one

I'd like to end with a quote from Yeats, "Education is not about filling a bucket, it's about lighting a fire."

So let's bring matches together

thank you

(Applause) Thank you. (Applause)

Let's start by looking at the history of cognition in the 20th century, because our intelligence changed dramatically during the 20th century.

As you know, cars in 1900 are different from today's cars because of better roads and better technology.

Our intelligence has changed as well.

Humans have gone from being self-interest-focused creatures in facing and analyzing the concrete world to being creatures looking at a very complex world, and this has forced us to develop new habits of thought.

Thinking habits are, for example, assigning categories to concrete worlds, or introducing abstract concepts to give them logical coherence, or taking assumptions seriously, which means thinking about possibilities rather than reality.

The reason I've noticed this dramatic change is that IQ has increased significantly over time, which is quite remarkable.

Not just a little more correct on an IQ test Not just a little more correct on an IQ test

The number of correct answers has gotten much higher in each generation since IQ tests were invented.

In fact, the average IQ of people 100 years ago, by today's standards, was 70.

If you measure modern humans by their standards, the average is 130.

This raises various questions

Were our immediate ancestors on the brink of intellectual disability?

Because 70 is usually the number for intellectual disability.

Or are we all geniuses?

The number 130 is a measure of genius

Now let's discuss a third possibility, which is much clearer than the first two, and an attempt to put this into perspective.

This Martian is an archaeologist, and he's found the scores that humans left in their marksmanship training.

First, if you look at the 1865 one, only one shot per minute hit the center of the target.

Then you look at 1898, and you're hitting about five shots a minute.

And in 1918, 100 hits.

At first, archaeologists were puzzled

They'll say, "Look, this test measures how well humans hold their hands, how sharp their vision is, how well they wield weapons.

How did you manage to improve so much?"

It's obvious to us

If the Martian had seen the battlefield, he would have seen that during the Civil War, he only had muskets, and during the Spanish-American War, he had repeating rifles, and by World War I, he had machine guns.

In other words, it's a matter of equipment that the average soldier deals with. It's not that the soldiers have better eyesight or better hand stability.

Now let's imagine the intellectual abilities that have developed over the last hundred years or so, and here we have Alexander Luria to help us.

Luria observed people, not long before the rise of science in the world, and Luria noticed people's resistance to concrete classifications of the world.

People liked to use things in small pieces People liked to use things in small pieces

We also found that they were reluctant to reason on assumptions and ponder possibilities, and we also found that they were not very good at discussing abstract phenomena and reasoning about them.

Here are some of Luria's interviews.

The opponent is the power in rural Russia The opponent is the power in rural Russia

In 1900, people only had four years of schooling.

Luria asked, "What do crows and fish have in common?"

The answer is "Nothing

You can eat fish, but you can't eat crows

A crow pecks at a fish

A fish can do nothing to a crow."

When Luria asked, "But aren't they both animals?"

The answer is "of course not"

"One is a fish

The other is a bird."

What he has in mind is basically how he relates specifically to the object.

Luria changed the subject and asked, "There are no camels in Germany.

Hamburg is a city in Germany

So are there camels in Hamburg? ”

The answer is, "Well, if it's a big city, there's probably a camel."

"What do I mean?" asked Luria.

I replied, "Maybe it's a small village, too small for a camel."

So he could only think of this as a concrete problem, and he was so used to having camels in his village that he couldn't use the assumptions to approach the problem as if there weren't any camels in Germany.

In the third interview, I asked him about the North Pole.

"There's always snow in the North Pole

Where there is always snow, bears are white

So what color are arctic bears? ”

The answer was, "Those things are decided by the testimony.

If a wise man from the North Pole says bears are white, you might believe me, but every bear I've ever seen has been brown."

You see, this person refuses to go beyond the framework of the concrete world, and sees the problem in terms of everyday experience. "What color are bears?"

I don't want to go too deep

Someone once asked Luria, "How can you solve a problem that doesn't exist?

The problem is just unrealistic

There's nothing you can do about it."

So what are the three things we've been talking about -- categorizing, using logic to deal with abstractions, and taking assumptions seriously -- and what impact do these things have on the real world?

Here are some examples

First, almost everyone today graduates from high school.

Four years of education has gone from eight to 12 years of formal education, and 52 percent of Americans will go through some form of tertiary education.

It's not just that the amount of education has increased, but a large portion of that education is scientific, and taxonomy is essential to addressing science.

In order to tackle science, it is also essential to present hypotheses.

Logic must also be consistent

Even elementary school content is changing

In 1910, if you look at tests for 14-year-olds in Ohio, the questions were all about concrete information of social value.

For example, asking the names of the capitals of 44 or 45 states at the time.

If you look at the 1990 test in the same state of Ohio, the problems are all abstract.

For example, it asks why the largest city in a state is less likely to be the capital.

It makes me think that the state legislatures are local, and they don't like big cities, so state capitals should be in local cities rather than big cities.

Albany than New York

From Philadelphia to Harrisburg

is the condition

The purpose of education has changed.

The goal of education today is the ability to take assumptions seriously and use abstractions to connect them logically.

what about employment

In 1900, 3% of Americans had intellectually demanding jobs.

At just 3%, lawyers, doctors and teachers could afford it.

Today, 35 percent of Americans have jobs that require intellectual ability, including not only professional positions such as lawyers, doctors, scientists, and lecturers, but also numerous semi-professional positions such as engineers and programmers.

Intellectual ability is now in demand in all occupations.

You have to be very flexible intellectually to meet the conditions of employment in modern society You have to be very flexible intellectually

It's not just that more people are working in intellectual professions.

the quality of work has improved

In 1900, a doctor only had to have a few tricks up his sleeve, whereas today, both practitioners and specialists have years of scientific training.

A banker in 1900 could get by if he was a good accountant and could spot local residents who were paying off their loans.

Morally aside, those money-changers who threw the world economy into turmoil were pretty smart.

Far better than the bankers of 1900.

I needed to look at the housing market forecast, I needed to look at the housing market forecast.

We also had to come up with CDO squared, using multiple collateralized debt obligations to consolidate our liabilities and make them look like lucrative assets.

We were also asked to create the basis for getting the highest rating. We were also asked to create the basis for getting the highest rating.

And, of course, we had to get people to put their money into what they call "assets," which are actually quite volatile.

Or be a farmer

The farmers of today are very different from the farmers of 1900.

So it's not just the proliferation of intellectually demanding occupations.

The quality of our work has improved, and our jobs, like lawyers and doctors, have become more intellectually demanding.

But I'm talking about education and employment.

Some of the habits of thought that we've developed over the course of the 20th century are having an impact in unexpected areas.

I specialize in moral philosophy

Psychology is just a hobby, and my main interest is in moral debates.

Now, since the 20th century, developed countries like the United States have had more moral debates, as people began to take assumptions seriously, to embrace the notion of universality, and to seek logical relationships.

In 1955, I moved back home from college, right around the time of Dr. King, when a lot of people were going back home and arguing with their parents and grandparents.

My father was born in 1885 and was somewhat racist.

He was an Irish man who hated English people and had no particular interest in anything else.

(Laughter) But it was clear that black people had a sense of inferiority.

One day, I asked my parents and grandparents, "How would you feel if you woke up tomorrow morning and were black?"

I was told, "Even an idiot should say a break."

I woke up in the morning and I was black— (Laughter) Who ever did that?

In other words, they were entrenched in specific norms and ways of thinking that they had inherited.

They didn't take assumptions seriously, and it's very difficult to start a moral discussion without assumptions.

I think the discussion starts with this: Imagine you're in Iran, and imagine that your innocent relatives are being bombed.

how do you feel?

If older generations say, "Our government protects our people, and it's their government's responsibility to protect them," they're not willing to take the assumption seriously.

Another example is a Muslim father who feels compelled to kill his daughter when she is raped.

Think of your customs and morals as unchanging, handed down from generation to generation, and cannot be manipulated by logic.

The old morality is inherited

In today's world, you would ask, What if you were swooned and raped by a man?

Is it okay to be killed?

A father would say, "You can't-

It's not written in the Qur'an, and it doesn't fit the principle."

Modern people give universality to principles

State the principle as an abstract concept and use logic there

For example, if you have the principle that a man should not suffer unless he sins, you need an exception to reject black people.

I have to say, "It's strange that people suffer just because they have dark skin."

If you decide that being black is some kind of blemish,

We should be able to prove it. It's crazy that all black people are inferior, because Augustine is black and Thomas Sowell is black.

This is how the moral debate begins, because moral principles are not concrete entities.

Because I see it as something universal, something that can be given consistency by logic.

Now, how did an IQ test tell this story?

That's what got me started on tracing the history of knowledge.

If you look at IQ tests, you'll see that certain areas have grown significantly.

There's something about the Wechsler intelligence test about similarity, which measures your ability to classify, and we're making huge strides in this area.

Another part of the IQ test measures your ability to apply logic to abstract concepts.

Some of you may have taken the Raven Progressive Matrix Test, which measures your capacity for analogy.

By 1900, people could make a simple analogy.

For example, "Cats are like wildcats, but

what do dogs look like ”

It's like "wolf"

By 1960, people were taking the Raven test to a higher level.

If you ask, "When two quadrilaterals are followed by a triangle -- what follows two circles?"

they were answered "half circle"

Since a triangle is half a square, we derived a semicircle, which is half a circle.

In 2010, if you ask, "When two circles are followed by a half-circle -- what are two 16s followed by?" college graduates will answer "8," because half of 16 is an 8.

What I mean by that is that they are far from the concrete world, and they are not deluded by the presence of symbols in their questions.

I have to say something very disappointing here.

We haven't made progress in all areas.

One of our favorite ways to deal with our modern sophistication is the political tool. Sadly, we have morality.

As you know, young people in America don't read history and literature anymore, they don't read information about foreign countries, they don't care about history.

I'm living in the foam called now

I can't tell the difference between the Korean War and the Vietnam War.

I don't know which countries the United States was allied with in World War II.

How different would America be if every American knew that this was the fifth time that a Western military had gone to Afghanistan and intervened politically, that it was the fifth time that a Western military had gone to Afghanistan, and that it knew a little bit about what had happened in the last four times, specifically.

(Laughter) I mean, it barely retreated and it didn't make sense.

Or how different things would be if a majority of the American people knew that America lied in four of the last six wars.

Spain didn't sink the battleship Maine, Lusitania wasn't just a passenger ship, it was loaded with weapons and ammunition, the North Vietnamese navy didn't attack the 7th Fleet, and Hussein hated Al-Qaeda and had nothing to do with it.

Now, let's talk a little less pessimistically.

The 20th century showed that ordinary people were capable of accumulating vast amounts of intellectual power. The upper class believed that ordinary people could not.

When Sir Curzon once saw people bathing in the North Sea, he said, "Why didn't anyone tell me that even the lowly are white?"

I bet you were very surprised

Rudyard Kipling was half right, as he said, "A colonel's wife and a lowly woman are all the same when you peel the skin off."

(applause)

I'm going to talk about trust, but let's start with what people generally think about trust.

Something that has been said like a cliché in a very mundane world

i think there are three

The first is the assertion, "There is a huge loss of trust," which is what so many people believe.

The second is the goal "I should trust the other person more"

And the third is the challenge: we have to rebuild trust.

I think all of these claims, goals, and challenges are irrelevant.

So today, I'd like to share with you a different set of arguments, goals, and challenges that can help us better understand trust.

First of all, the claim, why do you think it's losing credibility?

Based on my own evidence, I honestly don't know.

I'm sure there are some activities and groups that have lost credibility, but there will be others that have gained more credibility, and there will be others that have gained more credibility.

I don't know the overview

Of course, you can look at the polls, which are probably the basis for the claim that trust is eroding.

If you actually look at the polls over time, there isn't much evidence of that.

So here's what happened: People who weren't trusted 20 years ago, journalists, politicians, who weren't trusted 20 years ago, still aren't trusted today.

Conversely, people who were highly trusted 20 years ago are still highly trusted today, like judges and nurses.

Others are somewhere in between, by the way, the average person out there is right in the middle.

But is this good evidence?

Opinion polls tell public opinion

nothing more

So the polls tell you things like, "Can you trust politicians? Can you trust teachers?"

It's about what kind of overall response you get when you ask a certain question.

Suppose you were asked, "Can you trust the greengrocer?"

“Can you trust the fishmonger?”

“Can you trust your elementary school teacher?”

If you ask me that, I'm sure you'll answer, "For what?"

I think that's the real reaction.

And even if you knew what trust you were asking, wouldn't you say, "It depends on the person."

that's the most reasonable answer

So in real life, we trust people on a case-by-case basis.

You don't think that you always trust a certain job title, or a job category, or a certain type of person, to be the same amount of trust in every situation.

For example, I have an elementary school teacher who I have absolute confidence in teaching preschoolers to read, and I don't trust that teacher to drive the school bus.

'Cause she's probably not a good driver

Friends who are good talkers trust you to keep the conversation going, but you probably don't trust them to keep secrets.

it's simple

With all this evidence that the degree of trust we place in our everyday lives is contingent, why is it that when we think about trust in more abstract terms, it doesn't make sense?

I think polls are a really bad way to measure actual trust.

Now what about goals?

Our goal is to earn more trust

Frankly, this is a ridiculous goal.

I wouldn't aim for something like this

Aim to trust those you can trust more and trust those you don't trust less.

Honestly, I try not to trust untrustworthy people.

For example, have you ever met someone like this? Someone who entrusted their property to Mr. Madoff, a famous fraudster, and was literally made-off (stolen).

Having a lot of trust isn't a smart goal in life.

Trust wisely and trust wisely is a good goal.

You could also put it this way: the number one thing to think about is not "I can trust you," but "Is it trustworthy?"

It's about how trustworthy a person is at a certain point.It's a question of how trustworthy a person is at a certain point.

To determine that, we need to check three things:

competent, honest, dependable

If the person is capable of doing certain things, and if he or she is capable of doing certain things, and is dependable and honest, then you can trust them, and you can trust them enough.

But on the other hand, an unreliable person is not trustworthy.

I have friends who are competent and honest, but I can't ask them to mail me letters.

I'm so confident that I can do something I'm so confident that I can do something

Luckily, I'm competent and reliable, but I don't have many friends who are outright liars.

(Laughter) Even if there were, they wouldn't have noticed.

But in the end, that's what matters: trustworthiness rather than trust.

trust is a reaction to

You have to decide if it's trustworthy

this is difficult

Over the past few decades, every organization, every professional, every official, has been held accountable, supposedly to determine whether or not they are trustworthy.

often had the opposite effect

It's not doing its job

When I spoke with one midwife, she said, "It takes longer to do the paperwork than to pick up the baby."

This is a ubiquitous problem in societies and organizations, where the accountability system for ensuring and demonstrating credibility is working backwards, backwards.

People who do difficult jobs like midwives are unable to do their jobs because of boring paperwork.

there are many examples

Therefore the goals will be different.

If anything, the goal should be to be "trustworthy." Trying to be trustworthy, trying to convey that trustworthiness, and judging whether others, government officials, and politicians are trustworthy will change as goals.

This isn't easy, it's a matter of judgment, and it's more than simple reactions and attitudes.

Now the third problem is

And when you set the task of rebuilding trust as a task, it's backtracking again.

You and I will rebuild trust

Well you can do it for yourself

You can improve your credibility

Two people can increase their credibility together.

But trust is still unique because you get it from people.

You can't reconstruct what you get from people.

You have to give the other person a solid foundation to earn their trust.

So you have to be trustworthy yourself

Because, of course, it's usually impossible to fool everyone all the time.

But I need some useful proof that you're trustworthy.

what should i do

In fact, every day, everywhere, ordinary people, officials, and organizations are doing it very effectively.

Give a simple business example

The store where I buy my socks allows me to return them without giving a reason.

When I return the item, they will either refund me or exchange it for socks in the color I wanted.

That's great. It's a store you can trust because it gives me an edge.

here is an important lesson

Giving the other person an edge is a sign that you're trustworthy and confident in what you say.

After all, what we should aim for is not hard to understand.

We should aim for relationships in which we are both trustworthy, and in which we can determine when and how we can trust each other.

The point is, it's not about trust -- much less the false credibility that pops up in the polls -- it's about being trustworthy.

thank you

(applause)

Since ancient times, words have power, spells exist, and if cast correctly, "Whoa!" An avalanche will occur, wiping out the hobbits.

This idea is very attractive, because we are as lazy as the apprentice wizards and the best programmers in the world.

This idea has great traction

I like the idea that when we speak, mere information can cause physics in the real world to help us.

In this situation, there are computers and robots that can be programmed, so you can imagine it.

How many people are following my story?

please give me your right hand yes

How many people are not following you?

please give me your left hand yes

That's great. It seems like it was too easy.

you have a very unstable computer

The bottom line is that this is a slightly different kind of spell.

This is a computer program made up of 0's and 1's.

You can do this on your computer

The important thing is that you can write it in a high-level language.

A computer magician can write

This is compiled into 0's and 1's and pronounced by the computer.

The strength of computers is that they can compile high-level languages.

Actually, you don't need a computer to perform the spell.

In fact, at the molecular level, if you encode the information, the magic, the program as the molecule itself, the physical phenomenon actually reads that information directly and runs the program.

That's what happens in proteins.

If you convert this amino acid sequence into atoms, these little letters will bond together.

It folds into a three-dimensional shape and becomes a nanomachine that actually cuts DNA.

And interestingly, if you change the array, the three-dimensional folding structure changes.

This time, the DNA stapler was completed.

This is what we're aiming for in molecular programming.

But we don't understand protein machine language, we don't have a compiler.

So I joined a group trying to create molecular spells using DNA.

The reason we use DNA is because it's cheap, it's easy to work with, and it's well-understood, and we know so much about DNA that we think we can actually create a molecular compiler and a programming language for DNA.

So I think it is possible

So my first question was, "How do we create arbitrary shapes out of DNA?"

So I decided to use something like DNA origami, where you can fold long strands of DNA into whatever shape you want.

Here is an example

I actually spent about a year at home in my underwear, coding like Linus in the last picture.

This program reads the shape and displays 250 DNA sequences.

This short sequence of DNA folds into the desired shape to make a long strand of DNA.

So you send an email with this sequence to a vendor, and they cast a spell on their DNA synthesizer, which is about the size of a photocopier, and what happens is,

I'm going to read every letter in your email and replace each letter of DNA, A, T, C and G, with a compound made up of 30 atoms.

I'll arrange this correctly and send it back to you by FedEx, in a little tube.

You can get something with about 250 of these

I'm going to mix this up, add a little bit of electrolyte, and then I'm going to add the long strands of DNA extracted from the virus I was talking about earlier.

Then heat this until it boils

Then, when it cools down to room temperature, these short strands of DNA do the following: Each binds to one point on the longer strand, and then to another point on the other, bringing the two points of the long strand closer together.

So a short DNA strand as short as 250 versus a long DNA strand

It has the ability to fold into roughly any desired shape.

We actually do this work in a test tube.

There are about 50 billion such molecules in one drop of solution.

It can also be attached to any surface and viewed under a microscope.

What's amazing is that if you change the sequence of a long piece of DNA and the spell, you can change the shape you get, and you can make molecules like this.

See, he wants to hang out with his friends, right?

these are really well done

If you change the spell and the DNA sequence again, you'll have a clean triangle of 130 nanometers.

Do it again and you'll get an arbitrary shape

You can draw the shapes of North America and South America on a rectangle, or you can spell "DNA".

This is DNA origami This is only one way

There are many ways to cast spells with DNA molecules.

Our ultimate goal is to establish a self-associating program

We want to create technical works that contribute to the world.

I want to learn how we can create life like humans, whales and trees.

So if we can reach that level of complexity and improve our molecular programming ability, it could be real magic.

Thank you for your attention

(applause)

I feel like I've lived two very different lives for a long time in my life.

The life that everyone sees and the life that only you know

In the life they see, I'm their friend, son, brother, comedian, and teen.

this is what everyone sees

If you ask any of my friends and family, I'm sure you'll get an answer like that.

In fact, that's the big part of me, and that's who I am.

But if I asked myself about myself, I think I would say the same thing.

I'm not lying, but I can't say I'm telling the complete truth either, because the truth is, that's who everyone understands me.

Only I know who I am The real me is a young man struggling with depression

I've had depression for 6 years, and it's happening every day.

Now, if you've never had depression before, or if you don't know what it is, you may be surprised by my confession, probably because of a fairly generalized misperception: depression is when things go wrong in your life, when you leave your girlfriend, when you lose someone you love, when you don't get the job you wanted, when you just feel sad.

But it's only natural to be unhappy and sad

it's a natural human emotion

Real depression is not being sad when things go wrong in your life.

Being sad when everything is going well is real depression.

This is the depression I suffer from

To be honest, it took a lot of courage to stand here and talk.

Talking about depression, I think it's a difficult topic for everyone to talk about, and that's why nobody wants to talk about it.

Depression is off topic, but we need to discuss it.

because it's a big problem right now

But you don't see it on social media, do you?

i don't see it on facebook or twitter

It's not on the news, it's not happy, it's not fun, it's a dark topic

I don't know how serious it is because it's not mentioned anywhere.

When you hear this, you understand the gravity and the seriousness. Every 30 seconds, somewhere in the world, every 30 seconds, people are killing themselves because of depression.

As a society, we tend to look at problems like this and say, "So what?"

"So what?" "That's your problem."

"It's their problem."

They say they're sad, they say they're sympathetic, but they also say, "So what?"

Two years ago, depression was my problem. I sat on the edge of my bed, where I'd sat a million times before, and thought of suicide.

I had suicidal thoughts, but if you looked at my life on the surface, you wouldn't have imagined it.

I was the captain of the basketball team and the best student of the year in drama, theater and Japanese.

You wouldn't know depression on the surface, you wouldn't believe you had suicidal thoughts

But no, that night, on my bed, with a pill bottle by my side and a pen and paper in my hand, I was thinking about taking my own life.

I was on the brink of death

But I stopped. I'm one of the lucky people who looked down from the roof of a building but didn't jump. One of the lucky survivors.

I survived, so here I am, this is my life, in a nutshell, I'm depressed.

I suffer from depression, so for a long time -- I've lived two very different lives, each other's life, always afraid of the other.

I was afraid that people would find out who I really was I wasn't the perfect, popular high school student that everyone thought I was Beneath my smile there was always pain Beneath my lightness there was a darker side Beneath my bloated personality lurked an even greater pain

Some people fear that girls won't like them

Some people are afraid of sharks, some people are afraid of death

For most of my life, I was afraid of myself.

My true self, my honesty, my weakness, I was afraid of that fear - it drove me into a corner With nowhere to go, I thought there was only one way out I was thinking about this one day after day

Every day, if I'm being honest, I'm still thinking about it. This is the disease, the one I'm fighting, and the depression.

It's not like a disease that once you get it you'll never get it again

It's a disease that coexists and you have to live in it

A roommate I can't get rid of, a voice I can't ignore

It's an inescapable feeling, and the scariest thing is that after a while -- not feeling anything, it becomes the norm -- and most of all, the real fear is not your own inner battle.

The bad image of depression in other people's minds, the shame and guilt, the accusatory look on a friend's face, the whisper in the hallway that he's weak, the call that he's crazy.

This prevents you from asking for help

This is the reason why we hold back and hide

A bad image is what makes you hide your illness. You can't get out of bed every day, and no matter how much you try to fill it, your life feels empty and you hide it because of the fact that depression is a social stigma.

If you don't think so, can you write on Facebook that you can't get out of bed because your back hurts, but because you're depressed and it's hard to get out of bed every morning?

This is a bad image. Unfortunately, in our world, if you break your arm, you get a message in your cast, but if you confess you're depressed, everyone runs away.

this is a bad image

We're very tolerant of physical illness, but when it comes to mental illness, we're completely ignorant.

Pure ignorance is what makes the world unacceptable to depression and mental illness.

It seems to me that this is an ironic situation, because depression is one of the most diagnosed diseases in the world, yet it is rarely discussed.

Depression gets pushed into the corner, just pretending not to know and waiting for it to heal itself.

This disease is not cured, it will not be cured, it's just what they want, they're just procrastinating without a plan, and we can't procrastinate on such a serious problem.

The first step to solving any problem is acknowledging that there is a problem

You haven't done it yet, can you?

i don't know how to solve

I wish I knew, but I don't know... but that's why I think we have to start here.

I'll start with all of you, the people who are suffering, the people in the shadows who have to start.

let's stand up and break the silence

Let's be brave for what we believe in, because if there's one thing I've learned, the biggest one is, don't build a world that doesn't understand other people.

We need a world that teaches us to accept ourselves, we need a world that teaches us to be ourselves.

Whether it's depression or something else, you know how it feels to be hurt

I know what it's like to have a broken heart, and I know how important healing is.

But even though depression is a deep wound in modern society, we're content to turn a blind eye to it by putting a Band-Aid on it.

I have a problem, but that's okay

It's okay if you're depressed, if you're suffering, just know it's okay

You're sick, but you're not weak. It's a problem, but you're not yourself. Because if you can get past the fear of others, the ridicule, the criticism, the bad image, you'll understand what depression is.

Of course, I got sick and fell to the bottom of the valley, but it was to show me the summit, and I was driven into darkness, but I needed it to see the light.

The hardest thing in my 19 years of life, this suffering has given me a new perspective.

The world I believe in is that being yang is not ignoring yin

We believe that rather than ignoring adversity, we should be judged on our ability to overcome it.

I believe in a world where if you look someone in the eye and say, "I'm going through hell," they look back and say, "So do I."

We are human, we writhe, we suffer, we bleed and weep. If you think that true strength means never showing weakness, I want to tell you that you're wrong.

you're wrong because it's the opposite

we are human we have a problem

No one is perfect and that's okay

Let's overcome ignorance Let's end intolerance Let's put an end to stigma And let's break silence Let's put an end to taboos Let's see the truth and start talking Because the only solution to the problems we're fighting alone is to fight together.

i believe i can

i believe so thank you all

A dream come true Thank you (Applause) Thank you (Applause)

Today, I'd like to talk to you about a question that bothered me while I was writing my new book, and it happened 3,000 years ago, when the kingdom of Israel was just beginning.

It happened in a place called Shephelah, in what is now Israel.

And the reason I was worried was because I realized that I didn't really understand what I thought I knew.

There were mountains along the eastern border of ancient Palestine.

Same as Israel today

And the major ancient cities of the region—Jerusalem, Bethlehem, Hebron—were all in this mountain range.

And on the coastal plain facing the Mediterranean Sea lies today's Tel Aviv.

The area between this range and the coastal plain was called the Shephelah. A ridge and a valley run east and west through the Shephelah, leading out of the coastal plain into the mountains.

If you've been to Israel, you know it's the most beautiful place.

It's beautiful, oak forests, wheat fields and vineyards

But more than that, the area was historically of strategic importance, threatening the Israelites if a hostile army moved from the coastal plains through it and into the mountains.

3,000 years ago, this is exactly what happened.

The greatest enemies of the kingdom of Israel were the Philistines, who lived on the coastal plains.

They are a race of seafarers whose homeland is Crete.

They began marching through the Shephelah valley to the mountains, intending to take the highlands into their hands and divide the kingdom in two at Bethlehem.

The kingdom of Israel, led by King Saul, saw this trend, and he led his army down the mountain to meet the Philistine army in the Valley of Elah, one of the most beautiful valleys in the Shephelah.

The Israelites encamped on the North Peak, and the Philistines encamped along the South Peak, and they stood face to face for weeks.

Both sides are unable to attack. To attack, they must descend mountains, cross valleys, and climb onto the other side, exposing themselves to the enemy.

In order to overcome this situation, the Philistines sent their strongest soldiers to the bottom of the valley.The soldiers called out, "Send your strongest soldiers down. Let's settle this together."

This is the custom of the ancient battlefields in single combat—

It was a way to end the conflict without a bloody showdown.

The Philistines sent a mighty giant

2m or more

He was clad in bronze armor and wielded swords and spears of various sizes.

Out of fear, no one on the Israeli side responded.

It's like going to suicide, you have no chance

But finally someone stepped forward, a young shepherd boy, and said to King Saul, "Let's fight that Philistine."

The king said, "It will not be a match

You are young and your opponent is a seasoned soldier."

But the shepherd won't give up, "For years I have protected my sheep from lions and wolves."

The king has no choice, no one else will come forward.

"Then let's go."

Then he turned to the boy and said, "Put on this wardrobe that shouldn't be as it is."

I tried to give him my armor, but the shepherd refused.

"I can't wear something like this."

The Bible says, "If I hadn't tried it, I wouldn't have been able to wear it."

Instead, he picked up five stones from the ground, put them in the shepherd's shoulder bag, and began to descend the mountain to the giant.

When the giant saw it, he cried out, "Come on, birds of the sky, let the beasts of the field feed you."

That's how I mocked my opponent who was coming towards me.

As the shepherd approached, the giant saw his opponent's weapon.

opponent had

No weapons, just a shepherd's staff. Feeling insulted, the giant said, "You come at me with your staff, am I a dog?"

Then the boy took a stone from his sack, put it in a slingshot, and threw it around, and the stone struck the giant between the eyebrows, right here in his weak spot.Dead or unconscious, he fell to the ground.

Of course, the giant's name was Goliath, and the shepherd boy's name was David, and the reason this story stuck with me while I was writing the book was because I realized that my previous understanding of the story was wrong.

David doesn't seem to have a chance

In fact, the term "David and Goliath" is used as an epithet for upset, an unexpected victory.

Why did you think David had no chance of winning?

I'm a kid, so I'm out of luck A little boy and a mighty Goliath

And the odds are that Goliath is an experienced warrior and David is just a shepherd.

Most notably, Goliath was armed with state-of-the-art weapons: gleaming armor, a sword, and a javelin large and small, while David had nothing more than a slingshot.

Let's start with this: "All David had was a slingshot." Actually, this is the first misconception.

There were three types of soldiers on the ancient battlefield.

Cavalry fights on horses and chariots

Infantry This is a foot soldier armed with a sword and a shield and wearing some kind of armor. A foot soldier wearing some kind of armor.

And it's made up of artillery, archers, and, more importantly, slingers.

A slinger has a leather pouch that has two long strings attached to it, and you put a rock or a lead ball into this pouch and you rotate it like this and you release one of the strings and you throw it at the target.

This is David's weapon, and the important thing is that slinging is different from pachinko.

not a child's toy

It's actually a very powerful weapon.

When David was spinning his sling like this, I think he was probably spinning it about six or seven times a second, and when the stone was released it had a very high speed, probably 35 meters per second.

Faster than a baseball thrown by a strong-armed pitcher.

And what's more, the rocks in the Valley of Elah aren't just rocks, they're barium sulfate -- twice as dense as ordinary rocks.

If you do the math, a stone from David's sling has the stopping power of a .45 pistol.

It's a very powerful weapon.

It's accuracy is so great that historical records show that an experienced slinger could seriously injure or even kill an enemy from 200 meters away.

We also know from medieval tapestries that a slinger can drop birds in flight.

it's amazingly accurate

When David faced Goliath, he wasn't even 200 meters away from him. When he threw at Goliath, who was much closer, David was aiming exactly at Goliath's weak spot between his eyebrows.

If you look back at historical battles, and it's happened so often, the slingers overwhelmed the infantry on many levels.

Now what about Goliath? Heavy infantry. Of course, in single combat, we were going to fight with heavy infantry.

In "Come to me, birds of the sky, let me be prey to the beasts of the field," - "Come to me," is the point.

What's about to begin is this kind of close-quarters combat involving swords.

King Saul thought the same.

When David said, "I want to fight Goliath," the king tried to give him his armor, and if he said, "I want to fight Goliath," of course it would be "close combat," and "infantry against infantry."

But David never thought of that.

I don't fight like that Why?

Because he was a shepherd, his first job was to sling his flock of sheep away from lions and wolves.

that is his strength

This shepherd was armed with a familiar and powerful weapon against the slow-moving giant. With 50kg of armor, he was slow to move, and his heavy weapons are only effective in hand-to-hand combat.

Goliath was easy prey, and there was no chance of winning.

So why did David think he couldn't win? Are you going to keep saying it's an upset?

There is another important factor

Not only did we misunderstand David and his choice of weapon.

He also had a big misunderstanding about Goliath.

Goliath Was Not What He Seemed

There are many clues hidden in the texts of the Bible, and when you think about it, there are some things that don't make sense to you.

The Bible says that Goliath was guided by followers

It's funny, isn't it?

The strongest warrior who demands single combat from the Israeli army

Why should it, perhaps, be led by a child? I'm about to head to the battlefield

What's more, the Bible describes how Goliath was slow-moving, and that's also a funny way to describe the greatest warrior of our time.

The weirdest part is until Goliath reacts to David's appearance.

David came down the mountain, but he wasn't equipped for close quarters combat.

No matter how you look at it, it doesn't look like "Let's go directly to each other."

I don't even have a sword

Why didn't Goliath react?

It's like you don't know what's going on

Then he turns to David and makes these strange remarks, "You're coming at me with a cane, am I a dog?"

Canes? David has only one stick

This has led to a great deal of thought in the medical community, that there was something fundamentally wrong with Goliath, trying to figure out what was clearly mysterious.

many papers have been written

First, in 1960, in the Indiana Medical Journal, a number of observations sprang from that, starting with the mystery of Goliath's height.

Goliath stood above his peers from the shoulders up, and when you deviate that much from the norm, there's usually an explanation for it.

The most common form of gigantism, called acromegaly, is caused by a benign tumor in the pituitary gland that causes too much growth hormone to be produced.

Historically, many famous giants have acromegaly.

The tallest man in history is Robert Wadlow, who died at the age of 24 and was still growing at 272 cm.

it was acromegaly

Remember the wrestler Andre the Giant?

It's famous, it was acromegaly.

It is said that Abraham Lincoln may have been the same.

It's the disease that's first suspected in abnormally tall people.

Acromegaly also has other symptoms, which are primarily visual.

As pituitary tumors grow, they often press on the optic nerves in the brain, resulting in double vision and extreme myopia in people with acromegaly.

So when people started thinking about Goliath's weirdness, they realized, "Wait, Goliath looks like—he's got acromegaly."

This explains his strange behavior that day.

Why was it so sluggish Why did I have to be led by a squire? Why did I have to be led by a squire?

Because I couldn't see the way when I was alone

Why were you so absent-minded that you didn't realize until the last moment that David was clearly unprepared to fight?

because I couldn't see

When he says, "Come to me, bird of the sky, let me become food for the beasts of the wild," the "come to me," hints at his weakness.

You can't see it unless you come at it—

And "Am I a dog when you come towards me with a cane?"

I saw two sticks, even though David had only one stick.

The Israeli army on top of the mountain looked down at Goliath and thought he was a very strong enemy.

What I didn't realize was that the source of my apparent strength was also my greatest weakness.

I think there is an important lesson here for us.

Giants aren't as strong as they look

Sometimes shepherd boys have great weapons in their pockets.

thank you

(applause)

All of us will come close to death at least once in our lives.

But what if that engagement begins long before you're facing your own life and death?

What would it be like to live with death?

My husband's hometown is in the highlands of Sulawesi Island in eastern Indonesia, where people experience death not as an isolated event, but as a gradual social process.

In the Tana Toraja, the most important social milestone in life and the focal point of social and cultural interaction is not marriage, childbirth, family meals, but funerals.

Funerals are characterized by elaborate ceremonies, where the sharing of the animals needed for the ritual strengthens the bond between people. Animals, such as pigs, chickens, and most importantly buffaloes, are sacrificed in the name of the deceased and served to everyone.

It's this cultural conception of death, the final ritual of life, that makes it such a prominent aspect of the Toraja landscape.

Funerals last for days or weeks and are very lively, and mourning the dead is seen as a community milestone rather than a personal grief.

It's about the identity of the living, and it's about the identity of the living as well as it's about the deceased.

Thousands of tourists visit Tana Toraja every year to see this "culture of death," so to speak, and many feel that the grandiose ritual itself, and the long duration of the ritual, cannot be compared with the same standards that Western perceptions of death have.

Although death is experienced by everyone in the world, it is not experienced in the same way everywhere in the world.

As an anthropologist, I believe that these differences in experience stem from the cultural and social worldviews that underlie our interpretation of the phenomena around us.

Although death is an uncontroversial biological state when we look at things as an inalienable reality, Torajas see physical death as part of some beginning on a social scale.

Physical cessation of vital activity is different from death.

A Toraja person is considered truly dead only when the next of kin agrees and funds are provided for the funeral, which is supposed to cost the deceased's status.

Also, funerals should be attended by all involved and held in front of everyone.

After a physical death, the body is placed in a special room inside a traditional dwelling called a tongkonan.

Tongkonan is a symbol of the bereaved family's identity and the cycle of human life and death.

That's why the birthing building resembles the vehicle that carries the dead to where their ancestors rest.

Although it can be years after physical death before a funeral can take place, the deceased is called To Makara, "the sick," or To Mama, "the sleeper." They remain part of the family.

The family prepares and cares for formal meals.At this stage, the family undertakes a number of ceremonial decisions, thereby informing others that a member of the family is on its way from this world to the other world known as puya.

Some of you may think

"Does this mean that these people are living with the corpses of their relatives?"

That's right

But it's not that we have an instinctive response to the idea of ​​being near a corpse, to the familiarity of death, or how this concept differs from how we define death in biology and medicine. What I'm trying to think about here is an aspect of the human experience that can't be covered by the medical definition of death, but that can be explained by the Toraja way of thinking about death.

What I think is accepted and culturally expressed in Toraja society, which I think is true even for those of us who widely accept the biomedical definition of death, is that relationships and their impact on social reality do not end with the end of physical processes in the body, but change over time. Relationships between the living and the dead change, they never end.

By giving unstinting love and care to the corpse that most clearly symbolizes this, the Toraja people express the longevity of the relationship.

My husband has fond memories of talking to, playing with, and spending time with his grandfather's corpse.

It's a natural part of the process by which families embrace change in their relationships with the deceased, moving from relationships with living people to relationships with the deceased who became one of their ancestors.

Here are carved wooden statues of our ancestors, people who have already been buried and have had their funerals done.

This statue is called Tau Tau

In other words, the funeral embodies the way we think about death and relationships.

Funerals ritualize the impact of death on families and communities.

Funerals are also an opportunity for self-awareness.

It forces people to think about who they are, where they fit in society, and what is their role in the cycle of life according to Toraja's cosmology.

A Toraja proverb says, "Every human being becomes a grandparent." What this means is that after we die, we all join the ranks of our ancestors and are given a solid place between the past and the present, and who will be important for the future.

So every single one of us will be grandparents to our children for generations to come.

It's a lesson about being part of a family, but it's the same thing that children say when they give money. The sacrificial buffalo is thought to carry the soul of the deceased from this world to the next.

The sacrificing of buffaloes and the ceremonial display of wealth also indicate the status of the deceased and, by extension, the bereaved.

So at funerals, relationships are reaffirmed and transformed at the same time. Through ritualistic drama, the most salient feature of death in this land is highlighted: its impact on life and on the relationships of the living.

Despite this high interest in death, the Toraja people do not pursue the ideal of longevity.

They have a variety of customs that they believe will bring them health and longevity.

But they're less attached to trying to prolong their lives after they've been debilitated by illness or into old age.

In Toraja, it is believed that all humans have a fixed lifespan.

this thing is called sunga

Just like a bobbin unwinding, you will fulfill your natural lifespan until it ends naturally.

The cultural and social way of thinking about death as part of life influences the decisions people make about their health and how they manage their health on a daily basis.

The head of my husband's maternal tribe, Nenet Kacha, is said to be nearly 100 years old.

There are growing signs that he's about to leave for Puya.

When he dies, everyone will mourn greatly.

But my husband's family is looking forward to that time, when it's time for us all to show off how great his presence was to our family through a ceremony where we can tell the story of his life by telling stories about him in the context of our community's history.

The Elder's Story is Everyone's Story

His funeral song will be a song about everyone

And the story has no clear beginning and no clear end.

The story continues long after his body is gone.

People ask me if I don't feel fear or discomfort in a culture where death is physically present and welcoming.

I see great transformative potential in experiencing death as a social process rather than just a biological process.

In fact, the relationship between the living and the dead is creating drama in America's health care system. When deciding how far to extend the thread of life, it's not only about how far medically it is possible to extend life, it's about the emotional and social connections we have with those around us.

Like the Toraja people, we base our life decisions on the meaning and definition of death in our own concepts.

I'm not asking you to immediately adopt Toraja tradition.

It will be a little difficult to practice in America.

But I'd like to think about what we'd get if we took physical death beyond just being part of a biological process, to a much broader scale - part of the human story.

What would happen if we held onto a dead human being and considered it an inseparable part of ourselves?

If we could expand our definition of death to include life as well, we might experience death as part of our lives and feel something other than fear in the face of death.

Part of the answer to the challenges facing the American health care system, especially end-of-life care, might be something as simple as a shift in perspective.

You may find that the way we can only talk about death medically and biologically reflects the culture we share -- a culture that avoids death and is afraid to talk about it.

If we could embrace new wisdom about life, new definitions of death, and find value in it, it could change the way we talk about the end of our lives.

It may change the way we die, but more importantly, it may change the way we live.

(applause)

My name is Amy Webb, and a few years ago I had another great relationship that ended in a tragic way.

What went wrong?

I don't understand why this always happens

I asked everyone what they thought I asked everyone what they thought

My grandmother who always gives me advice said, My grandmother who always gives me advice said, Stop being picky

Try dating different people

True love is found when you least expect it."

The truth is, I'm a data person, as you'll soon find out.

I'm always thinking about statistics and pattern graphs.

My family is very close-knit, and I am very close to my sister, so my dream was to one day have a family like the one I grew up in.

I was 30 years old and just after going through a terrible breakup, so I did the math: if you dated someone for six months, you started dating, you lived together for a while, and then you got engaged.

If you wanted to have children by the age of 35, you should have started preparing for marriage five years ago.

it's too late now

If you wait to meet your true love unexpectedly, it depends on how lucky you are.

So I thought I'd figure out the odds of meeting the man of your dreams.

Now, I was living in Philadelphia at the time, it's a big city, and I thought, there's so much potential in this city.

So I did some math again.

Philadelphia has a population of 1.5 million

Assuming half of them are men, that's down to 750,000.

We want people between the ages of 30 and 36, so that number is 4% of the population, so that's a potential 30,000.

And as far as Jews are concerned -- which was very important to me as a Jew --

2.3% of the population

I feel attractive about 1/10 of that, and I feel attractive about 1/10 of that.

Basically, I ended up with 35 men in all of Philadelphia that I could date.

By the way, my extended Jewish family was already married and had more and more children, and I was under tremendous pressure to do something about it.

At this point I thought I had two options At this point I thought I had two options

Either follow your grandmother's advice and chance upon one of 35 possible out of Philadelphia's population of 1.5 million or try online dating.

I liked online dating better, because it's algorithmic, and it's as simple as asking a question, using data, using a system to find an answer, using a system to find an answer.

It's now the second most met through online dating, now the second most met through online dating, and the fact is that algorithms have been used in different cultures for thousands of years.

In fact, in Jewish culture, we've had matchmakers for a long time, and there was no clear algorithm, but we had to follow certain rules, like, is this guy my type?

Do you get along well with your family?

Will the rabbi approve?

are you ready to have a baby

I should have considered these matters and brought the two people together.

Now I thought about my case. Can data and algorithms get me to my prince?

I decided to register

Minor problem

I was very busy when I was signing up for various online dating sites.

more than that

Actually, I hate answering every question, and I really hate answering every question, and I especially hate question formats like aptitude tests.

So I copied my resume exactly as it was.

(Laughter) In the opening introduction, I said I was an award-winning journalist and visionary.

Regarding hobbies and ideal dates, he mentions monetization and fluency in Japanese.

I wrote a lot about JavaScript

It's clearly not very effective at appealing to femininity.

But the real downside was finding lots of men to date.

Algorithms like this found tons of guys asking me out on dates, and they were terrible people.

This IT guy Steve is one of them.

The algorithm decided we were a good fit, because we both loved gadgets, we loved math and data and '80s music, so we agreed to ask him out on a date.

Well, IT guy Steve took me to a fancy, ridiculously expensive restaurant in Philadelphia.

From the beginning, the conversation was not very lively, but he ordered a lot of food.

In fact, he didn't even look at the menu

We ordered a few appetizers and mains, and I ordered the same, and our table was brought to a mountain of food and bottles of wine.

At the end of our conversation, at the end of our dinner, I decided that Steve and I, the IT guy, were a perfect fit and that we were going to go our separate ways as friends.

Of course I am a modern woman

I agree with splitting the bill

But IT guy Steve didn't come back.

The price was equivalent to one month's rent.

It was a far from pleasant experience.

I flew home and called my mom and sister.

I say, "Don't complain"

(Laughter) "I'm not just being too picky."

So I decided that from now on, I'd pick a place with Wi-Fi for a date, and I'd bring my laptop.

You fill out an email document that you can shove in your bag and fill out while you're on a date, collect all sorts of statistical information, and prove to everyone with data how bad a date can be. (Laughter)

The data we collected were things like light-mindedness, awkwardness, nastyness, foul language, and the number of high-fives.

(Laughter) And I did some math on these numbers and found a correlation.

It turns out that for some reason, men who drink Scotch want to talk about kinky sex.

(Laughter) I don't think any of them are bad people.

It's just that it didn't suit me.

And the algorithm that brought us together wasn't bad.

These algorithms were working exactly as they were designed to, based on the information you put in. In my case, it was my resume.

The real problem isn't the algorithm's problem, it's us.

Only a handful of people can tell their true selves

Another problem with websites like this is asking the registrants, "Do you prefer dogs or cats?"

"Which do you prefer, horror movies or romantic movies?"

I'm not looking for a pen partner

I'm looking for someone to marry, right?

This kind of data only gives us a glimpse of the surface.

I came up with a plan

So I decided to use these online dating sites as a database, and instead of letting algorithms find me, I decided to understand how this works and use it.

Now that I knew I was making a match based on superficial data, I asked myself what was important to me.

I decided to make a list of all the conditions I look for in a marriage partner.

I wrote, I wrote, I wrote, and in the end I came up with 72 conditions.

Being Jewish... people who have the same experiences and ideas about their own culture, and who have the same experiences and ideas about their own culture, but it's not mandatory to go to the synagogue every Friday and Saturday.

Work is very important to me, so don't overwork even if you're serious about your work.

For me, a hobby was a project I had just launched.

I want two kids, and they're on the same education path, which means I'm in favor of starting piano lessons at age three, and preferably computer science.

I want to let you do it, well, it's like this, and people who enjoy traveling to exotic places, like Petra and Jordan.

And he always weighs 10 kilos more than me, no matter how fat I am.

(Laughter) So, we have 72 conditions, and I know there are quite a few.

Then I prioritized the conditions

We divided these into two levels, one on the top and the other on the scale from 100 to 91. The conditions listed there were, for example, someone who was very smart and a good source of stimulation.

These are important, but they're conditions that aren't fatal if they're missing.

Now that I've done all the rankings, I built a scoring system. What I wanted to do was put some number on whether or not the men I found online were a good match for me.

The minimum condition for sending an email or replying to an email The minimum condition for sending an email or replying to an email is 700 points

If you have a score of 900, you will date, and unless you have a score of 1500, you will not develop any relationship.

The system actually worked quite well.

back online

I found Jewishdoc57, incredibly handsome, very educated, who has climbed Mt. Fuji and walked the Great Wall of China.

If it wasn't for boat trips, I was a person who liked to travel.

It's finally here! I thought

decipher the code

I found my relatives' dream of a Jewish prince I found my relatives' dream of a Jewish prince

But there was one problem, he didn't like me.

I think I overlooked the variable rivalry.

What kind of women are on online dating sites

There was a woman named SmileyGirl1978

bright and sociable fun girl

my profession is teacher

It was also written as silly, kind and friendly.

She says she loves to make people laugh

After seeing so many, many, many self-introductions of this kind, I realized that I needed market research.

So I created 10 fictional male profiles.

(Laughter) I hope you understand that I'm only doing this to collect data about people who have signed up for the site.

I'm not in an inappropriate relationship with anyone

I was just collecting data.

Not everyone needs data

What I needed was data on women attracted to the type of men I really, really wanted to marry. (Laughter)

When I let this fictitious account hit the battlefield, I decided on some rules.

don't contact women yourself

I just waited for the women to populate these profiles, and my main focus was on two types of data.

Qualitative data, such as sense of humor, tone of voice, style of communication, what do these women have in common?

And what about quantitative data, like profile lengths, message intervals, etc.?

My goal here was to learn to create an online profile that would match SmileyGirl1978.

I wanted to know how to make my online profile the best it could be.

And then a month later, we had a lot of data, and we did another analysis.

I've learned that profile content is very important

Smart people tend to write longer, like 3,000, 4,000, 5,000 words, and they're all very interesting.

But what's important here is that the popular men or women are averaging 97 words, and the popular men or women are averaging 97 words, and they're writing very well without necessarily looking like it.

Another characteristic of successful people is the use of ambiguous language.

My favorite movie is The English Patient, but my favorite movie is The English Patient, but it's not suitable for an online profile.

Positive words are also important

This is a collection of words that popular women use so much: "fun," "girls," "love," etc.

But it doesn't seem necessary to lower my profile level.

What I wrote was that I'm fluent in Japanese and good at JavaScript, so that's fine as is.

But you need to make it easier to talk to them, it's important to give them cues to connect.

Furthermore, timing is really, really important.

Even if you have someone's cell phone number or instant messaging account, and you happen to be awake at 2:00 AM, it's not the right time to reach out to that person.

Popular women on this type of online site are averaging 23 hours between messages on average 23 hours between messages.

This is the same thing we usually do before we date.

And finally the photo is important

All popular women showed some skin.

It turned out that they all looked really good and were in stark contrast to the photos I had posted.

With all of this information, I was able to create a super profile, the most effective profile in the world, just for me.

this is a big success

I became very popular on an online dating site.

(Laughter) (Applause) So many date requests.

So I called my mother, my sister, my grandmother

I told him this great news, and everyone was like, "That's great," and they asked me when I was going on a date.

"Actually, I don't plan on meeting anyone," I replied.

If you remember my scoring system, the bottom line was 700, and no one scored above 700.

I was told, "I'm still so picky."

Not long after that, I met this guy, Thevenin, and I thought he had a sense of humor, because he was Jewish at heart and by profession -- he hunted baby seals in the Arctic.

There is a detailed introduction of the trip

have knowledge of different cultures

I got an 850 right away with the look and writing I wanted.

met the requirements for dating

Three weeks later, we met in person, and we talked for 14 hours. We moved from coffee shop to restaurant, then to another coffee shop and restaurant, and when he drove me home that night, I re-scored him (1050 points!).

A year and a half later, while I was traveling with Petra to Jordan without a boat, while traveling with Petra through Jordan without a boat, he got down on one knee and proposed to me.

A year later, we got married, and a year and a half later, our daughter, Petra, was born. A year and a half later, our daughter, Petra, was born.

(applause)

(Laughter) And what does this story mean to you?

Love had an algorithm

just different from what's offered online

it's something you write yourself

Whether it's looking for a marriage partner, looking for something you want to do, starting a business, whatever, clarify your vision, decide your own rules, and pick and choose as much as you like.

On the day of our wedding, I spoke with my grandmother again, and she said, "Looks like I was wrong.

It looks like you've found a really good way," he said.

"But matzo balls

You have to make it fluffy, not stiff."

I will follow this advice. (Applause)

I will follow this advice. (Applause)

They say a picture is worth a thousand words, so before we get to that, let me show you some pictures, taken very recently.

Is this enough time for a six-hour talk?

(Laughter) But maybe I should explain to you guys about the picture you just saw.

As a photographer, as an artist, what I want to do is combine art and science.

This photo captures the exact moment a soap bubble pops. Some galaxies are made up of little bits of oil-based paint. Strange fluids with unique properties. Paints shaped by centrifugal force.

What's so fascinating about both is that they both target the same thing, and they're both responding to their environment.

very different way

For example, about science, science takes a rational approach to its surroundings, whereas art usually takes an emotional approach to its surroundings.

What I'm trying to do is bring these two perspectives together, because that's how my work appeals to both the heart and the head of the audience.

I'll show you this through three projects.

The first is to visualize sound.

As we all know, sound travels in waves. Imagine a speaker. A speaker just takes a sound signal and converts it into vibrations that travel through the air and are picked up by our ears, converted back into sound signals, and we hear them as sound.

So I thought, how can we visualize sound waves?

I came up with this

I took a speaker and put a thin piece of plastic foil on top of it, and then I put some pigment on top of that, and it's on top of the speaker.

Then, by playing music through the speakers, the vibrations will move the pigments up and down.

It happens so fast that it happens in the blink of an eye, so we worked with LG Electronics to have a camera that could capture over 3,000 frames per second.

Please see how it is

(Music: Massive Attack, "Teardrop") (Applause) Thank you very much.

it's really amazing

here's an interesting episode

I got a sunburn indoors while doing this shoot in LA.

You know, when you think of LA, you get sunburned on the beach, but for me, it was indoors, because you need very strong light to shoot at 3,000 frames per second.

I'd take a speaker, set up a camera facing it, shine a strong light on the speaker, and I'd put some pigment on top of the speaker, and I'd do this over and over again.

What was interesting was that the sound from the speaker was coming from the right side, so the right half of my face turned bright red and I spent a week looking like the Phantom of the Opera.

Now for my next project, which is rather safe.

Has anyone ever heard the term ferrofluid?

oh you're welcome wonderful

Can I skip this part?

(Laughter) It behaves very differently than a ferrofluid.

with black liquid

have oil-like fluidity

It reacts to magnets because it contains metal particles.

Putting this liquid in a magnetic field changes its appearance.

See the live demo here

Align your camera with this plate, and we've put magnets under the plate.

Pour ferrofluid here Pour ferrofluid here

Move it a little more to the right. Focus a little more.

What you're seeing now is a spiking phenomenon in ferrofluid.

Individual microparticles dispersed in a liquid are attracted or repelled.

This is interesting enough on its own, but let's add some watercolor.

It's a normal watercolor paint used for painting.

You wouldn't draw with a syringe, but it would be the same without a syringe You wouldn't draw with a syringe, but it would be the same without a syringe

What's happening here is that when the watercolor enters the structure of the ferrofluid, it doesn't mix with the ferrofluid.

Because ferrofluids are hydrophobic Because ferrofluids are hydrophobic

It doesn't mix with water

At the same time, we try to preserve the magnetic morphology, which creates this wonderful look, with canals and small ponds in colorful watercolors.

This was my second project

So I'd like to introduce you to my last project, which is... Scotland's signature drink.

(Laughter) These photos were created using whiskey.

Are you wondering how we did it? Are you wondering how we did it?

"Did you half-empty a whiskey bottle and draw hallucinations on paper while drunk?"

I was definitely conscious when I took this picture.

Whiskey is 40% alcohol by volume, and alcohol has some very interesting properties.

You may have experienced it, and you may have experienced it, but I'm talking about physical properties, not the properties that you might imagine.

When you open the bottle, the alcohol molecules are released into the atmosphere.

very flammable

It's these two qualities that allowed us to create the image you're looking at right now.

Let's do a demo here

Prepare an empty glass bottle

is empty

put oxygen and whiskey in here

add some more

Wait a few seconds to let the alcohol molecules fill the bottle.

let's set the fire

(Laughter) That's it.

It was only for a moment, so you didn't really understand

I could try again, but some of you might think that whiskey is a waste and you'd rather drink it.

Watch this slow-motion darkroom reenactment of what we showed you in the live demo.

Inside the jar, the flame moves from top to bottom and burns the alcohol-laced air.It burns the alcohol-laced air.

So the picture you saw earlier is a momentary capture of a flame moving through a container, and it's turned upside down, so imagine it turned 180 degrees.

This photo was taken like this

(Applause) Thank you.

I've just introduced you to three projects. What are you guys doing?

What's the idea behind this?

Waste of whiskey?

It's just a strange material, right? what did you think

The three projects are based on very simple scientific phenomena: magnetism, sound waves, and the physical properties of matter, and what I'm trying to do is show these phenomena in a poetic and unprecedented way.

thank you

(applause)

We used to solve humanity's problems.

July 21, 1969 Buzz Aldrin landed on the Moon's Sea of ​​Tranquility from the Apollo 11 Lunar Module.

Armstrong and Aldrin were just the two of us, but landing on the gray lunar surface was the result of all human effort.

The Apollo program is America's most proud history -- the mobilization of peacetime power.

NASA spent about $180 billion in today's dollars, 4% of the national budget, on this program.

400,000 people did the work, 20,000 companies, universities, government agencies poured in.

Some died, including the crew of Apollo 1.

By the time the Apollo program ends, 24 astronauts will have traveled to the moon.

Twelve people have landed on the moon. Armstrong passed away last year, and now Aldrin is the oldest.

why did they go to the moon?

Many didn't take it back with them. 381 kg of rocks. And the 24 people who did come back said they all said that the earth we live in seemed small and ephemeral.

why did you go to the moon The cynical answer is that President Kennedy wanted to show the Soviets a rocket.

President Kennedy explained it this way in his 1962 speech at Rice University.

(Video) John F. Kennedy: Why Go to the Moon

Some people ask if they want to

They will also ask, Why climb the highest mountain?

Why did you fly across the Atlantic 35 years ago?

Why is Rice going to a game against Texas?

we decided to go to the moon

I decided to go to the moon

(Applause) It's not because it's easy, it's because it's hard to decide to go to the moon in the next 10 years, or to pursue other goals.

For the people of the time, Apollo didn't just signify victory over the Soviets during the Cold War.

It was a celebration, a celebration of the transcendent power of technology.

I went because it was a big challenge.

By the time we landed on the moon, a number of other technologies had also been successful.

The first half of the 20th century gave us factory assembly lines, airplanes, penicillin and tuberculosis vaccines.

By the middle of the 20th century, polio and smallpox were gone.

The technology at the time was Alvin Toffler in 1970. The technology at the time seemed to have "accelerated propulsion" in Alvin Toffler in 1970.

No one in human history had ever moved faster than a horse or a sailing ship, but in 1969, Apollo 10 traveled at 40,000 kilometers an hour.

No one has been to the moon since 1970.

No one has traveled faster than Apollo 10. The optimistic hopes for the power of technology have vanished. Big problems that we thought would be solved by technology -- like getting to Mars, clean energy, cancer treatments, food problems -- began to seem intractable.

The launch of Apollo 17 is still fresh in my mind.

I was five years old, and my mother told me not to stare at the fiery gas coming out of the Saturn V rocket.

I vaguely knew that this would be my last trip to the Moon, but I was certain that a Mars colony would come true in my lifetime.

And then we came to believe that something happened to technology's ability to solve problems.

it's a good thing to hear

It's been talked about at TED for the last two days.

Technologists seem to divert our attention and enrich themselves with little things like iPhones, apps, social media, algorithms that speed up stock trading.

These are not bad things

Enriching and expanding our lives

But humanity's problems cannot be solved.

what happened?

Silicon Valley's usual answer is that it invests less in ambitious companies than it did in the days when it invested in things like Intel, Microsoft, Apple, Genentech.

Silicon Valley has blamed this on the market, especially because of venture capital incentives for entrepreneurs.

According to Silicon Valley, venture capital has moved away from groundbreaking ideas and invested in small improvements and non-existent problems.

but that's not all

There's a problem in Silicon Valley

Even when venture capitalists liked risk, they preferred small investments with terms of payback within 10 years.

Venture capitalists find it difficult to profit from investments in energy and other technologies that require large sums of money and have long development periods, and they did not pay attention to technologies that did not produce immediate commercial value to solve human problems.

But the reason why we can't solve humanity's problems is actually much more complex and serious.

Sometimes the big problems we have are deliberately left untouched.

If you want to go to Mars, you can go.

NASA has a plan for that

But going to Mars is politically involved and will never happen without public support.

Because we all believe there are more important things on Earth than going to Mars.

When we can't solve humanity's problems, it can also be due to political dysfunction.

Today, less than 2% of the world's energy consumption is now recyclable through advanced technologies such as solar, wind, biofuels, not even 2%.

Coal and natural gas are cheaper than solar and wind Oil is cheaper than biofuel

Cheap energy to replace it is needed and there is none.

Now, technologists, business leaders, and economists agree on policies at home and abroad to encourage new energy development.

But in the current political climate, we can't expect American energy policy or international treaties to reflect this kind of public opinion.

Also, some human challenges that we thought were technical are not necessarily so.

Hunger has long been thought to be caused by food supplies.

But 30 years later, the study found that a political crisis was a food supply catastrophe.

Technology can improve agriculture, storage and transportation systems, but if governments don't improve, hunger will continue.

And sometimes humanity's problems remain unsolved because we don't understand the problems themselves.

In 1971, President Nixon declared that cancer would be eradicated, but what we learned after that was that there were many different types of cancer, many of which were incurable and difficult to treat.

Hard problems are tough

It's not that technology can't solve big problems.

A good solution requires four elements: political leaders and the general public working together to find a solution to the problem, institutions supporting it, and understanding if it's actually a technical problem.

It was because of these elements that the Apollo program was seen as a symbol of the power of technology to solve human problems.

But I can't do the same thing in the future

It's not 1961 now

There's no inspiring competition like the Cold War, no Kennedy heroism for those who face danger and hardship, no captivating sci-fi mythology like the exploration of the solar system.

And above all, going to the moon was easy.

I was able to go in just three days

It doesn't solve any big problems.

For those of us who live in such a modern age, the challenges of the future stand even higher.

Challenges keep coming

thank you

(applause)

There is a question that we all need to rethink together: What should be the role of money and markets in our society?

There are few things that money can't buy today

So let's say you're sentenced to prison in Santa Barbara, California, and it's good to know that if you don't like your regular cell, you can pay to upgrade your room.

this is a true story

How much do you think it is?

$500?

It's a prison, not a luxury hotel!

$82 per night

it's $82

If you go to a theme park and don't want to wait in long lines for popular attractions, there's a good way to do it.

At many theme parks, you can pay extra to get to the front of the line.

It's called fast track or VIP ticket.

This system isn't just for theme parks.

Even in Washington, D.C., lines can be long for important congressional hearings.

But some people don't want to stand in line because it might be an all-nighter - and it might rain.

So for lobbyists and people who really want to be at the hearings but don't want to wait in line, there's a queuing company.

For a little money, the company hires homeless people and people in need of work to wait in line, no matter how long it takes.

get hired and stand in line

Fields that incorporate market principles, ideas, and solutions are expanding.

Take war for example

Did you know that there were more private military companies deployed in Iraq and Afghanistan than there were soldiers in the United States Army?

We never publicly discussed whether to outsource the war to private companies, but that was the reality.

Over the past 30-plus years, we've all been living in a revolution without realizing it.

Before we knew it, the market economy had expanded into a market society.

The difference between the two is that a market economy is an important and effective tool for organizing production, while a market society is one in which almost everything has a price.

A market society is a way of life in which market ideas and values ​​govern every aspect of life: relationships, family life, health and education -- politics, law, civic life.

So why are we worried about becoming a market society?

I think there are two reasons

One of the reasons has to do with inequality.

The more things money can buy, the more important it becomes whether you're rich or not.

If money only got yachts, luxury vacations, and BMWs, inequality wouldn't be such a big deal.

But when things that money buys become increasingly essential to living well -- decent health care, top-notch education -- even political voice and electoral influence -- money becomes a huge problem.

If we free market everything, the pain of inequality in society and in civic life will only become more acute.

This is one of the reasons why I worry

In addition to the anxiety around inequality, there's another reason -- that some social objects and conventions change their meaning as soon as market ideas and market values ​​are introduced, and we may lose attitudes and norms that are worth cherishing.

Let me give you an example of one of the most discussed uses of market forces -- money as an incentive. What do you think?

Many schools struggle to motivate children, especially those from disadvantaged backgrounds, to ensure that they study hard and adapt well to school.

Some economists have proposed a market-based solution, where the incentive is to give children money for good grades, good test scores, or reading books.

this is actually tried

In the United States, several experiments are being conducted in major cities.

In a study in New York, Chicago, and Washington, D.C., we gave $50 for an A grade and $35 for a B grade.

A program in Dallas, Texas, gave eight-year-olds two dollars for every book they read.

Now think about it, some people are for and some are against giving money as an incentive to improve performance.

what do you think

Let's say you're the head of a school system in a big city and you're approached with such a proposal.

The other party is a certain foundation, and they also provide funds.

you don't have to pay

How many are in favor of the trial and how many are against it?

please raise your hand

Who do you think is worth trying first? please raise your hand

How many are against? A lot of people are against it, but there are also a lot of people who are in favor of it.

let's consider

Let's ask those who disagree first - those who say they won't allow trials.

What is the reason for your opposition?

Who do you start with? please

Heike Moses: Hello, my name is Heike. I believe that money undermines the very essence of motivation.

Michael Sandel: You're saying you shouldn't give incentives.

What is the nature of motivation? Or what should it be?

HM: The essence of motivation should be learning.

MS: What is "learning"? HM: To know the world

What if we stop giving money to it?

Should I stop reading?

MS: Okay, so who's next for - who do you think is worth trying?

Elizabeth Loftus: I'm Elizabeth Loftus. It's worth a try.

MS: What are you looking for?

MS: What are you looking for? EL: It's about how many books a child is reading -- if you stop giving them money -- how long will they continue to read?

MS: Even after I stopped the money

What do you think?

HM: Sorry if I offended you, but frankly, it's a very American way of doing things.

(Laughter) (Applause) MS: So what's come to light in this debate is, "Wouldn't the incentive of money drive out, corrupt, and destroy higher motivation -- the essence of what you want to pass on to your children -- to learn and read for yourself?"

I'm sure you'll disagree about the effectiveness, but the question remains: If market forces and money as an incentive send the wrong message, what will happen to the children who are taught?

Let me tell you about the results of the previous experiment.

Experiments with rewards for performance yielded inconclusive results, but most of the time they didn't improve performance.

In an experiment where you gave two dollars to read a book, children read more books.

But I've also learned to choose thin books.

(Laughter) But what I really want to know is what the future holds for these children.

Do you think reading is a tiresome chore, a task for pay? Or maybe it's for the wrong reasons that you end up falling in love with reading itself?

Even this brief discussion reveals something that many economists tend to overlook.

Economists tend to think that the market neither influences nor pollutes what is traded.

They believe that the meaning and value of what is traded in the market does not change.

If the subject is physical goods, that is certainly true.

If it's a flat-panel TV, whether you sell it to me or give it to me, it's exactly the same product.

Both have the same functionality

But it doesn't apply to things that aren't physical goods, or social conventions like -- teaching, learning, working together in civic life.

In those areas, market forces and financial incentives may undermine -- eliminate -- important values ​​and attitudes that don't belong in the market.

We've seen in the examples of education and learning how markets and commerce can change the nature of things and the meaning of social conventions beyond the product dimension. Now that we know that, the next question we should ask is where should the market belong?

But to advance this debate, we have to do what we're not good at: to consider together in public the values ​​and meanings of the social conventions we hold dear. And there we examine our bodies, our home lives, our relationships, our health, our education, our learning, our civic lives.

They're all controversial issues, and they're topics that people tend to avoid.

Indeed, over the past 30 years, market logic and thinking have gained momentum and authority, while public discourse has been watered down and lost its greater moral significance.

We avoid these issues for fear of confrontation.

But the moment we realize that the market changes the nature of things, it becomes imperative that we all discuss the larger issue of valuing things.

What really hurts when you put a price on everything is commonality, the feeling that we're all together.

Against the backdrop of widening inequality, the free marketization of all aspects of life creates a situation in which the wealthy and the poor are increasingly living apart.

We live, we work, we shop, we play in separate places.

children go to different schools

This is not a good situation for democracy, it's not a satisfying way to live, and it's also for people who can pay to be at the front of the line.

because -

Because democracy doesn't need perfect equality, but it does need citizens living a common life together.

The important thing is that people from different social backgrounds and different classes meet and get to know each other in their daily lives, so that we can overcome our differences and become more accepting of each other.

In this way, we can maintain the common good for all.

So at the end of the day, it's not the economy that's at the heart of the market problem.

It's really a matter of how we live together.

Do we want a society where everything has a price? Or are there moral and social things that money can't buy that aren't respected in the marketplace?

thank you

(applause)

As you all know, the world is full of problems.

We've heard these things today, yesterday, and every day for decades.

serious problem big problem urgent problem

Malnutrition Water supply Climate change and deforestation Skills shortage Anxiety Food shortage Inadequate health care, environmental pollution, etc.

There's no shortage of problems. What's different now is that these problems are being recognized more than at any other time in my life.

we all know very well

So why are we having so much trouble solving these problems?

I've been working on this question for a long time, even though I'm in a different field.

I'm not an expert on social issues

I've been helping to face business and make money in business

it's outrageous

Now, why do we have so many issues with these social issues? Can business do nothing? If so, what would that role be?

To face this question, we need to pause for a moment and re-examine how we think and think about the challenges and the solutions to the big social problems we're facing right now.

Many people see business as if it were a social problem in itself, or at least one of them.

Think of the fast food industry, the pharmaceutical industry, the banking industry.

It's the best example of disrespect for business The best example of disrespect for business

business is not the solution

The problem itself is now widely viewed

In fact, there are many such cases

I've had a lot of troubles, and I've done the wrong things and exacerbated the problem.

So this view makes sense

What are your views on solutions to many of the social problems we face so far?

We tend to look to NGOs, governments, charities for the solutions. We tend to look to NGOs, governments, charities.

Indeed, the phenomenal rise of NGOs and social organizations is indeed the phenomenal rise of NGOs and social organizations, which are the hallmarks of our time.

This unique new organizational form grows This unique new organizational form grows

There's an immense amount of innovation, a lot of energy, a lot of talent that's going to be mobilized and channeled through this organization to solve all kinds of social problems.

I'm sure many of you are deeply involved.

As a business school professor, I've actually started four nonprofits.

Every time I've cared about a social issue, I've founded a nonprofit. I've founded a nonprofit.

Everyone has thought that social problems should be dealt with this way.

Even business school professors thought so.

But looking back, we've been doing it this way for a long time.

Recognizing these issues for decades

I've been working with NGOs and government organizations for many years.I've been working with NGOs and government organizations for many years.

Because, unfortunately, we're not seeing progress fast enough.

we are not on the way to victory

These problems are still overshadowed and out of hand, and it's the little things that we're solving.

only incremental progress

What are the fundamental challenges in addressing these social problems? What are the fundamental challenges in addressing these social problems?

Simply put, it's a question of scale.

the scale is small

we can move forward and we can make a difference

We can get results, and we can make things better.

helpful and doing well

But I can't scale it up

cannot affect social problems on a large scale.

Why?

because there are not enough resources

Now this is a clear fact

It's becoming more apparent than in recent decades.

In other words, we don't have enough money to solve social problems at scale with the way we do things today.

We don't have enough tax revenue, we don't have enough philanthropic funding, and we can't address this problem the way we do it now.

we have to face this reality

While resource shortages are growing, resource shortages are the norm in developed societies with a range of financial challenges.

If this is fundamentally a resource problem, where are the resources in society?

How are resources created? Resources needed to solve social issues Resources needed to solve social issues

The answer should be obvious: business.

All wealth is created by business

A business creates wealth when it meets a need and generates a profit.

That's how all wealth is created

It serves a need, it generates a profit, and that's tax revenue, it's income, it's philanthropic funding.

business is the source of all resources

The fact is, only business can generate resources.

Other institutions don't create resources the way businesses do, even if they use their resources to do something important.

A business creates resources when it meets its needs and makes a profit.

The vast majority of the resources in the world are created by businesses.

the question is how to use this

How do you use it?

A business creates resources when it makes a profit.

Profit is the small difference between sales and costs Profit is the small difference between sales and costs No matter what problem the business offers, it's the same solution.

But this profit is the magic potion.

why? Because that profit makes the solutions we create infinite.

If you can make a profit, you can do 10x, 100x, 1millionx, 100millionx, 1billionx on that basis.

It allows the solution to stand on its own.

This is how businesses make money and scale This is how businesses make money and scale

So what does this have to do with social issues? So what does this have to do with social issues?

One way of thinking about it is that this profit can be diverted and used to solve social problems.

Business will pay more

should take more responsibility

This is what's been done in the business world This is what's been done in the business world

But this road we've chosen isn't leading us where we should be

Now, I started my career as a strategy professor, and I am still a strategy professor.

i am proud

But at the same time, over the years, we've become more focused on social issues.

I've been working more and more in the social sphere, addressing issues like health care, environmental issues, economic development, poverty alleviation, and over time I've started to realize that it's had a huge impact on me and my life.

The conventional wisdom in economics and business administration is that there is a trade-off between social and economic outcomes.

So the conventional wisdom is that businesses make money by causing social problems.

A classic example is environmental pollution.

When it comes to doing business, polluting the environment makes more money than trying to reduce it.

Reducing pollution also costs money, so business doesn't want to do that.

Hazardous working conditions are more profitable

It's too expensive to create a safe working environment, and a business that doesn't have a safe working environment makes more money.

This was the conventional wisdom until now

A lot of companies were falling into this myth.

Companies can also improve the environment

Reluctance to improve the working environment

And that way of thinking is ultimately what we've come to criticize, and I've come to criticize myself, to do business.

But as I got more and more involved with these societal issues, and some of them, personally, through my nonprofit, I began to wonder if the opposite was true.

Business is not profitable by causing social problems Business is not profitable by causing social problems It is fundamentally different.

it's very simple

As you get more involved in these issues, you'll understand more, but the truth is that business benefits from solving social problems.

there is a real benefit

Let's think in terms of environmental pollution

What we do know now is that reducing pollution and emissions will increase profits.

save money too

Manage more productively and efficiently

don't waste resources

A safer work environment means fewer accidents and more profits, because fewer accidents are a sign of a better production process.

Accidents cost money

What emerges from each issue is that, in a fundamental sense, there is no trade-off between social development and economic viability.

also have health issues

In fact, employee health is important in business, because healthy employees are more productive and less absentee.

More advanced new research, new thinking suggests that there's actually a deep, fundamental interaction between business and social issues, especially if you don't look at it from a very short-term perspective.

When we get caught up in the short-term, we sometimes get the wrong idea and think that business and social problem-solving are fundamentally incompatible.

How can we use the power of business to address the fundamental challenges we face?

If you can leverage your business, you can deploy at scale If you can leverage your business, you can deploy at scale

We can tap into this enormous resource and organizational capacity.

In fact, it's already started, and it's all thanks to people like you who have been working on these issues for years and decades.

The Dow Chemical Company and others are innovating to replace trans fats and saturated fats with revolutionary new products.

This is an example from Jain Irrigation Systems.

We've brought drip irrigation technology to thousands and millions of farmers, dramatically reducing their water use.

And companies like the Brazilian paper maker Fibria have figured out ways to stop the destruction of old-growth forests, planting eucalyptus trees to produce more pulp per hectare, making more paper without cutting down old trees.

Companies like Cisco have trained more than four million people in IT skills, for work, of course, but this training has spread IT technology and the growth of the industry as a whole.

There's a huge opportunity for business right now to make an impact and address these social issues, and this opportunity is the biggest business opportunity, the biggest business opportunity.

How can we steer our business towards creating this shared value?

What I call "common value" is using business models to address social issues.

This is creating shared value

Common values ​​is capitalism, but higher capitalism.

It's the ultimate form of what capitalism should be, one that serves a critical need of society.

Shared value is created when we create social value and economic value at the same time.

So, we're going to seize these opportunities and unleash our full potential, and actually address these social issues, because we can do it on a large scale.

Creating Shared Value can be approached on many levels.

it's true it's actually happening

But for this solution to work, we have to change the way we do business, and fortunately, this is already underway.

The conventional wisdom that business has been stuck with is that social issues are irrelevant, that they're irrelevant, that they're something other people do.

Now companies are increasingly embracing shared values.

But what we also need to understand is that working with NGOs and governments is more effective than working with businesses alone.

The new NGOs that are making the biggest difference are finding these partnerships and finding ways to work together.

The most successful governments are governments that have found a way to achieve shared value in business. Governments that have found a way to realize shared value in business.

Governments can motivate and empower businesses to promote competition in many ways. Government can motivate and empower businesses to promote competition.

If we can redefine the role of business and take that new way of thinking out into the world, we can change the world.

I see the signs and I know

I realize

Young people, my students at Harvard Business School, are beginning to understand.

If we can get rid of these kinds of divisions and fears and tensions, if we can get rid of these kinds of divisions and fears and tensions and create a realization that we need fundamental collaboration to solve social problems, then I think we can break through this situation and ultimately solve it.

thank you

(applause)

A traffic director's job isn't just about traffic signs and traffic lights.

I also do urban design and street design.

Streets are one of the city's most valuable assets, but most of them are hidden in the everyday landscape.

What we've learned from New York over the last six years is that this asset can be reinvented.

Streets can be rebuilt quickly and cheaply, and they can quickly become profitable -- they can even become hotspots.

just look at it from a slightly different angle

I think this is important for those of us who live in cities.

For the first time in history, most of the population is concentrated in urban areas, and the United Nations predicts that the world's population will double in 40 years.

So urban design is a major challenge for our future.

Realizing this, Mayor Bloomberg launched PlaNYC in 2007.

This plan positions the city as a global marketplace, and if we are to continue to grow and prosper and attract the million people who will move to New York in the future, we need to focus on quality of life and make our infrastructure more efficient.

For many cities, the streets have long been like a state of hibernation.

This is a picture of Times Square taken in the '50s, but despite all the technological and cultural and political changes, here's Times Square in 2008.

Not much has changed in 50 years

So we rethought this challenge to make transportation more efficient by giving people more space to enjoy New York by bus, by bike, and by creating safer streets for everyone.

We have set goals and standards to [ halve the number of annual traffic fatalities by 2030 ] and have a clear action plan [ establishment of a project to turn our streets into public spaces ].

It's important to set goals [doubling bike commutes by 2012] [establishing fast bus routes] If you're going to steer a big city in a new direction If you're going to steer a big city in a new direction, you need to know where you're going and why.

When you look at the design of the streets, you can see what the emphasis is on.

In this case one must avoid cars

The design of this road focuses on the movement of the car so that it can get from point A to point B in the fastest and fastest way, and from point A to point B in the fastest and fastest way.

When we started designing the city, we did an initial study of how the streets were used, and we did an initial study of how the streets were used, and found that there weren't many benches.

As you can see from this picture, I'm sitting on a fire hydrant, which doesn't seem like the most iconic city in the world.

(Laughs) Not good for parents and children

Not friendly to the elderly or retailers

It's not good for fire hydrants either.

No doubt the police don't like it.

So we tried to change the balance. A good example of our new approach is Times Square.

350,000 people pass through Times Square every day, and efforts have been made to improve it.

We changed the traffic lights, we changed the roads, we tried and tried to make Times Square better.

It's still dangerous and crossing the road is a cold sweat

It was just chaos

None of our past attempts proved to be effective, so we started thinking about the streets in a different, much larger approach.

As a test period of 6 months

We closed Broadway from 42nd Street to 47th Street and created a 10,000-square-foot pedestrian mall.

It was important for this project to be temporary, because I could show it how it worked, so I could show it how it worked.

As you know, I work with a data-driven mayor.

data was everything

If it had a positive effect on transportation, it made travel more efficient, it was safer, it was good for business, so let's keep it -- if it wasn't, we decided to stop.

This was the deciding factor for me to do it. If I knew I could undo it, I wouldn't worry so much. If I knew I could undo it, I wouldn't worry so much.

But the results were great [ 35% reduction in pedestrian accidents ]

Traffic has become smoother and safer [ Travel time reduced by 17% ]

Opened 5 flagship stores - [Opened 5 flagship stores]

It was a great success [Doubling of store rent]

Today, Times Square is one of the world's premier shopping destinations.

The important thing I learned here is that it doesn't have to be either transportation or building public spaces.

As with any project there are always surprises, but in Times Square it was the people rushing in.

As soon as we turned off the cars, people suddenly appeared on the street.

It was like an episode from Star Trek

Go to a place where no one was! with the feeling

people show up

people came from nowhere

This created an urgent problem, because we didn't have the furniture we were going to put on the street yet.

So I went to the hardware store, bought hundreds of lawn chairs, and put lawn chairs on the streets.

This lawn chair became the talk of the town.

It's not about shutting down traffic on Broadway.

It's a lawn chair

"What do you think of lawn chairs?"

"Do you like the color of the lawn chair?"

If you have a big, controversial project, consider the Lawn Chair.

(Laughter) Here's the final design for Times Square. No sidewalk-to-sidewalk, no sidewalk-to-sidewalk, and a beautiful reflective pavement for the streets to reflect the light from the billboards and bring new energy to the streets. It lives up to its name -- the new intersection of the world.

The ribbon cutting to celebrate the completion of the first stage will take place in December of this year The ribbon cutting to celebrate the completion of the first stage will take place in December of this year

All of the public space projects that we do work closely with local businesses and trade associations.

This is in front of Macy's department store.

And we've been doing this project -- in different parts of town.

This is Bed-Stuy in Brooklyn, so you can see there was a short road for the car, and it wasn't really needed.

So we painted the streets white, we paved the streets with epoxy pebbles, and we connected the triangle with the storefronts on Grand Avenue to create a new and wonderful public space.

We did the same thing with Dumbo in Brooklyn, where the first thing we did was transform an underutilized dingy parking lot, paint it, plant it, and transform it in one weekend.

In the three years that we've been doing this project, retail sales have increased by 172 percent.

That's double that of the same neighborhood.

They acted very quickly with paint and temporary materials.

Instead of waiting for years of research to get started, and years of research to get started, and waiting for computer models, we did it with paint and temporary stuff.

This result is not a computer model,

If you look at the streets in the real world, you'll understand

You can do many things with paint.

In total, we've created more than 50 pedestrian plazas in five boroughs of New York.

Approximately 100,000 square meters of used roadway turned into new pedestrian zone

One of the successes is that people started to imitate

After painting Times Square, a similar approach emerged After painting Times Square, a similar approach emerged: Boston, Chicago, San Francisco, Mexico City, Buenos Aires.

In fact, this is Ross, and it even mimics the green polka dots that we put on the road.

I'm going to stress it again and again, but compared to conventional construction methods, there's nothing else that works as quickly as this.

We applied this fast-acting approach to our cycling program, and in six years, cycling has become a part of everyday transportation in New York City.

I think... (Applause) It used to be a horrible place to ride a bike, but now New York is one of the top bike cities in the United States.

We immediately created a network of interconnected roads.

See map from 2007

This is how 2013 turned out after we built 560 kilometers of bike lanes.

On the screen, it's very easy and nice

One click and you're done

A new design for the streets

We built bike lanes outside of parking lanes, the first in the United States.

(Applause) Protecting bikes from cars entering and exiting parking lanes [\*Sales increased 49%] Very successful [\*Vacant stores decreased 47%]

Bicycle users are on the rise

Pedestrian, cyclist and car driver injury rates have dropped by 50 percent.

We built 50 kilometers of bike lanes that can now be seen all over the United States.

Make sure this strategy is working

The blue line is the number of cyclists, which is increasing. The blue line is the number of cyclists, which is increasing.

Green is the number of bike lanes

The yellow line is the number of casualties that stays fairly constant.

Despite the expansion of cycling, there's no net increase in injuries, which means we're numerically safer, which means we're numerically safer.

Bike lanes aren't for everyone, and a few years ago there were legal battles and excessive media coverage.

A Brooklyn newspaper calls Prospect Park West bike lanes A Brooklyn newspaper calls Prospect Park West bike lanes "Except for the most violently conflicted districts, the Gaza Strip."

(Laughter) We did it like this.

If you read the newspapers deeply, you'll find that people are far ahead of the media and politicians.

In fact, politicians would be happy to have such a high approval rating.

64% of New Yorkers support bike lanes

This summer, we launched Citi Bike, the largest bike-sharing program in the United States, with 6,000 bikes in 330 adjoining parking lots.

It's been used 3 million times since we launched this program.

It's a calculation that I ran a total of 10 million kilometers.

I have traveled 280 times around the globe.

This little blue key gives you access to the city's newest form of transportation.

Daily usage continues to rise

An average of 36,000 people cycle in New York every day.

The record number of Citi Bike users so far is 44,000 in August.

In New York City, 40,000 people rode Citi Bikes yesterday alone.

1 bike is used 6 times a day

The bicycles we see on the road are also changing.

You used to be a man like the one on the left, a motorcycle messenger like a ninja.

Now cyclists are like New York.

Diverse, young, old, black, white, women, children, all use it

Economical, safe and convenient

very basic

We've applied this method to buses, and New York City has the largest fleet of buses in North America, but the slowest.

As we all know, walking is faster than taking a bus to get around town.

So we opened six express bus routes and about 90 kilometers of new bus lanes, focusing on New York City's densest neighborhoods.

Pay the fare at the vending machine before boarding the bus.

These lanes are closed to regular vehicles, and if you use them, you'll be photographed by surveillance cameras and issued a citation, and it's been very successful.

One of my favorite memories is the day I started CitiBike as Director of Transportation. I was riding the CitiBike on First Avenue bike lanes. I looked around and saw pedestrians, standing safely in pedestrian spaces, cars moving smoothly, birds chirping...

felt great

This is what it looked like six years ago

What we've learned from the New York experience is that it's possible to change the streets on the fly, that it's possible to change the streets on the fly, and that it's cheap and has immediate benefits and can become a hotspot.

just look at the streets

Because it's hidden in the scenery of everyday life

thank you

(applause)

"Iran is Israel's best friend and will not change our stance on Tehran."

Believe it or not, the Israeli Prime Minister said, not Shah David Ben-Gurion or former Prime Minister Golda Meir, not Shah David Ben-Gurion or former Prime Minister Golda Meir.

In the words of the late Prime Minister Yitzhak Rabin

Travel back in time to 1987

Khomeini was the supreme leader, like Mahmoud Ahmadinejad is now.

Rabin called Iran his geostrategic friend.

When we hear threats of war and just cause today, we often assume it's one of those unsolvable Middle East conflicts, because it has roots as deep as the region.

It's totally irrelevant, actually, and that's what I want to explain today.

Relations between Iranians and Jews have actually been quite good historically, dating back to 539 B.C., when Cyrus II of Persia liberated the Jews from Babylonian captivity.

One-third of all Jews remained in Babylonia.

Iraqi Jews today

a third emigrated to Persia

That's today's Iranian Jews, 25,000 of whom still live in Iran, forming the largest Jewish community in the Middle East outside of Israel.

The remaining one-third who returned to historic Palestine completed the Second Temple in Jerusalem, funded by ancient Persian taxpayers' money.

But even in modern times, there are times when relationships are good.

Rabin's statement -- a reflection of years of security and intelligence cooperation between the two countries -- was born out of a common threat.

Both countries feared the former Soviet Union, Egypt, Iraq, and other Arab powers.

And then there was the Peripheral Israel Policy, where Israel's security would be achieved by forming alliances with the non-Arab countries on the periphery, in order to balance its Arab neighbors.

The Shah of the time wanted to keep this as private as possible, so when Yitzhak Rabin visited Iran in the 1970s, he usually wore a wig and disguised himself so that no one would notice.

The Iranian government has created a special tarmac at Tehran's airport, away from the main terminal, so that Israeli planes frequently fly between Tel Aviv and Tehran unnoticed.

Did this relationship end with the Iranian-Islamic revolution of 1979?

Despite the clearly anti-Israel ideology of the new Iranian government, cooperation between the two countries was still geopolitically logical, because they still had a common enemy.

When Iraq invaded Iran in 1980, Israel feared an Iraqi victory and actively supported Iran, selling its weapons to Iran and even providing spare parts for American weapons. Iran was very vulnerable because of the US-imposed arms embargo.

Indeed, in the 1980s, Israel lobbied the U.S. government to talk to Iran, sell weapons, and ignore Iran's anti-Israel voices.

This movement culminated in the Iran-Contra scandal of the 1980s.

But the end of the Cold War also brought down the curtain on the secret peace between Israel and Iran.

Suddenly, the common enemy that had brought our two countries closer together for decades had all but disappeared.

The old Soviet Union collapsed, Iraq was defeated, and a new political system was created, and both countries felt safer, but without the restraints they had.

Iraq, which held the Iranian balance, was gone, and some people said that Iran could be a threat to Israel.

In fact, the current Iranian-Israeli power relationship has its roots in the post-Cold War geopolitical restructuring of the region rather than in the Iranian-Islamic Revolution of 1979, because at this point, both Iran and Israel emerged as one of the strongest powers in the Middle East, rather than perceived as security partners, as rivals and competitors.

After lobbying in the 1980s to improve U.S.-Iranian relations, Israel wanted to isolate Iran because it feared a U.S.-Iranian peace deal that could cost Israel's security.

Ironically, this coincided with a time when Iran was more interested in negotiating peace with the United States than in wanting the destruction of Israel.

Iran has isolated itself with radical Islamism Iran has isolated itself with radical Islamism After the 1991 Gulf War, which indirectly supported the United States, what the Iranian government wanted was to be rewarded with a place in the post-war security fabric of the Middle East.

But the U.S. government ignored Iran's outreach, and the same thing happened 10 years later with the invasion of Afghanistan. And instead of deepening its isolation, Iran adopted an anti-Israel ideology as an operational policy, this time around 1993-94.

The Iranian government believed that no matter how hard they tried, no matter how hard they tried, no matter how hard they tried, the United States wanted Iran to remain isolated, so the only way for Iran to move the American government was to put pressure on the United States.

The quick target was the Israeli-Palestinian peace talks. Now, Iran's ideological assault took on an unprecedented character, and Iran began to provide massive aid to a group of Palestinian Muslims hitherto shunned.

It may sound paradoxical, but Martin Indik, who was Israel's ambassador during the Clinton administration, said that the Iranian government wasn't entirely wrong, because the more peace there was between Israel and Palestine, the more the United States thought Iran would be isolated.

So the more isolated Iran is, the more peaceful it will be.

Special envoy Indik said that the Iranian government had blocked Israeli-Palestinian peace talks through the US government to break the containment policy.

To break containment, ideology was irrelevant.

But even in the darkest times of entwined interests, both sides have reached out to each other.

Israeli Prime Minister Benjamin Netanyahu, who was elected in 1996, approached Iran and sought to see if it could restore alliances with its peripheral non-Arab nations.

The Iranian government showed no interest

A few years later, Iran sent a comprehensive negotiation proposal to the then Bush administration, which suggested that Iran and Israel might return to the negotiating table.

The Bush administration at the time didn't even respond to this.

Each player has always missed an opportunity to take advantage of the opportunity.

But it's not like the ancient conflict.

not an ideological conflict

Back-and-forth hostilities fluctuate not with ideological fervor, but with changing geopolitical landscapes.

A good example is the Iranian-Israeli security agenda that turned toward cooperation, not a catastrophic ideological confrontation.

When Iran's ideological momentum is combined with strategic interests, strategic interests always win.

I consider this to be good news, because war and confrontation will be avoided.

But there are also people who want war.

Some people remember 1938 that Iran was the old Germany and Ahmadinejad was Hitler.

If that's the correct interpretation, the fact is, it's 1938, Iran is the old Germany, Ahmadinejad is Hitler, and the question we have to ask ourselves is, who will play Neville Chamberlain?

Who would sacrifice peace?

This metaphor is designed to deliberately undermine diplomacy, and when diplomatic ties are cut off, war inevitably ensues.

There are no truces in ideological conflicts, there are no draws or reconciliations, you either win or you lose.

But looking at today's situation from an ideological point of view, it's far wiser to seek peace than to make war inevitable.

The Iran-Israel conflict is a new phenomenon that has only surfaced in the last few decades of its 2,500-year history. Its roots are very much geopolitical, so there are solutions.

The late Prime Minister Yitzhak Rabin once said, "I will not reconcile with my friends.

It is with the enemy.”

thank you

(applause)

For the last two and a half years, I've been one of the few, if not the only, child psychiatrist working on the coastlines of Greece and the Mediterranean, on relief ships and in refugee camps.

What I can say with certainty is that we are witnessing a mental health catastrophe that will affect the majority of us and change the world.

I live in Haifa, but these days I spend most of my time abroad.

While I was on the Greek island of Lesbos, on board a rescue ship in the Mediterranean, thousands of refugee ships arrived on the coast, swarming with more than 1.5 million refugees.

A quarter of them are children, fleeing war and deprivation.

Each ship carries a different kind of pain and trauma from Syria, Iraq, Afghanistan, African countries.

Over 12,000 refugees have lost their lives in the last three years alone.

And there are hundreds of thousands of people whose mental and mental health has been compromised by this cruel and deeply traumatic experience.

Let me tell you about Omar, a five-year-old Syrian refugee boy who made it to the shores of Lesbos in a cramped inflatable boat.

I couldn't comprehend what was happening to me, and I was screaming in fear, and I was getting new traumas.

I quickly realized that this was the "golden hour," and in that short amount of time, I could change this kid's story -- the story he's going to remember for the rest of his life.

I can reconstruct his memory.

I reached out quickly and spoke to his upset mother in Arabic, "Ateeni elwalad o khudi nafas."

"I will take care of that child. Please take a break."

the mother handed me the child

Omar was frightened and looked at me with fearful eyes and said (in Arabic) "Ammo," "Uncle."

"shut hada?" "What is that?"

He was pointing at a police helicopter circling overhead.

"It's a helicopter!

I'm taking pictures of you with a big camera, because only great and strong heroes like Omar can cross the ocean."

Omar looked at me, stopped crying and asked (in Arabic) "Ana batal?"

"Am I a hero?"

i talked to him for 15 minutes

and advised his parents on what to do next.

This short psychological intervention will reduce the incidence of PTSD and other mental disorders in the future and prepare Omar to get an education, enter the workforce, raise a family and beyond.

how?

It enhances the memory of good experiences, which are stored in the amygdala, which stores emotions.

In the future, when the memory of that good experience comes back, it will fight the traumatic memory.

For Omar, the smell of the sea won't just be a reminder of his painful voyage from Syria.

Because for Omar, this story is now a story of courage.

This is the power of golden hour, when trauma can be reframed and narrative remade.

But in this refugee crisis alone, there are more than 350,000 children without adequate mental health support, and Omar is just one of them.

Out of 350,000 children, I'm the only one.

We need mental health professionals to join our relief teams during conflict.

So my wife and I and some friends co-founded the Humanity Crew.

It is one of the few relief organizations in the world that specializes in emergency response psychosocial assistance and mental health interventions for refugees and forced migrants.

We've created a four-step psychosocial approach that follows the journey refugees take to reach them with appropriate interventions.

First as a mental health rescuer, at sea and on a rescue ship.

Then in refugee camps and hospitals, and in online clinics that overcome borders and language barriers.

Finally, we help refugees to assimilate in the countries of refuge.

Since its first mission in 2015, the Humanity Crew has had a delegation of 194 qualified and further trained volunteers and therapists.

We have provided 26,000 hours of mental health assistance to more than 10,000 refugees.

There are things we can do to prevent mental health catastrophes.

We need to recognize that emergency response is not just about the body, it's about the mind and the spirit.

The mental effects are mostly invisible, but the damage can last a lifetime.

We must not forget that what distinguishes us humans from machines is the beautiful and delicate soul within us.

Let's work hard to help more Omar

thank you

(applause) (applause) (applause)

As you mentioned, I'm a brain researcher, studying the function and structure of the human brain.

I want you to think for a moment about what that means.

The brain is a jelly-like mass that weighs about 1.4 kilograms, the size of the palm of your hand, but it allows you to imagine the vastness of outer space.

I think about what it means to be infinite, and I think about myself thinking about it.

I believe that this strange recursive quality that we call self-awareness is the ultimate goal of neuroscience, and one day we hope to understand how it works.

So how do we study this mysterious organ?

There are 100 billion nerve cells, these little clusters of protoplasm interacting with each other, and out of their activity come various abilities that we call humanity, or human consciousness.

How does it come about?

There are many ways to study the functioning of the human brain.

We primarily use patients with persistent damage caused by abnormal gene expression in small regions of the brain.

What happens when that happens is not a general decline in mental functioning, a kind of cognitive dullness.

Only one function is selectively lost, while other functions remain intact, which confirms that that part of the brain is performing its function anyway.

By mapping function to structure in this way, we can see how a given neural circuit makes up a particular function.

that's what we're trying to do

Here are some notable examples

I'll give you three examples, six minutes each.

The first is a very strange condition called Capgras Syndrome.

Look at the slide, in order, the temporal lobe, the frontal lobe, the parietal lobe. These lobes make up the brain.

Tucked away within the medial surface of the temporal lobe, which you can't see here, is a small region called the fusiform gyrus.

It's also called the "face area," because when damaged, people's faces become unrecognizable.

I can recognize him by his voice, and I can say, "Oh, that's Joe," but I can't recognize him by his face.

I can't even recognize my own face in the mirror

Well, if you wink, they wink too, so you know it's you in the mirror, but you can't really know that it's you.

It's well known that this condition is due to damage to the fusiform gyrus.

But there are other, rarer conditions that are so rare that most doctors have never even heard of them, even neurologists.

It's called Capgra's delusion, where, otherwise perfectly normal, he wakes up from a coma with a head injury, and otherwise perfectly normal, he looks at his mother's face and says, "This woman looks exactly like her, but she's a fake."

``Another woman is pretending to be my mother''

Why is this happening?

Why would an otherwise perfectly sane and intelligent person, when he sees his mother, go into delusions and say she's not his mother?

The most common interpretation of this, found in all psychiatric textbooks, is the Freudian view, which applies to women as well, but I'm only talking about men here.

This is the view that during early childhood, people felt a strong sexual attraction to their mothers.

It's called the Oedipus Complex.

I don't believe this, but that's the standard Freudian view.

As you grow and develop your cerebral cortex, your subconscious sexual drive toward your mother is suppressed.

Otherwise, every time I see my mother, I'll get lustful.

If you get hit in the head and damage the cerebral cortex, if you get hit in the head and damage the cerebral cortex, this subconscious sexual drive rises, it flares to the surface, and you suddenly and inexplicably find yourself lusting for your mother.

And I said, 'Oh, this is my mom, why am I so excited?

She must be another woman She's a fake

That's the only interpretation that makes sense for a damaged brain.

This argument makes no sense to me...

Freudian arguments are, as always, very inventive. (Laughter) It doesn't make sense, because I've seen patients with similar delusions about their pet poodles.

(Laughter) They say, "Doctor, this dog looks exactly like Fifi, but it's not Fifi, it's another dog."

Apply the Freudian explanation

(Laughter) So you're talking about the latent desire to bestiality that's common in humans?

So what is actually going on?

To explain this strange disorder, let's look at the structure and function of normal visual pathways in the brain.

Normally, visual signals enter the eyeball and go to the visual cortex of the brain.

In fact, there are 30 parts in the back of the brain that are solely concerned with vision.

There are neurons there that are sensitive to faces.

The "area of ​​the face" that I mentioned earlier

It was a good place to call

When that area is damaged, we lose the ability to see faces.

But from that area, messages are sent to an area of ​​the limbic system called the amygdala, the emotional core of the brain. That structure, called the amygdala, assesses the emotional significance of what we see.

Is it prey, predator or mate?

Or something completely insignificant, like lint, or chalk, or -- I hate to say it -- one shoe, or something like that.

can be completely ignored

If the amygdala is excited, it's considered something important and a message is sent to the autonomic nervous system.

heart beats faster

You start sweating to dissipate the heat created by your muscle movements.

Conveniently, we can place electrodes on the palms of our hands and measure the changes in the electrical resistance of our skin caused by sweat.

So what it does tell you is if you're excited or lusting when you're looking at something.

More on that later

Here's my idea: when this person sees an object, it doesn't matter, it goes to the visual cortex, and it's processed in the fusiform gyrus, and it recognizes whether it's a beanstalk, or a table, or a mother.

From there, messages are sent to the amygdala and passed on to the autonomic nervous system.

But maybe this person's nerve fibers from the amygdala to the limbic system -- the emotional core of the brain -- were severed in an accident.

Because the fusiform gyrus is normal, it can still recognize the mother and say, "Yeah, she looks like her."

But because the nerve fibers to the emotional centers are severed, they say, "But mothers, why can't they feel the warmth?"

Conversely, you may also feel "fear"

(Laughter) That's why I say, "I can't explain this inexplicable lack of emotion.

this can't be the mother

She's a strange woman pretending to be her mother."

How can this be verified?

I'm going to take one of you here, put you in front of a screen, measure your galvanic skin response, and put a picture on the screen and measure how much you sweat when you look at an object.

Show a sexy picture of a lion or a tiger and they'll start sweating.

And what's more, when I show her a picture of her mother, like most people, she starts sweating.

You don't have to be Jewish

(Laughter) So what happens with this patient?

You bring the patient in, show the picture on the screen, and measure the electrodermal response.

Nothing happens on a table or a chair or in chili like a normal person, but when you show him a picture of his mother, the galvanic skin response is flat.

They have no emotional response to their mothers because the neural pathways from the visual to the emotional centers are cut.

Your visual cortex is normal, so your vision is normal, your emotions are normal, you laugh, you cry, but your visual-to-emotional neural pathway is broken, so you're delusional that your mother is a fake.

This is a great example of our research, which takes a bizarre and seemingly puzzling neuropsychiatric condition and concludes that the standard Freudian view is wrong.

By the way, the next time this patient gets a call from his mother in the next room, he says, "Hey mom, how are you? Where are you now?"

No delusions on the phone

When his mother approaches him an hour later, he says, "Who?

You look like my mother

The reason is that there are different pathways from the auditory center of the brain to the emotional center, which weren't severed in the accident.

So, on the phone, I have no problem recognizing her as my mother.

But when you face it, you say it's a fake

So how are these complex circuits put together in the brain?

Born genetically? Or was it bred?

EnglishAnd one way to approach this problem is to consider another interesting condition called the phantom limb.

You know the phantom limb

When an arm or leg is amputated to treat gangrene, or lost in the Iraq War or whatever, this is a serious problem right now... the presence of the missing arm continues to be alive and well, and that's called the phantom limb.

Phantoms can actually occur in almost any part of the body.

Surprisingly, even in the gut.

Some patients had hysterectomies, had phantom wombs, and even had phantom menstrual cramps at certain times of the month.

A student asked me the other day if I had the phantom premenstrual syndrome.

(Laughter) It's enough of a scientific question, but we haven't tackled it yet.

So the next question is, what can we learn about phantom limbs from experiments?

One of the things we found is that half of the patients with phantom limbs can move their phantoms.

Tap your brother on the shoulder, pick up the ringing phone, or wave goodbye.

It feels so real and vivid.

The patient is not delusional

We know we don't have arms, but it's still an indistinguishable sensory experience.

However, it does not occur in about half of patients.

They say, "But sir, the phantom limb is paralyzed.

I'm in a convulsive state and it hurts a lot.

If only I could move it, the pain would be eased."

So why is the phantom limb paralyzed?

sounds like a contradiction

But when I looked at the case notes, I found that people with paralyzed phantom limbs had their original arm paralyzed from a peripheral nerve injury.

The nerve connection to the actual arm had been severed, for example in a motorcycle accident.

So the patient hangs the painful real arm in bandages for a few months to a year, and the surgeon, in a misguided attempt to remove the pain in the arm, amputates the arm.

this is a serious clinical problem

the patient is depressed

some even commit suicide

How can we treat this syndrome?

Now let's think about why paralyzed phantom limbs occur.

When I looked at the case notes, I noticed that they had a real arm, and the nerve that supplies the arm had been severed, and the real arm had been paralyzed, and had been suspended in bandages for months before the amputation, and the pain carried over to the phantom arm.

Why is this happening?

When the arm was paralyzed before it was amputated, the frontal lobe would tell the arm to move, but it would receive visual feedback that it wouldn't move.

Move, don't move, move, don't move...

This gets baked into the circuitry of your brain, and it's called "learned paralysis."

Through this "Hebbian association," the brain learns that a simple command to move the arm produces sensations in the paralyzed arm.

When you amputate your arm, this learned paralysis carries over into your body image, your phantom arm.

How can we save the patient?

Can you remove the learned paralysis, remove the painful, cramping spasm of the phantom arm?

I thought, why not send commands to the phantom arm and give visual feedback that the arm is following those commands?

I thought I might get rid of the phantom pain, the phantom spasm

How can we do that? it's virtual reality

It costs millions of dollars

I figured out a way to do it for $3, but don't tell my sponsors...

(Laughter) I build what I call a "mirror box."

You take a cardboard box with a mirror in the middle and put your phantom arm in there, and your first patient, Derek, comes in.

I had my arm amputated ten years ago.

Trauma to the upper arm severed the nerve, paralyzing the arm and amputating it after hanging it in bandages for a year.

I have a phantom limb and it hurts so much but I can't move it.

It's a paralyzed phantom limb

I gave you that box with the mirror, it's the "mirror box".

He puts his phantom arm, which is convulsively clamped, into the left side of the mirror, and puts his normal arm into the right side of the mirror, and then puts it in the same shape, the clasped shape, and looks in the mirror, what happens?

I see the phantom arm reanimating I'm looking at the reflection of the normal arm in the mirror and that's what the phantom arm looks like reanimating.

"Well," I said, "try twitching the phantom, look in the mirror and move your real finger."

He gets visions of moving phantoms, right?

It's obvious, but to my amazement, the patient says, "Oh, my vision is working! The pain and the constricting spasms are easing."

Thank you, the first patient, (Applause). When the first patient looked in the mirror, I said, "Look at the vision in the mirror."

He chuckled and said, "I can see visions."

but he's not stupid

I know it's a mirror reflection, but it's a vivid sensory experience.

Then I said, "Move the real arm and the phantom."

He said, "No, it hurts and I can't move the illusion."

I say "move your normal arm"

He said, "Oh, the vision has begun, I can't believe it!

The pain is also easing," he says.

I said "close your eyes"

he closes his eyes

"Please move your normal arm."

"Oh nothing happens I'm cramping again"

"Yes open your eyes"

"Wow! It's moving again!"

he was like a kid in a candy store

This proves my theory about learned paralysis, a crucial role for visual input, but moving his phantom arm doesn't get him a Nobel Prize.

(Laughter) (Applause) It's a completely useless ability when you think about it.

(Laughter) But then I realized that other paralysis that we see in neurology, like stroke or focal dystonia, maybe there's something that's been learned that we might be able to overcome with a simple device like a mirror.

So I said, "Hey Derek," because you can't just walk around with a mirror to ease the pain, so I said, "Take the mirror home and practice it for a week or two.

Maybe with practice you won't need the mirror, you'll forget the paralysis and you'll be able to move your paralyzed arm, and you'll be pain free."

he agreed and took it home

"Well, it's only two dollars, so please take it."

Two weeks after I brought it home, he called me, and he said, "Doctor, you probably won't believe me."

"Huh? What do you mean?"

he says "it's gone"

"What's missing?"

I thought maybe I lost the mirror box

(Laughter) "No, no, it's a vision that tormented me for ten years.

It has disappeared."

I got worried and said, "Oh my god!" I had changed his body image.

I asked, "Derek, does this bother you?"

He said, "No, for the past three days, I've had no phantom arm pain, no phantom elbow pain, no constriction, no phantom forearm pain, all pain gone.

The problem is that I still have a phantom finger hanging from my shoulder because it can't be reached in a box."

(Laughter) "If you change the design and put it on your forehead, you can do the same thing and get rid of the phantom finger, right?"

he thought i was a magician

How does this happen?

That's because the brain is confronted with a tremendous sense of contradiction.

Sight tells us that the phantom has returned.

On the other hand, you don't have proprioception from your muscles, because the signals from your muscles say, "I don't have an arm."

The motor command says I have arms. Because of this contradiction, my brain says, "I'm sick of it. I don't have illusions. I don't have arms."

We get into a kind of negation, choosing a signal.

So when the arm disappears, the pain disappears as well, because the pain of withdrawal can't be floating in the air.

it's an unexpected gift

This technique has also been tested in Helsinki with dozens of patients, and may prove beneficial as a treatment for phantom pain, and some have actually tried it for stroke rehabilitation.

It's usually thought that a stroke causes damage to the nerve fibers, and that there's nothing you can do about it.

But it turns out that one component of the paralysis that occurs in stroke is also learned paralysis, and it might be overcome using mirrors.

This too has been tested in clinical trials and has saved many patients.

Now let's switch gears for the third part of the story, a strange phenomenon called synesthesia.

Discovered by Francis Galton in the 19th century

he is cousin of charles darwin

He pointed out that some people, while everything else was normal, had this peculiarity: every time they looked at a number, they were always in color.

5 is blue, 7 is yellow, 8 is yellowish green, 9 is indigo, etc.

Remember, these people are otherwise perfectly normal.

Or the sharp in C. Sometimes scales evoke colors.

The C sharp is blue, the F sharp is green, the other notes are yellow, and so on.

Why is this happening?

This is called synesthesia, as Galton called it, a mixture of sensations.

All sensations are distinctly different

These people have mixed feelings

Why is this happening?

One of the two aspects of this problem is very interesting.

Synaesthesia has a family history, so Galton thought it was genetic.

And one more thing, which brings us to the main topic of this course -- creativity -- synesthesia is eight times more common among highly creative people -- artists, poets, novelists -- than it is in the general population.

Why?

I will answer that question

this was not yet clarified

So what is synesthesia?

there are various theories

one is that they're just crazy

Well this is not a scientific theory so forget it

Some theories say they're drug addicts

There may be some truth to this, because it's more common here in San Francisco than in San Diego.

(Laughter) So for the third theory, let's ask ourselves what exactly is going on with synaesthesia?

In the brain, we found that the color and number regions are adjacent, in the fusiform gyrus.

So I thought that maybe there was some sort of accidental alternating association between colors and numbers in my brain.

So every time you look at a number, you see the corresponding color, and as a result, you get synesthesia.

Why is this happening?

Why do some people have alternating ties?

Remember when I said it was related to the family tree?

that will give you a hint

Abnormal genes exist, and genetic mutations create alternating connections.

We are all born with everything connected to everything else.

Every region of the brain is connected to other regions, which are then debranched to create the unique modular structure of the adult brain.

If a gene causes debranching and that gene is mutated, de-branching is defective between adjacent regions of the brain.

If it's between numbers and colors, it's number-color synesthesia.

If it's scale and color, it's scale and color synesthesia.

So far so good

What if that mutant gene was expressed all over the brain and everything was interconnected?

Think about what artists, novelists, and poets have in common: the ability to think metaphorically, connecting seemingly unrelated ideas, like, "There's the East, and Juliet is the Sun."

You wouldn't say that Juliet is the sun You mean she's a ball of flame that sparkles?

Schizophrenics say so, but that's another story.

Ordinary people say she's warm like the sun She shines like the sun She gives grace like the sun

You'll soon find a connection

Assuming that this enhanced state of connectivity and conceptual intersection exists in other parts of the brain, people with synesthesia are more likely to generate more metaphorical thinking and creativity.

That's why we see eight times as many cases of synesthesia among poets, artists and novelists.

This is a very phrenological view of synesthesia.

Can we have one more minute for the final demonstration?

(Applause) I'm going to show you that we're all synesthetes, even if you don't think so.

This is what I call the Martian alphabet, just like the normal alphabet: A is A, B is B, C is C.

Different forms correspond to different phonemes

This is the Martian Alphabet

One is "Kiki" and the other is "Buba"

Which one is Kiki and which one is Buba?

If you think Kiki is on the left and Buba is on the right, please raise your hand.

There are one or two mutants.

(Laughter) Whoever thinks Buba is on the left and Kiki is on the right, raise your hand.

99 percent of you

No one is Martian, so how did that happen?

You've cross-modeled the abstraction of synaesthesia, which is to say that the sharp kiki in the auditory cortex -- the kiki that excites the hair cells -- is similar to the sudden bends, the jagged shapes that you can see.

This is very important, because it seems like a silly illusion because your brain says it's engaged in primitive things, but the photons in your eyes are shaping, and the hair cells in your ears are responding to that auditory pattern. Your brain is drawing out common meanings.

It's a primitive abstraction, and we know it happens in the fusiform gyrus of the brain, because when it's damaged, you lose the ability to distinguish between Buba and Kiki.

When I asked him what he meant when he said, "Not all that glitters is gold."

The patient said, "It's metal and it's shiny, but it's not gold.

I have to weigh that specific weight."

completely overlooking its metaphorical implications.

This region is eight times larger in higher primates, especially in humans, than in lower primates.

There's something very interesting going on here in the angular gyrus, because it's the intersection between hearing, sight and touch, and it's getting huge in humans, so there's something very interesting happening.

I think that's the basis for some of the uniquely human capacities of abstraction and metaphor and creativity.

All of these questions that philosophers have explored for thousands of years, we scientists can begin to explore through brain imaging, patient studies, and asking the right questions.

thank you

(Applause) Sorry for running out of time.

(smile)

I'm an infectious disease doctor, and after my training, my experience in San Francisco, after my training, my experience in San Francisco, I moved to Somalia.

The director of the infectious disease department at San Francisco General Hospital said, "Gary, this decision is the biggest mistake you can make."

But I was deployed to help refugees in 40 camps with a million refugees, and only six doctors.

There were many diseases

My job was mainly to diagnose and treat tuberculosis, but then there was the cholera epidemic.

It was my mission to stop the spread of tuberculosis and cholera, to stop the spread of tuberculosis and cholera.

There was a shortage of medical workers to carry out this task, so naturally we had to recruit local refugees to serve as a new category of medical staff.

After three years in Somalia, I was hired by the World Health Organization to work on AIDS.

I worked mainly in Uganda, but I also went to places like Rwanda, Brunei, Zaire, the current Congo, Tanzania, and Malawi.

My last mission here was to run the Department of Medical Intervention Development My last mission here was to run the Department of Medical Intervention Development.

By the time I had worked overseas for 10 years, I was completely exhausted.

I have exhausted my energy

move from country to country

I also feel strong loneliness

wanted to go back to america

I've seen a lot of deaths, especially deaths from contagious diseases, and contagious deaths are different from normal deaths.

It's filled with panic and fear. I can still hear women screaming in the middle of the desert.

After returning to Japan and resting for a while, I thought it would be nice to do something new again.

I never thought America had a contagious problem.

In fact, I didn't know anything about the problems in America.

It's true

In fact, no matter which friend's house you visit, there's something like a water pipe that delivers water to the house.

Are there any of you who are similarly lucky?

(Laughter) And most of the homes have water in multiple rooms.

I learned that a small temperature controller installed in a house can control even a slight temperature change of 1 or 2 degrees.

now i also use

Now, as I was wondering what I was going to do, a friend of mine told me that it's time for kids to shoot kids.

So I asked, in response to this, the people of this country—

What is America doing? and

There were two essential ways of dealing with it that had become commonplace.

one is punishment

i've heard this too

Behavioral research experts understand that punishment is both useful and overrated.

Because punishment doesn't shape behavior or motivate behavior change.

It also reminded me of ancient epidemics that had been completely misunderstood before, because science was immature. At the time, the common causes of epidemics like plague, typhus, and leprosy were bad people, bad fluids, bad environments.

The other coping method -- it's not so much a coping as it's a solution -- just get everything right -- the school, the community, the home, the family, everything.

I've heard this before

I call it the "everything" theory, or EOE (everything on earth).

But what we do know is that we don't necessarily have to fix everything to fix other processes and problems.

And I felt there was a big gap here.

The issue of violence was deadlocked, and this is true of many other issues throughout history.

diarrheal disease or

The malaria problem was also at a dead end.

If this is the case, you should reconsider your strategy.

I don't have a clear idea of ​​what to do, but I felt that something had to be done about new categories of talent, about changing human behavior, about educating the general public.

So I put together my questions and started gathering information that I could use to study the epidemic: What is the distribution map?

What are the numbers on the graph?

what about the data? examined

If you look at the distribution of violence, this is what most American cities look like.

There are clumps here and there

This local mass reminded me of epidemics like cholera.

If you look at the graph, you can see the wave after wave that is typical of epidemics, because an epidemic is many epidemics put together.

So violence seemed like an epidemic.

So I asked myself, what could actually predict violence? and

It turns out that the preceding violent events lead to secondary violence.

If you have a case of the flu, it's analogous to how flu and colds can be passed from person to person, and that your greatest risk of contracting tuberculosis is coming into contact with someone who has tuberculosis.

So in a way, violence behaves like an epidemic.

I'm sure you've all noticed, from everyday experience and newspaper articles, how fights have turned into more violence, gang wars, civil wars, even genocides.

But there's also good news. There's a way to stop contagion, and by doing just three things, you can stop contagion.

In order to prevent contagion, we need to investigate and find the source.

If it's tuberculosis, you have to find tuberculosis patients who are spreading the bacteria.

Of course, right?

By the way, there are experts who do that.

So we've created new categories of talent for this problem as well, such as SARS experts and people who can track down the origin of avian flu.

In the case of violence, it's coming from people who are very angry -- for example, people who have jealousy or financial troubles -- and we find people who can deal with this, and we train them and bring them into a special category of people.

The second thing to do -- and obviously, is to prevent further spread -- people who have been exposed to the risk of infection but have not yet spread it, such as people with mild symptoms of tuberculosis, or people who travel in and out of the community where they live.

The third is to change the norm environment, which requires a lot of community action, a lot of change, a lot of public education, and that's what we call herd immunity.

It was the combination of these factors that allowed us to successfully halt the spread of AIDS in Uganda.

So in 2000, we decided to recruit a new category of people to do these things, first create people who stop violence.

So we did all of the things I've been telling you about in one area, which at the time was the worst neighborhood in America.

We chose people from this region to stop violence. Credibility, trustworthiness and access were key. It's the same as what we did in Somalia, but in a different field, so we redesigned it.

People in other departments are outreach workers, who put violent people in psychotherapy and watch over them for six to 24 months.

It's like tuberculosis treatment, but the goal here is behavioral change.

It also required a lot of community action to change the norm.

Well, the result of this first attempt was a 67 percent reduction in shootings and homicides in the Chicago neighborhood of West Garfield.

(Applause) It's a happy outcome for the district, too. The first 50 to 60 days, the next 90 days were calm, and unfortunately, after another 90 days, there was a shooting.

I started using parks that I didn't use before.

It was warm and cheerful outside, and everyone was happy.

Of course, the funders said, "You've done so well, do it again."

Thankfully, we got funding to repeat this experiment, and this is one of four more districts that have seen a 45 percent reduction in shootings and homicides.

Since then, the method has been replicated around the world, 20 times.

An independent evaluation of this new method, conducted at Johns Hopkins University in collaboration with the Department of Justice and the Centers for Disease Control and Prevention, found a 30 to 50 percent reduction in shootings and a 40 to 70 percent reduction in homicides.

In fact, there have been three independent evaluations so far.In fact, there have been three independent evaluations so far.

As a result, it received a lot of attention and even made a Sunday feature story in the New York Times.

In 2009, The Economist called it "a tool that is beginning to attract attention."

Our work has become a movie

[The Interrupters] But it's not all smooth sailing, because there are quite a few people who don't agree with this method.

There was a lot of criticism, a lot of dissenters, a lot of opponents.

So this is a health issue?

Is this contagious?

What do you mean it's not the bad guy's problem? was criticized as

There's also a big industry built to keep bad guys under control.

What's the point of hiring someone with a criminal record?

A work friend said to me, "Gary, you've been criticized so much.

So you must be doing the right thing."

(Laughter) My musician friend said, "Wow."

Anyway, since then, we've had this problem, and we've been the subject of a lot of criticism for not addressing other problems.

But we've been able to put malaria under control, and AIDS and diarrheal diseases to be reduced, without rebuilding the economy in a region with terrible economic conditions.

So what's really happened is that, despite some objections, it's clear that this movement is growing.

In many major cities in the United States, like New York, Baltimore, Kansas, city health departments are doing this now.

Health departments in Chicago and New Orleans are playing a big role in this effort.

Police are adopting this method more than they did a few years ago.

Emergency care centers and hospitals are also cooperating.

The United States Conference of Mayors not only endorsed that effort, but endorsed it as a concrete example.

It was the international community that embraced this sooner, with Puerto Rico's first district seeing a 55 percent decline, Honduras starting to stop violence, Kenya putting this strategy up in its most recent elections, and Iraq successfully stopping 500 cases of violence.

Violence not only behaves like a disease, but like a disease it can be treated.

So this theory is that treatment has proven effective.

Recently, the Institute of Medicine released a workshop report that looked at some of our data and from a neuroscience perspective, looking at how this problem really spreads.

I think this is good news, because it gives us a chance to step out of the medieval way of thinking, and we felt that the field hadn't progressed since the Middle Ages.

It also gives us the dream of fewer prisons, more playgrounds, more parks, and even more, making our communities more localized, using new strategies, new processes and new people, using science to do what we've been doing with morality.

Separating emotions is one of the most important solutions for science, and it's very important in finding solutions.

I never imagined we would end up like this

So it all started, I actually wanted a vacation, but I looked at the scatterplot, I looked at the graph, I sorted out the question, and it was the result of trying a method that had been used over and over again for other problems.

I myself tried to do something different from the epidemic, but it didn't happen.

thank you

(applause)

When I'm not working on Twitter, I'm writing stories online to see what new digital tools can do.

In fact, at work, I'm also proposing new storytelling formats for storytellers on Twitter.

Today, I'd like to share with you some real-life examples, which are very interesting, taking advantage of the flexible identity and anonymity that are the characteristics of the Internet to blur the line between true and fictional stories.

But let me start with the 1930s.

Years before Twitter, radio broadcast programs, connecting millions of people to one place, the radio station.

Those radio stations produced different stories.

If there are common stories

there was a new story

For a while, it was an established narrative format, but it gradually evolved into a format unique to the medium of radio.

A good example is a story broadcast live on the radio.

A new form of storytelling was born, with radio stations broadcasting live, serialized stories.

And the reason I'm talking about radio is because I think it's a great example of how new mediums can give rise to new narrative formats, which in turn can give rise to new stories.

Now we have a whole new medium, the Internet.

This is a map of Twitter users and their relationships.

tens of millions of users

Anyone with access to the Internet can transmit information.

It's not just one place to many people, but many places to many people, as people learn how to tell stories in this new medium.

We will begin to notice that many new narrative formats have emerged.

Think of it as a vast wilderness in front of you, where you can build all kinds of buildings. Now that we've learned and become accustomed to how this wild wilderness of the Internet works, we're finally at the point where we can build buildings, and those buildings are new narrative formats that the Internet has created.

This new format is born using an existing format

Take the short story, for example, and short stories are starting to get a lot of attention again thanks to e-books and the digital marketplace.

An author named Hugh Howie has released a super short story called "Wool" on Amazon.

He says he didn't really mean to make it into a series, but it was so well received by readers that he decided to write a sequel.

Wool 2, which was slightly longer than its predecessor, Wool 3, which became a novella, and by the time Wool 5 came out, it was a 60,000-word novel.

I think Mr. Howie was able to do all this thanks to the e-book system, which allows readers to instantly see what they're saying.

He was able to publish his novel in a relatively short period of time.

because there was no one between him and the reader

Readers' feedback came directly to him, and in response to readers' opinions and requests, Mr. Howie was able to continue writing his novels.

This initiative was a new attempt

This effort began with a short story and became Howie's narrative format.

And that's what this new medium has made possible, the experiment itself has become a new format.

This is a short story by Jennifer Egan called "The Black Box."

"Black Box" was originally a story written for Twitter.

Egan persuaded the New Yorker to set up a Twitter account for his novels and write "Black Box" on Twitter.

Of course, tweets are limited to 140 characters.

As you can see, in his sketchbook, Egan created a frame the size of an actual tweet screen, where he hand-wrote each tweet. It ended up being over 600 tweets, serialized in The New Yorker.

Every night at eight o'clock, you can read short stories from your New Yorker fiction account.

I think that's pretty groundbreaking. It's like turning on the TV to read a story.

Of course, it's on Twitter, so there were many ways to enjoy Mr. Egan's story.

You can read it all at once, but what's interesting is that when you're reading it in real time, you're more likely to want to know what's going on.

It means you can't decide for yourself. Normally, when you read a story, it's the reader who decides how fast they read, but in this case, it was the New Yorker.

Another good example of fiction and short stories on Twitter is Eliot Holt, author of the novel "Evidence."

It began the tweet with, "Nov 28th at 10:13pm Woman fell off Manhattan Hotel roof and died. Identified as Brooklyn resident Miranda Brown, 44."

As the narrator, Mr. Holt begins, but the narration tapers off, and the characters Elsa, Margo, and Simon that Mr. Holt has created on Twitter continue to tell the story, narrated from different perspectives, all the way to 10:13 p.m. when the woman died.

will be connected

The point of view of these three characters created the illusion of a true story.

One reader described Mr. Holt's story as "typical of Twitter fiction." Exactly.

Narrative tone Multiple characters Simultaneous with real time

The interesting thing is that Twitter is not only playing a distribution role,

I also played a role in the production of

Holt later said, "I wrote everything with my thumb.

Lying on the sofa, I pretended to be a different person line by line and tweeted."

This ad-hoc retelling of the characters' statements made them feel like they were real, and gave credence to her unique narrative format of multiple perspectives on a single story on Twitter.

And it's even more interesting when you incorporate real-world narratives with online mutable identities.

Examples of the 2012 US presidential election, such as the "invisible Obama" mocking of Republican speeches, Romney's "binder full of women" remarks, fanfiction of a real-life show called "The White House," "The White House Twitter," all the real-life characters in "The White House," even the little bird that appeared in one scene in one episode, have accounts.

These authors are imaginative people trying to figure out what they can do with this new medium.

The "White House" on Twitter is where the fictional character of the show meets the real world.

The characters criticize the political world and denounce the darkness of the Diet.

they are democrats

Story characters discuss real-world topics

In short, I'm criticizing real-world politics.

Changeable identities, anonymity, using real-world topics to create stories that show only the good side of reality and go beyond parodies can be really interesting.

During the Chicago mayoral election, there was a parody on Twitter.

It's about Mayor Rahm Emmanuel.

The parody shows various aspects of Mayor Emmanuel, especially the mayor's use of foul language.

This Twitter account followed the day-to-day campaign and tweeted foul language.

It was a composition common to popular Twitter parodies, but it got a little strange from the middle

It started out as an election story, but as the protagonist of a real-time sci-fi novel, Mayor Emanuel goes to another dimension on election day... but that didn't actually happen.

i checked the newspaper

And how the parody came to an end

This is something that doesn't usually happen with parody on Twitter.

It's like the end of a story

Dan Sinker, the reporter and author of this novel, had kept it anonymous all this time, but in the end it was in narrative form, so he probably thought it most natural to turn it into a book.

One of my favorite things on Twitter right now is this silly show called "The Climber Show."

"The Climber Show" is a dialogue between a genius criminal and a poor detective, using the kind of structure you see on TV, and when they face each other they talk in a very strange way.

The creators said "The Climber Show" was a parody of a popular British show, but it's really weird.

Criminal genius climbers often do the kind of gestures you see on TV.

They'll pretend to be cool and take off their sunglasses or look at the camera, but it's not a video, it's a text.

I think it's a very new format, deliberately rephrasing "episodes" as "episods," and splitting the story into episodes that mimic television.

On Twitter, almost every day, a new "epassod" is posted, grouped by "epathod."

You could say the 'climber show' is experimenting with interesting formats

A funny imitation of the TV show has created a whole new format.

It is thought that there are many examples on Twitter that can be enjoyed in real time based on true stories.

There's a Twitter account called "Real-Time World War II," which tells in real-time detail what happened on this day 60 years ago, and it feels like you're reading a newspaper from the time.

And the author, Tejou Cole, has experimented with different ways of using contemporary topics to create literary interest.

here he talks about drone bombing

In these two examples, we can see that Twitter users are beginning to take on new forms of telling stories based on true events in a variety of new ways.

Real-time narratives, real and fictional, blurring the lines between the real world and the digital world, along with changeable identities and anonymity, are tools within our reach, like building blocks.

These building blocks are the materials from which the buildings and frameworks are built, and eventually the Internet wilderness becomes a city, the perfect place to experiment with creative stories.

thank you

(applause)

"Give me freedom or die"

It's a 1775 quote by Patrick Henry, member of the Virginia Colonial Legislature. He never expected that he would find so much sympathy with Americans generations ahead of him.

At the time, it was a refutation of British rule, but 200 years later, the quote has become a symbol of what many Westerners believe: freedom is the most cherished value, and the best system of political economy is one that incorporates it.

You're not wrong, are you?

Over the past 100 years, the fusion of liberal democracy and private capitalism has spurred the United States and European countries to new levels of economic development.

Over the past 100 years, the average American income has increased 30-fold, lifting hundreds of thousands of people out of poverty.

At the same time, American creativity and innovation fueled industry, which in turn contributed to the invention and manufacture of consumer electronics, refrigerators, televisions, automobiles, and the mobile phone in your pocket.

Not surprisingly, even in this crisis of private capitalism, not surprisingly, even in this crisis of private capitalism, President Obama said, "It's not a question of whether the market is good or bad. It's not a question of whether the market is good or bad.

Because nothing has the power to create wealth and spread freedom like the market.” Because nothing has the power to create wealth and spread freedom like the market.”

So, of course, the Western belief is that the whole world will eventually adopt private capitalism and liberal democracy as models of economic development, and that the world will continue to value political rights over economic rights.

But for many people in emerging markets, this is irrelevant, and what the Universal Declaration of Human Rights, adopted unanimously in 1948, did was hide the rifts that had surfaced between developed and developing nations, and the ideological differences between political and economic rights that wavered.

This crack is only widening

For the 90 percent of the world's population who currently live in emerging markets, the political rights that the West insists on are irrelevant, and what really matters is better food, better housing, better education, better health care.

"Give me liberty or die." This is fine if you have the basics in place, but if you're living on less than a dollar a day, you don't have time to spend every day trying to survive, to feed your family, to proselytize and defend democracy.

I wonder if a lot of people in this room, and people around the world, would say, "Honestly, I don't understand." Because private capitalism and liberal democracy are so sacred.

But what I want to ask you today is when you're faced with a choice.

What if you were forced to choose between where to live and the right to vote?

In the last ten years, I've been able to visit more than 60 countries, many of them in emerging markets, South America, Asia, and my home continent of Africa.

Through my encounters with presidents, dissidents, policy makers, lawyers, teachers, doctors, and people on the street, I have come to realize that many people in emerging markets feel that there is a discord between what they ideologically believe in politics and economics in the West and what people in the rest of the world believe.

Now don't get me wrong

I'm not saying that people in emerging markets don't understand democracy, or that they don't ideally choose their own president or leader.

of course you will

But all things considered, they're more concerned with how their living standards will improve, how their government will ensure it, not whether their government will be democratically elected, not whether their government will be democratically elected.

The truth of the matter raises a very thorny question, because for the first time in a long history, the political and economic ideological regimes of the Western nations have emerged as a true rival, a regime embodied in China.

China is adopting state capitalism instead of private capitalism.

We don't embrace liberal democracy, we don't value democracy.

And they prioritize economic rights over political rights.

Today, I want to tell you that the regime embodied by China is gaining traction among people in emerging markets as the regime to follow, because they are beginning to believe that it is the regime that will improve the living standards of their people in the shortest, best and fastest way.

If you're still willing to let me continue, I'd like to first explain to you why China has arrived at this economic tenet.

The first is China's economic development over the last 30 years.

The country's record economic growth has lifted millions out of poverty, and in particular, it has made significant achievements in lifting more than 300 million people out of extreme poverty.

It raised not only the economy, but also the standard of living.

At that time, only 28 percent of people had a secondary education.

now close to 82 percent

So the economy as a whole has improved significantly.

Second, China has reduced income inequality significantly without changing its political system.

Today the United States and China are the two leading economies in the world.

They have very different political and economic systems, with the United States adopting private capitalism and China broadly adopting state capitalism.

But these two countries have the same national income distribution coefficient, the Gini coefficient, which measures income equality.

What's even more disturbing is that China's income distribution has become more equal in recent years, while in the United States, inequality has increased.

Third, emerging markets are paying attention to China's amazing and legendary infrastructure policies.

China's roads, ports, and railroads aren't limited to its homeland. It's built a network of 85,000 kilometers of roads across the country, farther than the United States. And even in places like Africa, China is helping pave the roads from Cape Town to Cairo, a distance of 15,000 kilometers, three times the distance between New York and California.

Anyone can see this result

Perhaps unsurprisingly, according to a 2007 poll by the Pew Research Center, African citizens in 10 countries said, "The Chinese have done an amazing job of making their lives better," a staggering 98 percent.

Finally, China is also bringing innovative solutions to the aging problem facing the world.

Travel to Mogadishu, Mexico City or Mumbai and you'll see just how dilapidated infrastructure and logistics systems can hinder the delivery of medical supplies and healthcare to remote areas.

But thanks to a network of state-owned enterprises, the Chinese are able to use their companies to bring healthcare to these remote areas.

It may not be obvious to everyone, but when you look around the world, you point to what China is doing, and you say, "Great, what China is doing.

i want to do it myself

It looks like a feasible system."

I also want to tell you that what China is doing, with its democratic stance, is bringing about a lot of change.

Distrust has grown, especially among people in emerging markets, to the point that they believe that democracy no longer needs to be seen as a prerequisite for economic growth.

In fact, if you look at countries like Taiwan, Singapore, and Chile, you can read that economic growth, not just China, is a prerequisite for democracy.

A new study shows that the size of a nation's income has a huge impact on how long a democracy lasts.

The study found that if the national income per capita was 1,000 dollars a year, that country's democracy would last eight and a half years.

With a per capita national income of $2,000 to $4,000 a year, a democracy only lasts 33 years.

Only if the national income per capita exceeds $6,000 a year will democracy continue, no matter what happens.

What this teaches us is that we need to build a middle class that can hold government accountable first.

But it's also possible that imposing democracy around the world is a tricky thing, because it runs the risk of ultimately becoming an illiberal democracy, which may be worse than the authoritarian regimes that citizens want to get rid of.

If you look at a country where illiberalism prevails, you'll understand the terrible consequences.

Freedom House claims that 50% of the world is a democracy, but 70% of them are illiberal, with restrictions on freedom of speech and movement.

And a report published by Freedom House last year found that freedom has been declining year by year for the past seven years.

And what this tells us, to those who care about liberal democracy, like me, is that we have to find a more sustainable way, to move in the direction of liberalism in a sustainable form of democracy, and it's rooted in the economy.

But experts predict that by 2016, China will be on the verge of becoming the world's most powerful economy, widening the political and economic ideological divide between Western society and the rest of the world.

How will the world change?

I think the world will morph into more state-involved state capitalism, more state protectionism, but as I pointed out a little while ago, there will be a huge loss of political and individual rights.

The question that is posed to us is what should the West do?

So I will offer you two options.

Western countries can take either the path of "competition" or "cooperation".

If the West were to try to destroy the Chinese model, and to do so by pushing private capitalism and liberal democracy around the world, it would be like facing a headwind.

But what would be the outcome? If the West raced in, there would be widespread rifts.

Another option is for the West to cooperate, and cooperation here means giving people in emerging countries the flexibility to find organic ways in which their political and economic systems can best operate.

Do people in the audience think that they're making concessions to China, or that if they do this, the West will come second?

But let me tell you, if the United States and European countries want to maintain their global influence, why not consider temporarily working together to beat the competition? That is, they may need to focus more strongly on economic effectiveness to create a middle class, but eventually they can oversee government accountability and create the democracy we really want.

As a matter of fact, rather than flying around the world and trying to persuade countries that are allied with China, the West should rejuvenate its own businesses and increase trade and investment in emerging economies.

Rather than criticize China for its problematic behavior, shouldn't we show how good the political and economic systems of the Western countries are?

And instead of forcing democracy on the world, the West should look back at its own history books and remember that it took a long time to model regimes like the one we have today.

Supreme Court Justice Stephen Breyer reminds us that nearly 170 years after the U.S. Constitution came into force, equal rights finally came to America.

Some of you may think that even today there are no equal rights.

In fact, some groups are fighting for equality under the law.

In its heyday, the Western model was self-evident.

so people don't run out of food

get a fridge

sent mankind to the moon

But the truth is that in the past, people looked at the Western countries with admiration and said, "I want that, I want that."

The new generation looks up at China and says, "China will bring us infrastructure," "China will help us grow our economy," and "Thank you."

Because at the end of the day, our most pressing question is how can we thrive on the issues facing seven billion people on earth.

For a country that cares about that issue, it makes sense to switch between its political and economic models and choose a model that guarantees a better life in the short term.

I would like to leave you with a very personal message to all of you here today, and it is what I believe in, that each of us should be open-minded and open-minded to the dreams and hopes of bringing prosperity to the people of the world.

Let me tell you about my own history.

this photo is me

(Laughter) I was born and raised in Zambia in 1969.

At the time of my birth, black people weren't issued birth certificates, and that law only changed in 1973.

This is a certificate issued by the Zambian government.

And the reason I'm showing you this is because, 40 years later, I wanted to show you that I, who wasn't even recognized as a human being when I was born, was standing in front of a prestigious TED audience and speaking my point of view.

With this in mind, it's possible to grow the economy.

Poverty can be overcome in meaningful ways.

But what this requires is a rethinking of what we've been thinking, the institutions that have brought us economic growth, rethinking democracy, private capitalism, rethinking democracy, private capitalism, reducing poverty and building freedom.

We may need to rip out our textbooks and look at other options, and the openness to the quest for truth is the key.

And one day the world will change, and it will be a much better place than it is now.

thank you

(applause)

I've worked in urban planning and design, and I've had a background in arts support, and I majored in architecture and art history. But today, instead of design, I'd like to talk to you about America.

I know this is a global forum, but I would like to talk about the United States because historically in many places -- not all, of course -- American ideas have been widely accepted and imitated, for better or worse.

Now, the issue I want to address is that of sprawling suburban development.

While we're talking like this, here and there

There's a similar kind of suburbanization going on, where redevelopment and construction for a motorized society has turned the automobile, once a symbol of freedom, into a venting, inefficient, and life-threatening tool that, in fact, has become just an essential part of everyday life for the vast majority of Americans.

It's time to think of another way

Half of the world lives in cities

In America, many city dwellers are still dependent on their cars. Still dependent on their cars.

My aim is to propose a walkable city.

But I can't propose a design that has more impact than what I've learned from what economists and epidemiologists and environmentalists are arguing.

I'm going to touch briefly on three points.

When I was growing up in the '70s, most households spent a tenth of their income on transportation.

Since then, we've doubled the number of roads, and now one-fifth of our income comes from transportation.

For the "working family," Americans earning between $20,000 and $50,000 a year, the cost of transportation is now slightly more than the cost of living. The quest for affordable housing has led to "urban suburbanization," where people are increasingly living further from the city center and from their workplaces, resulting in a two-, three-, four-hour commute.

Some neighborhoods, like California's Central Valley, were safe when the housing bubble burst, but were hit hard by rising gas prices.

In fact, there are now more and more vacant homes.

It would make sense if the property were worth less than the balance of the mortgage you're putting everything into, and double the cost of driving every day.

So there's a high price to pay to maintain our car society, and a high price to pay.

So what would happen if the city chose a different policy?

Perhaps the best example is Portland, Oregon.

In the 1970s, Portland made a drastic decision unlike any other city.

This era was the time when most other cities simultaneously expanded their cities into car societies.

While many cities widened roads to accommodate more traffic, removing parking and trees to increase traffic, Portland rolled out plans to slim down its roads.

While other cities were investing in building roads big and small, Portland built bike paths and sidewalks.

I spent 60 million dollars on my bike, which might sound like a lot of money, but over 30 years, that's two million dollars a year, which is half the cost of the flyover we were trying to rebuild.

Along with other changes, the lifestyle of Portlanders changed. Car miles driven per day and hours driven per person began to decline in 1996. They started to decline in 1996. They are now 20 percent less than in the United States.

The typical Portlander drives 6.4 kilometers less per day than before, and drives 11 minutes less.

Economist Joe Courtright has calculated that the savings of 6.4 kilometers and 11 minutes is worth 3.5 percent of the income of the entire region, or 3.5 percent of the income of the entire region.

So instead of spending money on driving, by the way, 85 percent of the spending that goes with driving doesn't contribute to the local economy.

Portland has the highest number of roof racks per capita, the highest number of independent bookstores, and the highest number of strip clubs.

It's a bit of an exaggeration, but people in Portland spend more money on all kinds of recreation than anywhere else -- on all kinds of recreation.

In fact, people in Oregon spend more money on alcohol than they do in other states, and for better or worse, they don't drive much, which is a relief.

(Laughter) In fact, we spend most of it on housing. Investments in housing come back to the community. Investments in housing come back to the community.

And when it comes to Portland, it's not just the data I've been talking about, but young, educated people have moved to Portland.

By creating a pedestrian and cyclist-friendly environment, we not only benefited our residents, but we also made it a city that young people wanted to live in. It was a city that young people wanted to live in.

So the best policy for local economic development is not just trying to attract business as we've always done, attracting the biotech industry, the medical industry, the aerospace industry, but building cities that people want to live in.

Entrepreneurship is driven by 64 percent of young people who first decide where they want to live, first decide where they want to live, then move there and then look for a job.

Health issues are taking a scary turn, as some of you may know.

If you go all the way back to the '70s, 1 in 10 people were obese.

Today, one in three people is obese, the other half are overweight.

25% of young men and 40% of young women cannot join the U.S. military because of their weight.

According to the Centers for Disease Control and Prevention, a whopping one-third of children born after the year 2000 are expected to develop diabetes.

For the first time in American history, children are predicted to live shorter lives than their parents.

I believe that the health care crisis that we've heard about in America is also a crisis of urban design, and urban design needs a cure.

We've been talking about diet for a long time, so it's no secret that diet affects weight, and weight affects health.

But when it comes to physical inactivity -- environmental physical inactivity, living in a place where it's no longer meaningful to walk, the mechanism by which physical inactivity causes weight gain is just beginning to be noticed.

Finally, there was a study called "Overeating vs. Lazy," a British study that looked at the relationship between weight and diet and weight and lack of exercise, and found that the latter was much stronger.

In a study conducted by Dr. James Levine of the prestigious Mayo Clinic, subjects were asked to wear high-tech underwear, followed a normal diet, and then suddenly increased their calorie intake.

Some people gain weight and some don't.

It was thought that metabolism and genetics were to blame, but the results, to everyone's surprise, were that the only difference between the subjects was how much they exercised.

These studies found a link between weight and physical inactivity, but now there are also studies linking where you live and your weight.

Is it an easy-to-walk town or not? Which one do you live in?

San Diego uses the Walk Score, which will be a measure of walkability not only in the United States, but eventually around the world.

So people in walking-friendly environments have a 35% chance of gaining weight.

It turns out that in other environments, the chances of that happening are as high as 60%.

A growing body of research shows where people live, especially in the United States, where the biggest threat to health stems from a lack of exercise due to the environment in which they live.

I learned a new word last week

It's called an "obesageric" area.

I don't know if it's right, but I think it's a nice way of saying it.

This is not the only

Let's also talk about asthma. Asthma is epidemic in the United States.

you'll probably be surprised

Asthma kills 14 people a day, three times the number in the 90's, mostly from car exhaust.

Pollution in America now doesn't come from factories, it comes from car exhaust pipes, and if we look at the VMT, the amount of driving in each city, we can predict asthma problems fairly accurately.

Of course, when it comes to driving, the number one killer of all populations, including healthy adults, is car crashes.

about car accidents

I think it's a natural risk associated with driving.

But in America, 12 out of every 100,000 people die in car accidents each year.

it's safe here

7 per 100,000 people in the UK

4 per 100,000 people in Japan

What city do you think has 3 people per 100,000 people?

New York City

So are San Francisco and Portland.

So is it safer to live in a city where less driving is required?

14 per 100,000 in Tulsa

20 per 100,000 in Orlando

It's not about urban or rural, it's about urban design.

Depends on car or people priority

In a car-first city, you're more likely to hit each other.

Here's an overview of health issues

What's interesting about the environment is the sudden shift in opinion among environmentalists that happened about 10 years ago.

The American environmental movement has been anti-urban since Jefferson's time.

"Cities are detrimental to health, to liberty and to people's morals.

If we continue to live in cities, we will degenerate like Europe, and eventually cannibalism will begin."

Jefferson seems to have had a sense of humor.

America's environmental movement was a pastoral movement.

Let's think about the environment and go to the countryside Return to nature Go to the suburbs

but you know the result

This is the carbon map of the United States, showing the distribution of CO2 emissions, which has long supported this theory.

The map is made per 1.6 square kilometers, and if you look at a carbon map of the United States, it looks like a nighttime satellite image, where the cities are hot, the suburbs are cooler, and the countryside looks darker and calmer.

But economists question how CO2 is measured,

So that people in this country can choose to live in places with less impact on the environment

When we measured CO2 per household, the map was reversed: cooler in the city, hotter in the suburbs, and "urban suburban" areas had the highest values, and "urban suburban" areas had the highest values.

It turned my good intentions upside down, according to environmentalist and economist Ed Glazer, who said that humans are destructive.

If you love nature, the best thing you can do is stay away. Move to cities and increase population density. Dense cities like Manhattan are the best for the environment.

Average gas usage in Manhattan hasn't changed since the 1920s, half of Dallas's electricity usage.

Of course you can do better

Canadian cities consume half as much gasoline as Americans.

The same is true for cities in Europe.

There's gotta be a better way in America, and we're all trying to be good for the environment.

And the last thing I want to point out here is that there's a problem with that method. I'm one of those gadget-focused people. It is a firmly believed method that

Actually, I am no exception.

When my wife and I built a new house on our lot in Washington, D.C., we went to a store that said it was eco-friendly, and we emptied the store shelves.

We installed a solar power generation system, a solar power heater, a toilet with large and small levers, and covered the floor with bamboo.

German high-tech stoves burn firewood to reduce carbon emissions, which should be better for the environment than letting it decompose naturally in the forest.

But this new technology is all second-hand from a pamphlet.

(Laughter) Even with the best of technology, there's little you can do compared to living in a walkable town within three blocks of an inner-city subway.

Of course, it's a good thing to replace all the light bulbs in your home with energy efficient bulbs, but even if you replace all the light bulbs, you're saving the same amount of energy in a year as if you moved to a walkable city for a week.

But this kind of thing doesn't get noticed

Politicians and the marketing industry avoid promoting eco-living as a "lifestyle choice."

In America, you can never tell people to change their lifestyle.

But if lifestyle is quality of life, what if we could enjoy life more and enjoy life better than we do now?

There is a survey called the Mercer Survey, which is representative of quality of life rankings.

I'm sure some of you know

Hundreds of countries around the world are ranked based on a comprehensive evaluation of 10 items Health, economy, education, housing, etc. as an index of quality of life Health, economy, education, housing, etc. as an index of quality of life

There are 6 more items, but it's a short talk, so I'll skip it (laughs).

(Laughter) Interestingly, Honolulu came in at No. 1 in America, No. 28 in the world, followed by the familiar walkable cities of Seattle and Boston.

Car societies in the Sunbelt Dallas, Phoenix, and Atlanta weren't on the list.

Where was the highest score?

A Canadian city like Vancouver, a city that uses half as much fuel.

German-speaking countries like Düsseldorf and Vienna always win German-speaking countries like Düsseldorf and Vienna always win Again using half the fuel.

This strange coincidence

Does being kind to the planet lead to a better life?

I would like to suggest the same thing: if you live greener, if you live in a walkable environment, you can improve your quality of life.

Of course, I don't know if there's a direct impact on sustainability, including things like wealth and health. I don't know if there's a direct impact on sustainability.

But America hurts the environment so much, because it wastes time, money and lives on the road, and the two problems seem to share the same solution: make your city walkable.

It's not easy, but it's possible, because there are cities around the world and in America that have done it.

I would like to find some comfort in the words of Winston Churchill, who said, "Americans will definitely do the right thing, if they're fed up with options." (Laughter) Thank you very much.

(applause)

everyone can improve their health and minimize physical suffering

Whatever happens to me, cancer, diabetes, heart disease or a broken bone, I want to get better.

I'm the director of the Institute for Biomaterials, and I'm very impressed by the variety of materials that have been used in the human body in creative ways in the past.

For example, look at the blue mother-of-pearl in this shell.

This was actually used by the Maya for dental implants.

I'm not sure why

hard and long lasting

There are other very good qualities as well.

When you put it in your jaw, it fuses with your jawbone, and what we know from advanced imaging technology is that the reason for this fusion is the material's well-suited design and its amazing chemistry and structure.

In many ways, I think that the use of the Maya's blue mother-of-pearl shell was the very first Bluetooth technology.

(Laughter) If you go ahead and think about the many different types of materials that humans have used in their bodies throughout history, it's often doctors who have been ingenious.

they made many inventions

My favorite among them is Sir Harold Ridley, who was a famous ophthalmologist, or at least he was.

During World War II, when he saw pilots returning from the front lines, he noticed that they had small foreign particles in their eyes, and interestingly enough, the substance did not cause any inflammatory response.

Upon inspection, it turned out that the material was tiny bits of plastic that were coming from the canopy of a Spitfire fighter jet.

So he proposed this material as a new intraocular lens material.

It's called PMMA, and it's used in millions of eyes every year to prevent cataracts.

An example of this is that in the past, bioinert materials were often chosen to perform mechanical functions.

indicates that it was used

You can put bioinert materials into your body without rejection.

But what I'm trying to say here is that regenerative medicine has moved away from bioinert materials altogether.

The materials that we're actively looking for are bioactive materials that interact with the body, that are put into the body, function there, and are absorbed by the body over time.

Take a look at this chart, which shows a typical approach to tissue engineering.

usually taking cells from a patient

And you can put it in materials, and you can make it really complicated -- you can either grow it in the lab, or you can put it back directly into the patient's body.

That's how it's done all over the world and in our laboratories.

One of the really important things about stem cells is that they can and tend to differentiate into any tissue, so if we make sure that we put the necessary information into the environment that we put the stem cell in, it will become the specific tissue of interest.

Almost every conceivable type of tissue is being regenerated in laboratories around the world.

The structure of such tissues is quite diverse, and the patient's other underlying diseases and health problems affect how the tissue regenerates, how materials are used, its biochemistry, its function, and many other attributes, which greatly alter the way we deal with it.

Each organization has a different ability to regenerate. Here we are reminded of poor Prometheus, who made a risky decision and was punished by the Greek gods.

Tied to a rock, an eagle comes daily to peck at his liver.

His liver regenerates every day, so day after day he will forever be punished by the gods.

The liver will probably regenerate in this way, but other tissues, like cartilage, are very difficult to regenerate from any defect, no matter how small.

In this way, there is a great deal of variation between organizations.

Bone's ability to regenerate is somewhere in between. Bone is one of the most popular tissues in our laboratory.

The ability to self-repair is actually quite high.

If not, we're in trouble, because maybe we've all had broken bones.

One method of treating fractures is a technique called iliac harvesting.

Surgeons take bone from the ilium, which is here -- and transplant it into other parts of the body.

This works really well, because it's your own bone, so it's very well vascularized and the blood flow is very good.

The problem is that there's a limit to how much bone can be harvested, and what's more, after surgery, the place where the bone was harvested can be very painful, even two years later.

So we thought, of course, the demand for bone repair is so great -- the iliac-type approach is so limited that what if we could regenerate the bone in vivo and then transplant it, if needed, so that we could do the transplant without the extreme pain that comes with the iliac harvest? about it

So our approach went back to a typical tissue engineering approach, but with a very different perspective.

I've simplified it a lot and saved a lot of steps.

Eliminates the need to harvest cells from patients, the need for all expensive chemicals, and the need to grow carriers in the lab.

What we're really focused on is the material system and the simplification of it, but we've used it in a very thoughtful way, and with this approach, we've been able to regenerate an enormous amount of bone.

So we used the living organism as a vehicle to mass-produce bone.

We call that approach a "living bioreactor," and in this way we can regenerate an incredible amount of bone.

To explain in an easy-to-understand manner

Here's the thing: your body has a layer of stem cells on the outside of your long bones.

called "periosteum"

It's usually very tightly attached to the bone underneath, and it contains stem cells.

These stem cells are very important for embryonic development, and after a fracture they are activated to try to repair the bone.

We looked at the periosteum and developed a method of injecting a liquid underneath it, and within 30 seconds of injection, the liquid turned into a solid gel that lifted the periosteum from the bone.

An artificial cavity forms between the bone and the stem cell-rich periosteum.

Because it enters through microscopic incisions, other cells from the body cannot enter. Artificially created cavities, bioreactor spaces, lead to the proliferation of stem cells, creating many new tissues that, over time, can be harvested and transplanted elsewhere in the body.

So here's a slide of the tissue structure in that process, and what we're looking at is a very large amount of bone.

In this picture, you can see the middle part of the foot -- the bone marrow on the far right, then the original bone, and just to the left of where that bone ends is the new bone that's regenerating in the bioreactor space.

The interface between the natural bone and the new bone is a tiny but weak spot, and that's where the surgeon comes in. The new bone is harvested, the periosteum regenerates, and the leg returns as if it never had surgery in the first place.

So the pain after surgery is much less than after the iliac harvest.

The amount of bone regeneration depends on the amount of gel injected, so it can be adjusted as needed.

When we released this, it got a lot of media attention, because it's a really good way to regenerate new bones, and we've been getting inquiries from all sorts of people who want to use it.

In fact, there were some really weird ones, I would say very funny ones that I never expected. One of them was from an American football player who wanted to double the thickness of their skulls.

I get a lot of questions like this, and being an Englishman who grew up in France, I tend to be a bit harsh, and I explained to them, "In your special case, maybe there's not much to protect in there."

(Laughter) (Applause) That was our approach. It's a simple ingredient, but we planned it carefully.

Knowing that living and embryonic stem cells grow to become cartilage in a different tissue, we developed a gel with slightly different chemistries, injected it, and were able to regenerate 100 percent of the cartilage.

This is something that has to be planned in advance in a way that works very well when planned in advance.

Other surgeries certainly need other carrier-based approaches.

When developing other carriers, you need a team of experts from different disciplines.

Our team includes chemists, cell biologists, surgeons and even physicists, all working together to develop materials.

We want the material to have enough information to make it perform a specific cellular function and not be too complicated for practical use.

One of our jobs is to improve our understanding of biological tissue architecture.

When you think about bone, the tissue that I'm interested in -- if you zoom in, even if you don't know much about bone tissue, you can see that it's really wonderfully organized.

there are blood vessels

If you zoom in even further, you can see that a 3D matrix of nanoscale fibers surrounds the cell and gives it a lot of information.

If you zoom in even further, in the case of bone, the matrix around the cells is a beautiful, nanoscale grouping, a hybrid organic-inorganic hybrid.

Now we move into a whole new field, the development of materials with hybrid structures.

I'm going to give you just two examples of this, where we've created tunable materials with hybrid structures.

You can see the squishy stuff here, but it's also a hybrid material that's surprisingly strong and not fragile.

Inorganic materials are usually very brittle and don't have this toughness or strength.

There's one more thing I want to touch on, and a lot of the carriers we make are porous so that blood vessels can grow through them.

The holes are larger than the cells, and although they're 3D, they might look like a slightly curved surface to the cells, which is a little unnatural.

So what we have to think about is to make the carrier a little bit different, a 3D wrap around the cell and a little bit more information to the cell.

A lot of research is being done in these areas.

And finally, I want to talk a little bit about the application of this to cardiovascular disease, because it's a really big clinical problem.

One thing we do know is that, unfortunately, once you have a heart attack, the tissue starts to shut down, so your outlook may get worse over time.

How wonderful it would be if we could either stop tissue from dying or encourage regeneration.

The stem cell clinical trials that are taking place around the world today are using all types of cells, but a common problem that has surfaced is that the cells often die when transplanted into the heart.

You could put the cells into the heart or into the blood system, but either way, it doesn't seem possible to get enough cells into the right place to regenerate the cells for a favorable clinical outcome.

We and others in this field are thinking about developing materials to solve that problem.

but there is one difference

To do that, we still need chemical and technical improvements, reference topographic images, and ways to surround the appropriate cells.

Cells will also begin to act like conductors, because the cells themselves are highly responsive and send signals to each other.

Even now, cells are pulsing in sync with each other in this material, and there are some very exciting things happening.

And finally, for those of us who work in this field, it's really an honor to be able to work in a field of science that is very dreamy, and that has the potential to make an impact on patients, to a greater or lesser degree.

For that, I would like to express my gratitude to all of you.

thank you

(applause)

Throughout my career, I've been fortunate enough to document the work of some of the world's greatest architects and observe how their work affects cities.

New cities like Dubai, ancient cities like Rome, Zaha Hadid's National Museum of the 21st Century, and here in New York, have been greatly impacted by the development of the High Line.

But what impresses me most is how people remake cities when architects and urban developers leave, like Chandigarh, India, where the architect Le Corbusier designed every corner.

Now, 60 years later, people are using the city in completely different ways than it was originally designed for.

Over the years, I followed the construction sites of Rem Koolhaas' China Central Television Headquarters and Herzog & de Meuron's Olympic Stadium in Beijing.

At these large construction sites in China, workers create temporary accommodation for them to live in during construction.

Over the years of construction, you'll end up with cluttered yet functioning workers' settlements, in contrast to the sophisticated buildings they're building.

For the last seven years, I've been fascinated by the fascination with the built environment. Anyone who knows me will say, "Because I'm fascinated by these things."

And being constantly on the move means that you're also blessed with opportunities to capture the extraordinary, like the day after Hurricane Sandy hit here in New York City.

Three years ago, I went to Caracas, Venezuela for the first time. Three years ago, I went to Caracas, Venezuela for the first time. When I saw the city from above, I was amazed at how slums are spread all over the city.

Local architects and think tanks told me about the Torre de Davi, a 45-story office building in the heart of Caracas.

The building was under construction until the developer died in the early '90s when Venezuela's economy collapsed.

About eight years ago, people started moving into this abandoned building, building their homes between the stilts of this half-finished building.

The building has only one small entrance, through which 3,000 residents enter and exit through one door.

Residents work together to create communal spaces that are designed to be cozy homes, not unfinished buildings.

We repainted the walls of the lobby and planted trees.

A basketball court was also built.

But if you look closely, you can see that there are holes where functions such as elevators would have been.

Residents have come up with various solutions to the challenges of living in this unfinished tower.

This tower has no knowledge of architecture or design

It's a 45-story, elevator-less building that was uniquely designed by its inhabitants, who had no knowledge of architecture or design.

By each inhabitant finding their own way of adapting, each inhabitant finding their own way of adapting, this tower will be like a living city with a thriving microeconomy and small businesses.

Smart people find opportunities in the most unexpected places. For example, this multi-storey car park has become a taxi corridor to reduce the distance residents have to walk to their rooms.

As you walk around the tower, you can see how the inhabitants created partitions and ventilation channels inside the tower to ensure internal transparency and logistics, creating a house perfectly adapted to the given environment, to the given environment.

Newcomers to the tower already have a roof, so they divide the area they want to live in with curtains and rugs.

And then, gradually, walls are built using what you find, creating a space made of whatever you have.

I'm amazed by the decisions they make in designing. I'm amazed by the decisions they make in designing. If a house is made of, say, red bricks, some people put wallpaper with brick patterns on top of the bricks to make it look better.

These residents literally build their homes with their own hands, and it's this loving effort that makes the tower's many families proud.

They try to make their space as clean and comfortable as possible in the environment they are given.

Inside the tower, you'll find a variety of services, like barbershops, small workshops, and small grocery stores and shops on each floor.

there is even a church

There's a gym on the 30th floor that uses elevator pulleys that were never installed for weights and barbells.

From the outside, behind the ever-changing exterior, you can see that the fixed concrete beams are the framework for the residents to follow their natural instincts to build their homes to suit their needs.

Now let's turn Africa into a community called Makoko in Nigeria, a slum where 150,000 people live above the water in the Lagos lagoon.

It may look completely chaotic, but from the air, you can kind of see the orderly waterways and canals that connect all the houses.

From the main deck, people board long wooden canoes and travel across vast areas of their homes and shops.

Once you're out on the water, you'll find that their lives are perfectly adapted to this particular way of life.

Canoes have become grocery stores, and women go from house to house selling everything from toothpaste to fruit.

Small children are peering out of the windows and doors, and while Makoko is teeming with people, the most surprising thing is that the entire building is teeming with children.

Nigeria's population growth, especially in areas like Makoko, Nigeria's population growth, especially in areas like Makoko, symbolizes that things are getting out of hand.

Makoko has little infrastructure. Makoko has little infrastructure.

Electricity is temporary, and fresh water comes only from self-made wells scattered around.

All economic activity here has been adapted to life on the water, so fishing and boat building are common occupations.

There are also businessmen who have set up businesses in the area, barbershops, CD and DVD shops, cinemas, tailors, you name it.

There's even a photo studio, and if you look in there, you can get a glimpse of the longing to live in a house on land, or to a faraway place like a hotel in Sweden.

That night, I happened to run into a band wearing matching T-shirts.

They entertained the community as they traveled through the canals in large canoes with generators.

When the sun goes down, it's almost pitch black, save for a little light bulb or torchlight.

The reason I came to Makoko in the first place was to participate in a project that my friend Kunle Adeyemi had set up for Makoko's children to build a three-story floating school building.

The whole village was built on the water, so there was limited public space, but thanks to this school, the ground floor became a playground for the children. After school, the deck becomes like a town square, where fishermen mend their nets and floating merchants docked their boats.

Next is Zabalin, who lives in Cairo.

They are the descendants of farmers who migrated from northern Egypt in the '40s, and now they make a living by recycling garbage they collect from Cairo residents.

For many years, the Zabaleen people lived in makeshift villages, living a nomadic lifestyle to avoid local administration, but in the early 1980s they settled on Mocatum Rock, on Cairo's eastern frontier.

Today, there are 50,000 to 70,000 people living in this area, living in self-built multi-story homes, with up to three generations living under one roof.

When you look at the apartment complexes they built, it seems that there is no planning or formal division, but each household specializes in some kind of recycling business, with the ground floor of each apartment being a recycling bin and the upper floor being a living space.

I think it's amazing that the people here live as if there were no mountains of trash.

Most of us wouldn't be able to live with this much trash, but for the people of Zabaleen, this is normal.

When I look at these places I've shown you today, I'm really struck by the fact that there's no such thing as "normal," and they prove that humans can adapt to any environment.

Throughout the day, you'll run into small parties on the streets, like engagement parties.

The tradition here is for the bride-to-be to display all that she would bring to the groom's man.

Gatherings like this highlight an interesting contrast: Gatherings like this highlight an interesting contrast: new items are on display, while trash is mixed in as props to showcase the furnishings of the new home.

Like Makoko and Torre de Davi, Zabaleen has all the facilities of a typical town.

Shops, cafes, restaurants, etc. And since this community is Coptic Christian, you'll find religious iconography everywhere, not just in churches, but all sorts of everyday services, from electronics repair shops to barbershops.

More surprises await when you visit the Zabaleen homes.

From the outside, these homes look like handcrafted structures you'd find anywhere in the city, but once you step inside, you'll discover a wide variety of room designs and interiors.

Despite limited space and money, the homes in this area are meticulously and carefully designed and decorated.

Each apartment is unique and speaks to its environment and the values ​​it holds dear.

Many people are serious about their homes and their interiors, they're meticulous, they put a lot of effort into it, they put a lot of effort into it.

The same attention to detail can be seen in the common spaces, where the walls are painted in marble.

But despite these elaborate decorations, these apartments are sometimes used in unexpected ways.

When we let them in, it appeared that this five-story apartment building had been converted into a livestock farm, and six or seven cows were grazing in what was originally the living room.

But the apartment across from this cowshed is occupied by a newlywed couple in what locals say is the nicest apartment in the area.

I was blown away by the attention to detail. The owner of the house proudly showed me around the apartment, which was decorated from floor to ceiling.

If that sickening smell you remember smelling doesn't even enter your room, you can easily forget that you're next to a cowshed and on top of a landfill.

And what impressed me even more was how, in this seemingly uninhabitable setting, they welcomed me into their home with love, care, and unbridled passion.

Let's change the location a bit and look at Shanxi, Henan, and Gansu provinces in China.

In this region, famous for its soft, porous Loess Plateau soil, until very recently about 40 million people lived in underground homes.

This residence is called Yaodong

This subtractive architecture, Yaodong, is literally embedded in the ground.

In these villages we see a completely man-made spectacle, hidden in these mounds are square and rectangular houses seven meters underground.

When I asked them why they built their houses in the ground like this, they said that being poor farmers of wheat and apples, they didn't have the money to buy building materials and that digging up the earth was the most rational way of life.

From Makoko to Zabaleen, these communities planned and designed and managed themselves and their neighbourhoods, in ways that were well adapted to their environment and circumstances.

Created by people who live, work and play in these special spaces, these neighborhoods are intuitively designed to take full advantage of their environment.

Most of these regions are anarchy, and their inhabitants have no choice but to live off of what they have. While these regions are at a disadvantage, they are showing great creativity, showing great creativity, and proving that we are capable of adapting to any situation.

Places like the Torre de Davi are particularly noteworthy because these skeletal structures provide a foundation for people to be creative.

If this already-imaginative community, if this already-imaginative community were given the basic infrastructure, imagine what they would create and how well they would come up with solutions.

Today, we see massive housing development projects that provide standardized housing for millions of people.

From China to Brazil, these schemes try to provide as many housing options as possible, but they are too typical to be a solution that can meet people's individual needs.

Finally, I would like to quote my friend and inspiration, Zita Cobb, the founder of the Shorefast Foundation, based on Fogo Island, Newfoundland.

She said, "The disease of uniformity is robbing us of the joy of living."

thank you

(applause)

i'm james

I'm a writer, an artist, and I work with technology.

We've been doing life-size outlines of military drones in cities around the world, to help people think and understand these kinds of technologies that most people don't see or think about.

I've even built neural nets that predict election results based on weather forecasts, because I'm interested in what these strange new technologies can really do.

Last year, I built my own self-driving car.

I don't trust technology, so I also built a trap for self-driving cars.

(Laughter) I do it because I think it's funny, but sometimes when we talk about technology, it's mostly about who we are and how we understand the world.

Now let's talk about technology.

This is a video of "Surprise Egg"

Basically, it's just a matter of just opening the chocolate egg and revealing the toy inside.

That's it. I've been doing it for seven minutes.

There are two things I want you to notice here.

First, this video has 30 million views.

(Laughter) And the other thing is that this video channel has 6.3 million subscribers. It's got 8 billion total views, but they're all very similar to this one.

It sounds really weird, but if you search for "surprise eggs" on YouTube, it says there are 10 million.

there will be a lot more than that

If you search for it, you will find it endlessly.

There are millions of videos, an ever-growing mix of brands and materials, and new videos are being added every day.

It's a strange world

The problem is, you're not an adult watching these videos.

i'm a little kid

These videos are like drugs for little kids.

There seems to be something about the repetition, and every time it's revealed, there's a little dopamine kick and I'm totally drawn to it.

Little kids will watch these videos over and over and over and over again for hours.

If you try to take it away, you'll cry out and you won't be able to touch it

If you don't believe me -- some of you are nodding your heads in the audience, but ask anyone with young children, they probably know the Surprise Egg video.

this is the starting point

Now in 2018, there are a lot of people who are trying to get advertising money by playing with little kids' heads and applying the same gimmicks that Facebook and Instagram use to YouTube to keep people checking their apps.

At least I'd like to think so

because if you want to get ad revenue on youtube

There are easier ways, just make it up or steal it.

If you search for kids' favorite cartoons like "Peppa Pig" or "Paw Patrol," you'll find millions of videos.

Most of them weren't uploaded by the real authors

It's being posted by tons and tons of random accounts, and I don't know who's doing it, and I don't know their motives.

It sounds like something you've heard before

Exactly the same thing is happening with a lot of digital services, where you don't know where the information is coming from.

It's fake news for kids, because kids are trained from birth to click on the first link that comes up, regardless of its source.

I don't think it's a very good idea

This is another very famous YouTube video for kids.

"The Finger Family Song"

I can hear groans from the audience

here is the original

it's the first one i found

It was released in 2007 and has 200,000 views, which is insignificant in this space.

It's got some haunting music on it, but I'm not going to let you listen to it here because it's stuck in your head and you can't leave it.

Like a surprise egg, it gets into a child's head and makes them addicted.

Within a few years, videos of the Finger family began popping up everywhere, in many variations, some in foreign languages, some with popular cartoon characters, some with food, using whatever anime elements were out there.

There are tons of videos on the internet with all sorts of crazy combinations like this.

And when you start seeing things like that, you start to feel like you're going insane.

It was this deep sense of strangeness that made me start looking into these things, and it was so mysterious how they were made.

I have no idea where this is coming from

Who is making it?

Some look like they were made by a professional animator.

Some of them look like they were just randomly synthesized in software.

There are some people who look like very healthy singing sisters.

Some are by people who shouldn't be allowed near children at all.

(Laughter) I have no idea who made it.

human or troll

What does it mean that we no longer know the difference?

Doesn't this uncertainty feel familiar?

The main way you're going to get an audience for your videos -- views mean money -- is to put popular words in the title.

For example, "surprise egg," "Paw Patrol," "Easter egg," or whatever, you add keywords from other popular videos, and you end up with a bunch of meaningless words that don't make sense to humans.

It doesn't matter which way you watch these videos because they're little kids.

The true audience for these things is software—

it's an algorithm

It's a program on YouTube that recommends videos and selects similar videos that make them popular.

That's how you end up with a video that's a mixture of meaningless titles and content.

But let's not forget that even in this algorithmically optimized system, there are still real people. People who are forced to act out to increasingly bizarre word combinations, like improvisers desperately responding to the word combinations screamed at the same time by millions of toddlers.

There are people trapped in this system, and the strange thing about this algorithm-driven culture is that it forces humans to act like machines just to survive.

And also, on the other side of the screen, there are these little kids watching, fascinated by this strange mechanism.

Many of those kids are too young to know how to use websites.

Just tap the screen with your little hand

Autoplay keeps these videos playing over and over for hours.

What's really weird about this system is that the autoplay takes you to some really weird places.

In this example, it goes from a cute video of a train counting trains to Mickey Mouse masturbating in about 10 steps.

Excuse me

but this gets worse

That's what happens when you lump together keyword clutter, fragmented attention, and desperate content generation.

A strange chain of keywords leads to

And when you add in some tokusatsu heroes and some weird troll insider jokes to the Finger Family videos, you get to some really weird places.

It's violent and sexual that angers a child's parents.

Characters from children's cartoons are attacked and killed, and the antics unfold to simply frighten children.

All of that excitement is jumbled together by software to create a child's worst nightmare.

That kind of thing actually affects children.

Parents are reporting that their children have been traumatized, that they've developed a fear of the dark, or that they've become afraid of their favorite cartoon characters.

If there's one thing you can learn from this, it's that if you have young children, stay away from YouTube.

(Applause) The other thing that bothers me is that we don't know how this happened.

All the influence, taking all these things and putting them together in a way that no one intended.

It's also how we make the whole world.

We're taking all the data, lots of bad data, historical data full of biases, full of the worst impulses, and we're going to create huge datasets and automate that.

We put it all together and use it for things like credit checks, insurance premiums, crime predictions, sentencing standards.

Today's world is actually made that way using data.

I don't know which is worse. Did you deliberately create a system that was optimized for the worst aspects of human behavior, or did you just happen to be, without knowing what you were doing?

There are two factors that make it particularly so prevalent on YouTube. One is interest monetization, advertising, with virtually no other factors at work, no consideration for the people actually creating the content, no concentration or separation of power.

Whatever you think about profiting from advertising, the sight of a grown man in a diaper rolling around in the sand hoping an algorithm that he doesn't really understand will give him money is an indication that this is not what society or culture should be based on, nor how it should be funded.

Another major factor is automation. As soon as they come in, they roll it out without any checks, and when they come out, they raise their hands and say, "It's not my fault, it's the technology that did it."

As if to say "We don't care"

That's not good enough, because these things are not only controlled by algorithms, but they're also censored by algorithms.

When YouTube started paying attention to these issues, what they said was, get better machine learning algorithms to check the content.

As any expert will tell you, machine learning is software that you don't really know how it works.

there's enough of that

We shouldn't let AI decide what's right, because we know what's going to happen.

other things will start censoring

Censor strange content

They'll start censoring even decent speeches.

What speech is permissible shouldn't be left to an irresponsible system.

it's something we should all discuss

But I'd like to point out that the alternative is also not very nice.

YouTube recently announced that it's coming out with an app for kids, all checked by humans.

Facebook, too, Zuckerberg said something similar in Congress when he was asked about moderation.

If you prepare a human for that

And what that means is that instead of being a toddler, the first thing you'll see is an underpaid, precarious contract worker who has no mental health support and suffers.

(Laughter) We can do better things.

(Applause) I think the idea that brings these two things together is agency.

It's about how much you really understand, how you know how to act in your best interest.

This is almost impossible in a system that we don't understand very well.

power imbalance leads to violence

Within these systems, imbalances in understanding produce the same results.

If there's one thing we can do to improve these systems, it's to make them more understandable to the people who use them, so that everyone has a shared understanding of what's going on.

Problems with these systems, as I said before, are not unique to YouTube.

applies to everything

Issues like accountability and agency, transparency and complexity, violence and exploitation are the result of the concentration of power, and it's a much bigger problem.

It's not just a YouTube problem, it's not just a technology problem, it's not even a new problem.

it's been a long time

It's just that we've created this global system, the Internet, and it's become so extreme that it's undeniable.

Technology has tremendous power to shape and perpetuate some of our most profound and hidden desires and prejudices, imprinting them on the world, but by writing them out, they become visible and can no longer pretend they don't exist.

We need to stop thinking of technology as the solution to every problem, and start thinking of it as a guide to what the problem really is, so that we can get it right and start working on it.

thank you

(Applause) Thank you.

(Applause) (Helen Walters) James, thank you for speaking with us.

It's interesting, though movies about humans being ruled by computers are more spectacular than your story.

There's always resistance in those movies.

Is there any resistance to this issue?

Have you noticed any signs of growing resistance?

(James Bridle) I don't know of direct resistance, and this is a very long-term problem.

I'm so deeply immersed in the culture

As my friend Eleanor Saitta always says, any technology problem of sufficient scale and scope is first and foremost a political problem.

I think that what we need to do to address this problem is not just to create better technologies, but to change the societies that create those technologies.

Not yet. I think the road is very long.

But like I said, by unpacking this and being very frank, we can at least start the process.

Helen: When I touched on readability and digital literacy, I thought it would be difficult to put the burden of digital literacy on users themselves.

Whose responsibility will education be in this new world?

CA: Again, the responsibility rests with all of us. Everything we do, everything we make, needs to be made with the consensus consent of everyone. Rather than trying to trick people into doing what's right or surprise them, everyone needs to be involved in each step of the education process, because such a system is educational.

And that's where my hopes are in this depressing problem. If you can take it and look at it properly, there's something to learn there, to see how complex systems come together, and that knowledge might be useful elsewhere.

Helen: I think it's a really important topic, and I think a lot of people here will be willing to join in. Thank you for a great talk first thing in the morning.

(James) Thank you very much.

(applause)

For a while now with me Come back with me to the dark night in China where I met my husband for the first time

A long time ago, Beijing was called Beijing, not Beijing.

At a certain party-

I sat next to a tall, middle-aged man in round glasses and a bow tie, who was studying abroad on a Fulbright scholarship -- a scholar of Sino-Soviet diplomacy.

As a young and ambitious correspondent, I couldn't have asked for anything.

Trying to get information and write an article Getting information and writing an article I tried to memorize every single word

we talked for hours

But a few months later, I found out what it really was.

I was actually the representative of the American Soybean Association in China. I was actually the representative of the American Soybean Association in China.

"What are soybeans?

You said you were a Fulbright scholar."

“If I had said I was in the soybean industry, I would not have been able to talk to you for so long.”

(Laughter) I said, "I'm not kidding."

Of course I didn't just say that

I said, "I was about to get fired."

"Let's get married," he replied.

(Laughs) I said, "Let's go around the world and have a lot of children."

I did

(Laughter) (Applause) Terrance Brian Foley was such a lively person.

My husband is a Chinese scholar, he got a PhD in Chinese history in his sixties, got a PhD in Chinese history in his sixties

He spoke six languages, could play 15 instruments, was a pilot, was a cable car driver in San Francisco, had pigs and cows, and was an expert in Dixieland jazz and film noir.

It was like, living with my job, anything is possible for the two of us.

So when it was discovered that he had cancer, both of us knew without saying a word, and we believed that if we both had the intelligence, the courage to face it, and work together, we would get through it.

The next few years seemed to be going well.

A surgeon came out of the operating room—

I said the fixed line, "I completely removed the cancer."

But when pathologists worked up kidney cancer, a problem arose.

It turned out to be a very aggressive, rare cancer, and it turned out to be a very aggressive, rare cancer, and the diagnosis was weeks of life at most.

yet he survived

miraculously he survived

coaching my son little league

I built a playhouse for my daughter.

In the meantime, I continued to search online for oncologists for treatment.

I was looking for a cure

A year later, as is often the case with cancer, I had a recurrence, and was pronounced dead again, this time with nine months to live.

So I tried another painful intensive care,

Serious side effects forced him to stop, but he survived.

And yet another year has passed

It's been two years and I've seen many specialists.

It's been two years and I've seen many specialists.

In the meantime, send the children to Italy and

took me to australia

Years later, the cancer began to spread.

This time, a new treatment has been put forward as a candidate.

It was the experimental stage that I heard for the first time.

It's about attacking cancer in a whole new way.

The treatment worked

The cancer began to shrink, and now I've escaped death three times.

So here I am asking again, when the final hour finally came - how did I feel?

A 20-something resident doctor I've never seen before tells me in the intensive care unit that Terrance's life is in danger -- maybe tonight's the mountain.

What should I say to the doctor? "How are you doing?"

there is a new drug

is stronger

started two weeks ago

maybe there's still hope

what can i say

Of course, I said, "Please do whatever you can."

Terrance died six days later.

We fought hard and we won

It was an uplifting fight. If I were in the same situation, I would make the same choice again without the slightest hesitation.

fight together

You'd think it was the worst seven years of our lives together, but it was actually the best seven years.

It was also a costly struggle.

Such struggles and choices, as everyone at the venue thinks, will greatly inflate the cost of end-of-life medical care and medical costs.

Both me and the two of us were fighting until the very last moment, so we never got the chance to say goodbye to him. I still say to the late Terrance almost every day, "We really did a great job."

I didn't get a chance to say goodbye

Because neither of us thought this was the end.

always had hope

How do we interpret this?

As a journalist after Terrance's death, I wrote a book called "The Cost of Hope."

I wanted to know the reasons for the actions that I, he, and the people around me took.

What did you learn from that?

One of the things I've learned is -- experts believe that advance directives, experts believe, can save families from making irrational choices like the last one I faced.

I actually had that document too.

both of us had

so that it can be enforced at any time

was in my hand

They both said the same thing, "I don't want hopeless life-prolonging treatments."

I understood Terrance's intentions as clearly as my own.

Still, I didn't give up hope

Even with that plain document in our hands, we changed our definition of hope.

I believed I could keep him from dying, so I would be too embarrassed to say this if I hadn't had the chance to meet and share my experiences with so many people who felt exactly the same way I did.

Until the few days he died, clearly and strongly, as ridiculous as it may seem, I believed that I could keep him from dying.

What do experts call this condition?

I say "denial"

that's a strong word

But the word "denial" isn't enough to describe how strong we feel when our loved ones are facing death.

Health care workers often say, "I wish I could, but my family just can't accept the reality.

reason does not work

I'm running away

I'm desperate for treatment even though there's nothing I can do about it

The results are clear, but they deny it."

I don't think this idea will help much.

Not just family

Health care workers and everyone will be in denial.

I want to help, I want to heal

I want to do something

The treatment so far has worked well, but you must be feeling powerless to let one patient die.

actually saw it

A few days before Terrance died, the oncologist said, "Tell Terrance he'll get better soon."

a few days before he passed away

But Dr. Ira Byok, director of palliative medicine at Dartmouth Hospital, said, "Even the best doctor in the world can't make a person immortal."

So what the experts call "denial," I'd like to call "hope."

Let's redefine denial as hope, so that it becomes a necessary function of being human.

not a bug

is our function

(Laughter) We should be more constructive with this deep, powerful human emotion that we all have.

It's part of human functioning, but our systems and thinking are not built to accommodate it.

I believed in Terrance's story of that night long ago.

maybe you wanted to believe

During Terrance's illness - we both wanted to believe in a story of fighting together We both wanted to believe in a story of fighting together

To give up the fight, as it was, is to give up not just his life, but our story, the story of fellow fighters, our story, the story of fellow fighters, our story of invincibility, and the story of doctors as healers.

so what do we need

I don't think you need any new documents.

We need another story, not a story of giving up the fight, not a hopeless one, not a story of hopelessness, not a story without hope, a story of a brave victory, a brave victory, and the result, a graceful retreat. I can't

Everyone recommended hospice, but I wouldn't listen.

Hospice is for people who are dying, Terrance wasn't.

As a result, I was only in hospice for four days, and as you all know -- and it happens all the time -- we never said goodbye, because neither of us were prepared for the end.

People follow a noble path in an attempt to cure their illness. It's the same for patients and doctors. But there seems to be no dignified way to death.

Death is seen as a failure. There were stories of two people fighting bravely.

The stories we need are stories to see the end and say goodbye, stories of heroic struggles and farewells.

Terrance loved poetry, and the Greek Constantinos Cavafis is one of my favorite poets.

I will introduce a few lines of the poem

Works about Marcus Antonius

You know the great general Marcus Antonius, Cleopatra's lover?

I'd rather say one of my lovers

a competent general

I've won every battle - I've escaped danger many times, but in the end I've arrived in Alexandria to accept my defeat.

No one obeys, the music flows

I hear a song

At that moment he realized his defeat

Know that the gods have forsaken you Know that the gods have forsaken you and you know it's time to go

Then this poet told him

Singing a noble way to leave worthy of a hero Singing a noble way to leave worthy of a hero

"Like a long-term resolution, graciously--Once you've got it, it's a city you deserve. Step, surely, to the window--Look at your heart--A cowardly wailing--No excuses--For the last joy--Hear the strange--the tune of the band--And say goodbye to her, Farewell, Alexandria."

It was the way he left, legendary. It was a fitting end for a man who could do anything, almost anything.

Isn't this what we're missing?

How can you say that your decision to end your loved one's life is so irrational - based on a fleeting hope?

The existence of irresistible hope is not denial.

Hope is part of our DNA, and it may be time for our healthcare system -- doctors, patients, insurance companies, and us -- to start grasping the power of hope.

hope is not a bug

It's a built-in feature

thank you

(applause)

Today I want to connect the famous privacy incident involving Adam and Eve with the dramatic shift in boundaries between public and private that has occurred over the last decade.

You know this incident

Adam and Eve in the Garden of Eden one day find themselves naked.

they are terribly upset

You know what happened after that

Adam and Eve would probably act differently today.

[@Adam: Last night was fun! That apple was delicious (laughs)] [@Eve: Seriously, but what happened to your pants? ] We put more information online than ever before, and information about us is collected by various organizations.

There's something very useful and valuable to be gained from this vast amount of personal information, or big data, but there are also complex trade-offs that come with giving up privacy.

I'm going to talk to you today about trade-offs like this.

I want to start by starting with an insight that has become very clear to me over the last few years that any personal information can be private information.

In the year 2000, around 100 billion photographs were taken worldwide, but a very small percentage of them were uploaded to the web.

In 2010, Facebook alone posted 2.5 billion photos a month, most of which were identifiable.

In the same time period, computers' ability to recognize people in photographs has increased by three orders of magnitude.

So what happens when we combine these two technologies? We have more and more pictures of faces, more computers, more capable of recognizing faces, and cloud computing gives everyone here the kind of computing power that a few years ago only specialized government agencies had.

We speculate that this combination of technologies will profoundly change our fundamental understanding of privacy and anonymity.

To test this idea, we conducted an experiment at Carnegie Mellon University.

We asked students walking around campus to participate in experiments, took pictures of their faces with webcams, and asked them to fill out surveys on laptops.

While they were completing the survey, we uploaded the photos to a cloud computing cluster and used facial recognition technology to match them against a database of hundreds of thousands of images pulled from Facebook.

By the time the subject student got to the last page of the survey, the page had dynamically changed to show the 10 most similar photos selected by the facial recognition engine, so I asked the student if they were in one of the photos.

Can you find the student?

We could find the computer, and in fact, we were able to identify the students in one out of three students.

Thanks to social media, it's basically possible to start with an unidentified headshot and use facial recognition technology to identify the name of the person in that photo, whether online or offline.

I did a different experiment a few years ago.

Starting with social media data, and then combining that statistically with the US government's social security data, we were finally able to identify the social security number, which is a very important piece of information about privacy in the United States.

What do you see ahead of this story?

Combining these two experiments raises the question: Can we start with a picture of a face, use facial recognition technology to identify a name, and from that name, get public information about that individual, and then from the public information, can we look up more private, non-public information and link it to the original face?

The answer is yes and we did it

Of course, it gets less accurate over time [we were able to identify the first five digits of 27% of subjects' social security numbers].

[We were able to identify the first five digits of 27% of the subjects' social security numbers.] We also decided to build an iPhone app. I think it's an example of augmented reality I think it's kind of chilling I think it's an example of augmented reality

This app is not published I just tried to see if it was possible

Given the maximum application of such technology,

I can imagine a future where people around you can look at your face through Google Glass or contact lenses and have access to any personal information they can learn from seven or eight pieces of data about you.

What would a world without these secrets look like?

Should we pay attention to such things?

We tend to believe that the future, where we have access to more data, is a world without prejudice.

In another experiment, subjects were asked to look at information about job applicants.

In this information, intentionally mixed in, is about completely legal, but slightly uncomfortable information posted online by the subjects themselves.

Some of the subjects had posted such information, some had not.

Which group do you think slammed job seekers?

Paradoxically, this is a group that has posted such information themselves, and this is a good example of discord.

You may be thinking that this doesn't apply to you because you have nothing to hide.

But privacy isn't about hiding negativity.

Let's say you're the head of human resources at some organization, and you've received a resume from a job applicant, and you want to do a little more research on the applicant.

Let's say you Google a candidate's name and you find this information on one site.

On the other hand, let's say you find this information in some parallel world.

Would you like to interview both applicants equally?

If you think so, then you are not an employer in the United States.

We put up a fictional profile of a manipulative person on Facebook, sent that person's resume to various companies in the United States, and when we observed whether companies looked up information about that person on social media and whether they were affected by the information they got there, we found that it affected them.

There was discrimination through social media between candidates with the same ability

Marketing people want us to believe that information about ourselves is used for us.

But think about it, it can't always be that way.

A few years ago, there was a famous scene in the movie "Minority Report," where Tom Cruise was walking through a mall with personalized advertisements holographically surrounding him.

The movie is set in 2054, 40 years in the future, and while the technology looks great, it already underestimates the personal information that organizations can collect and how it can be used in unexpected ways.

As an example of this, I would like to introduce an experiment that we are currently conducting.

Suppose a company has access to your Facebook friend list, and some algorithm can choose your two closest friends.

And let's say you can synthesize these two friends' faces in real time.

Past research has shown that, even though the person himself/herself cannot recognize the face in the synthesized photograph, for some reason, the face in the photograph is familiar to him/herself.

The next time you're looking for something specific, you'll see an ad recommending it, and it's not a stranger recommending it.

You may not notice it at all in your friend's composite image.

The problem is, under current law, the mechanism that protects us from misuse of our personal information is like fighting a gunfight with a knife.

One such mechanism is transparency, which makes it clear how we use the information we receive.

In principle it's a good thing

necessary but not sufficient

Transparency can be misused

You can induce people to provide personal information after telling them how you will use the information.

We conducted another experiment with students. We asked students to provide information about their conduct on campus. Have you ever cheated on an exam?

We told the first group that only other students would see the answers.

I told the other group that other students and faculty would read the responses.

The transparency and considerations are clear, and it's a natural result, which is what you'd expect: the first group is more likely to disclose information than the second group.

i think it's a fair result

Then added a false lead

We conducted the experiment with the same two groups, but this time we shifted the timing of telling them how the responses would be used and the timing of actually asking the questions.

How long do you think it took you to forget the deterrent information that the professors also read the answers?

10 points?

5 points?

1 point?

How about 15 seconds?

Fifteen seconds was enough to get both groups to reveal the same amount of information, and the second group didn't seem to mind that the professors were looking at their answers either.

I'm sure all of this will make you feel very depressed, but that's not the point.

I want to tell you that there is actually another approach.

It's not the only way, it's not the best way, it's not the best way

If someone says, "People don't care about their privacy," suspect that their practices are cleverly designed to make them less privacy conscious.

If anyone says that privacy and the benefits of big data are incompatible, it should be remembered that over the last 20 years, researchers have developed techniques that can theoretically enhance privacy over any electronic communication.

we can browse the internet anonymously

You can also send mail so that it can only be read by the recipients you specify, even the National Security Agency can't read it.

Privacy-friendly data mining is also possible

In other words, it's possible to take advantage of big data while preserving privacy at the same time.

Of course, technologies like this may affect the costs and benefits between those who have information and those who use it, and that's probably why we don't hear about it as often.

Now let's go back to the Garden of Eden

This is another interpretation of the Garden of Eden story, from a privacy standpoint.

A similar story can be found in John Milton's "Paradise Lost."

In the Garden of Eden, Adam and Eve were materially free

i was happy and satisfied

But at the same time they lacked knowledge and self-awareness.

They discovered themselves the moment they ate the fruit, aptly named the Fruit of Wisdom.

they recognized themselves and gained autonomy

But the price was to leave the Garden of Eden.

Privacy is both a means to freedom and a price to pay.

People in marketing say that big data and social media are not a place for them to profit, but an Eden for all of us.

We enjoy content for free

You can get Angry Birds or get any app you want

But the reality is that in a few years, companies will know us so well, they'll know what we want before we even think about it, and they'll buy it for us before we even think we need it.

There was an English writer who was concerned about a future where we would give up our independence and freedom in exchange for comfort.

Aldous Huxley, of course, painted this better than George Orwell.

In Brave New World, he creates a world where the technology we originally built for freedom rules us.

But at the same time, the novel presents a route out of that society, similar to the route that Adam and Eve had to take to get out of the Garden of Eden.

In the words of the savage in the novel, he says that independence and freedom are possible, although the price is high.

I believe that the unique battle of our time is the battle for control of personal information: whether big data is a force for freedom, or a force behind us, a force behind us.

Today, many people still don't even know that such a battle has begun, but whether they like it or not, it has.

At the risk of playing the part of the serpent, I want to tell you that the tools you need to fight are here, and the power to understand what's going on is in your hands, just a few clicks away.

thank you

(applause)

Hetain Patel: (in Chinese) Yuyu Rau: I'm Hetain I'm an artist

This is Yu Yu, a dancer I work with.

I asked for an interpreter

HP: (in Chinese) YR: Please tell us a little bit about yourself and your work.

HP: (in Chinese) YR: I was born and raised near Manchester, England, but I don't speak English.

(Laughter) HP: (in Chinese) One of the drawbacks of hiding your accent in Chinese is that you can only speak this phrase that I memorized when I visited China.

(Laughter) HP: (in Chinese) (Laughter) YR: If any of you speak Chinese, I'm sorry.

When I was a kid, I didn't like being forced to wear Indian kurta pajamas because it wasn't cool.

It's like a dress, it's girly - my trousers are loose and I'm embarrassed that they hang down if I don't tie them properly.

My father didn't wear it at all, so I thought I didn't have to.

And when I wear it, I feel uncomfortable. Everyone thinks I'm pure Indian, even though I don't think so.

HP: (in Chinese) YR: The only way you can really put this on - is to pretend it's the costume of a kung fu master - a master like Li Mu Bai in "Green Destiny."

(music) Now-

My work deals with identity and language -- and troubling assumptions rooted in what you look like, where you come from, your gender, your race, your class.

So what is it that makes us "we"?

HP: (in Chinese) YR: I used to read a lot of Spider-Man and watch kung fu movies and study Bruce Lee's philosophy.

He said HP: "Empty your mind -

(Laughs) Like water that has lost its shape and form...

If water is poured into a cup

shaped like a cup

If it's poured into a bottle, it becomes a bottle

If it is poured into a teapot, it becomes a teapot

Water can be a still stream - a torrent

My friend, be water." (Applause) YR: I'm 32 this year, the age when Bruce Lee died.

I've been thinking lately, if he were alive and I was going to speak at TED, what kind of advice would he give me?

HP: "Don't imitate voices

It's unpleasant."

(Laughter) YR: Good advice, but I think that by imitating others, we learn who we are.

I'm sure you've all imitated your childhood heroes, your moms and dads.

i imitated

HP: I shot this video a few years ago to use in my work.

My father was on the side and was trimming his mustache.

it went well at first

It was enough to give me a discount at an Indian store.

(Laughter) But then my beard grew faster than I thought it would, and it grew too much.

You don't look like an Indian

People are yelling Spanish from across the street HP and YR: Areva Areva! Andare Andare!

(Laughs) HP: Actually, I don't have to have such an Indian accent

My father doesn't have an accent either.

Now it's the British way of speaking

After all, my father isn't the only one I've imitated.

A few years ago, I was in China for a few months, and I didn't speak Chinese.

YR: This sentence is engraved in my memory, and I remember it more clearly than the number on the card, so I can pretend to be fluent in Chinese.

As soon as I learned this sentence, I asked a Chinese artist how accurate it was.

When I spoke, he laughed and said, "I'm very good at it, but it sounds like a woman's language."

if you ask me what

I was told, "Didn't you learn from a woman?"

"Yes, but why?"

So he explained to me that men and women have a distinctly different tone of voice.

(Laughter) (Applause) HP: There are risks in mimicking like this.

No matter how good an interpreter is, things don't always go as planned.

But I won't give up, because contrary to the usual idea, imitating someone reveals your individuality.

When imitating my father doesn't work, I become myself.

When impersonating Bruce Lee doesn't work, I'm the real me.

this is my art

We strive hard for the real thing, sometimes in forms we might not have expected.

I've only recently come to realize that it's not because I'm Indian that I'm sitting this way.

I learned it by reading Spider-Man

(laughs) Thank you.

(applause)

There's a small country hidden in the foothills of the Himalayas, far away from these beautiful mountains, in the Kingdom of Bhutan, we're doing something a little different.

why?

Because happiness isn't just for the lucky few, it's a basic human right for all people.

And what is happiness here?

Happiness is the freedom to choose

You are free to choose where to live, do what you like, buy and sell what you like. Of course, you are free to decide who to buy and sell, when and how.

Where are the opportunities for choice?

Who can get it and how can they claim it?

One way to assert choice is through the market.

A well-functioning market creates choices so that the people who participate in it are free to seek happiness.

The great Indian economist Amartya Sen won the Nobel Prize because he said that the cause of famine was not the lack of food supplies, but the inability of people to participate in markets and get food - malfunctioning markets.

In 1984, in what can only be described as one of the greatest human crimes, nearly a million people starved to death in my native Ethiopia.

It wasn't that there was no food - in fact, there was a surplus of food in the fertile land of southern Ethiopia, but there was no way for people in the north to go to the market and get food.

was a turning point in my life

Most people in Africa today are farmers.

And most African farmers work small plots of land and live off very little capital.

Agriculture in Africa is one of the least capitalized in the world.

Only 7% of the arable land is cultivated, compared to 40% in Asia.

And per hectare, only 22 kg of chemical fertilizer is used in Africa, compared to 144 kg in Asia.

If you compare the number of roads, there are six times as many in Asia as in rural Africa.

Latin America has eight times as many tractors as Africa, and Asia has three times as many.

Today, the lives of small farmers in Africa don't have many options, they don't have much freedom.

their livelihoods are squeezed by poverty

They have no choice but to sell what little crops they've worked so hard for right after the harvest, when prices are at their lowest.

And then a few months later, when food starts to run out, when prices are at their highest, they come to buy food for their families.

The question here is, how can we establish a market that harnesses the power of the innovative, entrepreneurial farmers that exist in rural Africa?

Another eminent economist, Theodore Schultz, won the Nobel Prize in 1974 for his work on efficient yet poor farmers.

So farmers, like the general public, are rational and profit-seeking.

Even without more Nobel Prizes, you know that farmers want to have equal access to the market and want to make money.

And at least for now, it's clear that Africa is ready to start a business.

It is a business called agriculture.

More than 20 years ago, world public opinion called for the liberalization of African markets and the transformation of the very structure of the economy.

This meant that government agencies stopped intervening in the inefficient trading that they had done up until then, and let the private market take over.

25 years later What happened?

Is Africa self-sufficient?

Could a farmer become an efficient merchant?

We are gathered here today, probably because we know that Africa is the only place in the world where poverty and malnutrition will increase in the next decade. Today, the cost of importing food is more than double what it was 20 years ago, per capita food self-sufficiency is unchanged, and chemical fertilizer use is falling, not rising.

Why didn't the agricultural market grow as expected at the time?

For 15 years, I've traveled across continents about the market reforms driven by the West, and I've talked to hundreds of traders in 10, 15 countries about agricultural markets to see where and what they did wrong.

This much-anticipated market reform seems to have turned the cart before the horse.

Like its agricultural practices, African markets are uncapitalized and inefficient.

And what we've found is that the transaction costs and the risks involved in trading in rural agricultural markets are very high.

In fact, only one-third of the harvest reaches the market.

The reason Africa's market economy is so weak is not because it doesn't have infrastructure like roads and telephone lines, but because it doesn't have the necessary market mechanisms, market information, ratings, standards, and other reliable ways to connect sellers and buyers.

Because of this, only small transactions can take place, and commodities can only be bought and sold between personal acquaintances and trusted associates.

And because of this, not only does the product go through about four or five hands in the journey from producer to consumer, but each time, as I've seen in farming villages all over Africa, the bags change.

i thought it was very funny

However, as I heard the same story from many traders, I realized that people could only determine the quantity and quality of goods by doing this.

And this greatly affects the market's ability to quickly detect and respond to the signs of product shortages and price volatility.

reflected in the price itself

By my calculations, the 26 percent margin is simply because the product is not vetted, there is no product standard, no market information, and you are forced to change bags repeatedly.

As a result, fees are piling up.

The smallholder farmers who produce most of the agricultural produce in Africa come to the market blindly ignorant, believing there must be a demand for their produce, completely at the mercy of the merchants, unable to bargain and reduce risk by coming to the only local market in the region.

Speaking of risks, African food crop prices are among the most volatile in the world.

Small farmers face this risk the most in Africa.

In my opinion, no place in the world, no time in history, in my opinion, no one in the world, no time in history, has taken as many risks as African farmers.

And if you look all over the world, you won't find any example of how agriculture has developed while taking the risks that African farmers did.

For example, in Ethiopia, the price of corn fluctuates by 50 percent in a year.

Market risks like these are surprising, but they're not just about farmers' investment in efficiency-enhancing technologies like seeds and fertilizers, but also things like food security.

For example, in 2001 and 2002, Ethiopia had a good harvest of corn.

Without a strong market system, domestic corn prices collapsed by 80 percent.

For this reason, there are some farmers who cannot even earn the cost of harvesting.

It's been calculated that in 2002, 300,000 tons of corn was left in the fields and wasted.

Six months later, in July 2002, Ethiopia announced the same level of food famine as in 1984, when 14 million people faced starvation.

Also in 2002, after a lot of rain and a good harvest, farmers decided to stop using fertilizers, and actually reduced fertilizer use by 27 percent.

This is a tragic example of developmental delay, like stopping a budding green revolution.

This is happening not only in Ethiopia, but all over Africa.

I'm not here today to lament this situation.

I'm here to tell you that change is near.

Africa today is neither waiting for aid nor relying on cookie-cutter foreign policy.

Africa has grown, and it's slowly coming to understand that markets don't start on their own.

In the '80s, good bargaining was considered a good thing.

A book has been written that has influenced this, and it talks about separating the government from the market.

Today, the theory is that a well-functioning market isn't just about price incentives, it's about investing in the right foundations and creating the conditions for innovation in the marketplace with the right institutions.

It is in such conditions that the frontiers of Africa can innovate like they do elsewhere.

About three years ago, I quit my job as a senior economist at the World Bank in Washington and returned to my native Ethiopia after 30 years abroad.

the reason is simple

After more than a decade of learning about African agricultural markets and persuading policy makers and donors, I felt it was time to act.

Now I'm in Ethiopia working on the establishment of the Ethiopian Commodity Exchange (ECX).

The concept of commodity trading is not new.

In fact, in 1848, in a small town at the crossroads of the Illinois River and Lake Michigan, 82 grain merchants and farmers banded together to create a system to better trade themselves.

That was the beginning of the Chicago Board of Trade, which is now the most famous commodity exchange in the world.

Farmers in Ethiopia will also benefit from a commodity exchange for exactly the same reasons that the Chicago Board of Trade was established at the time.

Farmers in the American Midwest shipped their grain upriver to the markets in Chicago.

If you can't find a buyer there, or if the price drops unexpectedly, it's going to cost you a lot.

He even dumped the grain in Lake Michigan to save on the cost of bringing it home.

To avoid great risk and great loss, the futures market was born, laying the groundwork for buying and selling grains, such as valuing grains and issuing wholesale receipts.

And that led to the biggest innovation in the marketplace, a system where buyers and sellers could trade grain without actually seeing it.

Grains are no longer bound by distance or time, and can be traded far ahead, up to 18 months ahead.

It's this innovation that changed American agriculture and helped Chicago move from a small town farm market to a global market.

In the last century, commodities trading was thought to be confined to the developed world of the West. It is the commodity exchanges in the countries of the Northern Hemisphere that determine the prices of the products of the Global South, such as cotton, coffee and cocoa.

But that's changing

We're witnessing a shift, driven primarily by IT developments, where market dominance is shifting to new markets.

And over the past decade, Western European exchanges, especially the United States, have accounted for about half of global trading compared to a decade ago.

Similarly, in India, for example, there has been an explosion of growth, 270 percent over the last three years, as rural farmers use the exchange mechanism.

This is the result of aggressive market participation by farmers through low-cost VSAT technology.

And China's Dalian Commodity Exchange surpassed the Chicago Board of Trade three years ago, in 2004, to become the second largest commodity exchange in the world.

Ethiopia is currently building the first ever commodity exchange.

Instead of trying to mimic Chicago or India, we're trying to create a system that's tailored to Ethiopia's unique needs and realities, to Ethiopia's smallholder farmers.

So what is ECX Commodity Exchange for Ethiopia

It will be a place where all participating people can benefit, and a healthy, reliable efficient and transparent mechanism will be created, and small farmers will be able to respond to the risks mentioned above.

What's unique about our envisioned Ethiopian Commodity Exchange is the holistic approach that we call the ECX Edge.

ECX Edge creates an ecosystem where the market grows on its own.

It's a system that I arrived at because I've learned in researching market development in Africa that a piecemeal approach won't solve the problem.

The problem is that there are donors building market information systems, and others trying to build ratings and standards mechanisms, and other people working on ICT and cargo storage, all over the place.

What we're trying to do is establish the whole ecosystem, or the environment itself, where the trade takes place.

So the exchange will run the system, and although there will be a lot of opposition at first, we don't think Ethiopia is ready for fully electronic trading yet.

Also, unlike any other commodity exchange in the world, we're going to set up internet cafes in various local areas and make them a part of the market trading.

By coming to what we call "internet cafes," which we call local access centers, smallholder farmers and traders from all over the country can actually see what's going on on the Addis Ababa exchange without having to buy or own a computer.

At the same time, the imperative of this market, which is one of our new ideas, is that a central exchange will operate the depots across the country, as well as provide valuations and cargo storage.

And we'll have our own clearing system, and we'll give the system credibility by ensuring that payments are made at the right time, at the right price, at the right time.

When building an exchange, of course, we also work with the people who participate in the market to create the rules and legal foundations on which the whole market system works.

Our proposal will be submitted to the Ethiopian parliament next month.

The key here is that ECX's market information system will be able to provide farmers across the country with real-time prices for their crops through electronic price dissemination VSAT technology.

This will fundamentally change the relationship between farmers and markets.

Until now, the way of thinking was limited to the region, and I used to have no choice but to sell my products at the market closest to where I live, about 8 to 10 kilometers away on average, without knowing the added value or appropriate value of my products.

Taking this opportunity, our field of vision began to expand nationwide.

People are making informed decisions about future price movements, not just about buying and selling, but even about planting.

And we started to see how our crops would perform in the market in terms of added value.

All these things change the farmer

And it will change the way merchants do business.

Instead of arbitrage after arbitrage, we're going to think more strategically and move surplus grain to areas that are in short supply.

Can Ethiopia do something like this?

It seems so impossible

Create new opportunities

This proposal requires a great deal of political will, as well as financial institutions and ICT partnerships, to lay the legal groundwork.

Now that the winds of change are blowing, I believe we can do it.

Market ECX for New Century Ethiopia will start in about 8 months

The most recent Ethiopian parliament closed with the President's statement that this proposal is the most important economic innovation for our country right now.

I know you're taking big bets, but the rewards are definitely bigger.

And above all, ECX could one day become a marketplace for agricultural trade across Africa.

Ethiopia's domestic market is worth about $1 billion.

Our reading is that over the next five years, if Ethiopia can only operate 40 percent of it, and add just 25 percent of it's value, the market value will double.

Ethiopia's agricultural market is 30% higher than South Africa's cereal production and boasts Africa's second largest corn production.

there is a possibility

I have the will to make it happen

I made a pledge

I feel that we have created a compelling value proposition that will increase farmers' options, grow agriculture, and change Africa.

So we are in business for happiness.

Thank you. (Applause)

Thank you. (Applause)

I have devoted my life to the pursuit of sustainability.

Launched “The Climate Group” as a climate change countermeasure NGO

At WWF, I got involved in deforestation issues.

At the United Nations, I was also involved in issues of development and agriculture.

It's been about 25 years, and three years ago I met the CEO of IKEA and decided to join his team.

Like everyone here, I wanted to reach out to the world as big as possible, so let me tell you why I joined the IKEA team.

Let's start with three numbers

The first is a population of 3 3 billion

This is the number of people who will be lifted out of poverty and into the middle class by 2030.

It will be wonderful for yourself and your family, but the world where 2 billion middle -class people currently around the world will be exposed to 5 billion. It is a major trial in a world where resources are starting to be depleted.

Next is 6. 6 degrees Celsius is the temperature that will rise with global warming.

predicted to rise by 6 degrees instead of 1, 3 or 4

Many of the mysterious weather events we experience in recent years are caused by just one degree increase in temperature, and CO2 emissions will have to go over the hill by the end of the 2010s and fall further down.

It doesn't naturally decrease, so you have to make a decision and act.

The third is 12. When my grandmother was born, there were 12 cities in the world with over a million people.

a picture of my grandmother

it was the beginning of the 20th century

I was born in Manchester, one of 12 cities, the ninth most populous city in the world at the time.

We're approaching 500 cities with over a million people now.

The first century, from 1950 to 2050, is the century in which humans built cities, and we're halfway there now.

All previous ages have been mere exercises that have become blueprints for how we live today.

please think about it

We're building cities, lifting people out of poverty, and changing the climate at an unprecedented pace.

Sustainability has gone from a “wish I could” stage to a “should” stage

We have to work right here, right now, and we have to continue for as long as humankind exists.

So I'm going to talk about what companies can do, and what companies like IKEA can do. IKEA is developing a strategic sustainability project called Positive Relationships between People and the Planet, to help companies create policies that will have a positive impact on the planet.

It's only natural for companies to do good things for the planet, right?

Sustainability is also a strategy for other companies

I'll introduce them later, and I'll also give some examples of communities as specific examples.

Consider the consumer first

Consumer survey results from China to the United States

Most people are interested in sustainability, but they first think about the mundane: how do we get our kids to school every day?

Will I be able to pay at the end of the month?

Then they're interested in big topics like climate change.

People want an easy, cheap and attractive way to do things, and they think companies should do something about it.

Let's look back and remember what the first sustainable product was.

Washing with eco-friendly detergent made white things look dull

There were energy-saving light bulbs, but they took five minutes to light up, and they looked pale.

Recycled toilet paper used to be stiff.

Every time I put on my T-shirt, every time I turned on the light bulb, every time I went to the bathroom, or all three at the same time, I was reminded that sustainability must be compromised.

It was inconvenient at first

now you have a choice

You can make your product beautiful or ugly, you can make it sustainable or not, you can make it affordable or expensive, you can make it functional or not.

So let's create beautiful, functional, affordable and sustainable products.

Let's take LED as an example

LED is the second best light source after sunlight

The old light bulb, that is, an incandescent ball-I don't say how many people will use it at home, but I will waste energy every time I switch on. I don't know if I'm using it for the TED stage in the future-I don't know if it's an old incandescent ball-I just want to sell it as a heater.

It's been mis-sold for over 100 years.

It puts out only heat and very little light.

Now there are light sources that emit primarily light and very little heat.

LEDs save 85% of the electricity of incandescent bulbs

Even better, it has a lifespan of 20 years or more.

would be great

In 20 years, you'll probably replace your smartphone more than seven or eight times.

Change the car three or four times

Children will finish school, go to college, become independent parents, and come home with grandchildren, all the while using the same light bulb to save energy.

LEDs are great

At IKEA, we put high-priced LEDs in the corner, and at IKEA, we put high-priced LEDs in the corner, and we don't sell incandescent bulbs, or halogen bulbs, or compact fluorescent bulbs next to them.

We will phase out halogen and compact fluorescent lighting over the next two years

“Company-wide full-scale development” This is exactly what a company should do

"Company-wide rollout." That's what companies should do. It's a 100 percent commitment. Zero investment in old models. Invest in new models and lower costs.

(Applause) But it's not limited to products that go into our homes.

We also have to think about the raw materials that make up the product.

The use of recycled materials should be highly commended, and zero waste is possible and aspirational.

Circular economy is also something we want to realize.

But for now, IKEA still relies on natural raw materials.

Take cotton for example

Cotton is a wonderful material, and many of you wear cotton clothing.

cotton is wonderful and popular

the production process is terrible

We use a lot of pesticides, fertilizers and water.

So we've organized the Better Cotton Initiative with outside groups, companies, and NGOs, and we're working with farmers to cut irrigation water in half, cut chemical use in half, and increase yields, because 60 percent of the cost for low-income farmers comes from importing chemicals.

More yields, half the cost

Farmers are happy because they can lift themselves out of poverty.

Already, hundreds of thousands of farmers are being educated and trained. 60% of the cotton we source is improving.

This is also a comprehensive effort.

All cotton will be better cotton in 2015

If you say something like "Achieving 100% as a goal"

In general, one would think that such a goal is too high, and the same is true in the business world.

But at IKEA, we think 100% is easier than 90% or 50%.

When 90% is the goal, every company tries to get into the remaining 10%.

There is no ambiguity in 100% goals. Business people love clarity, because once you have a clear goal, you just go for it.

And then I've also studied timber, forestry, and I think it's a matter of choice.

We have illegal and destructive logging on a large scale, but we also have a wonderful, proud and responsible forestry.

It's a matter of simple choice. And so we've been working with the Forest Stewardship Council for many years. It's actually a collaborative effort with hundreds of organizations. Working together is what counts.

Hundreds of organizations, NGO Forest Workers Association, Companies, etc. cooperated with the establishment of the Forest Management Council, formulate the standard for forest management and check the site whether the forestry is performed correctly.

Through our supply chain, we have been able to work with our business partners to certify 35 million hectares of forest

It's roughly the size of Germany.

IKEA plans to double the use of certified materials in the next three years.

determined to solve such problems

It is important to improve using supply routes.

We also need to improve the management of the company.

You can definitely see

We will continue to rely on electricity for the next couple of decades,

There is no doubt that the sun will continue to shine on the earth, and the wind will continue to blow for a few decades.

So what if we got our energy from the sun and the wind?

What if we could do it ourselves?

That's why IKEA has set itself the goal of being 100% renewable.

By 2020, we plan to generate more renewable energy than IKEA consumes.

300,000 solar panels have been installed on all rooftops of the IKEA store factory delivery center We have built 14 wind power plants in six countries.

about the solar panel

Depreciable in 7-8 years

Electricity is free after that

Every time the sun rises, you can make electricity for free

It's good news not only for sustainability people, but also for CFOs.

Any company can do something like this

But it's not just to improve your company's management. I think everyone can agree, but companies have to be responsible for all the supply routes on the earth.

Fortunately, many companies are currently setting up the standards to be protected and investigating the supply route, but not all companies are far from all.

IKEA faced this problem in the 90s.

It turned out that there was a possibility of child labor in the supply route.It was a big shock among those involved.

This was completely unacceptable and had to be rectified immediately.

Therefore, we have set the standards to be protected. Currently, there are 80 investigators around the world, and we have confirmed that all factories every day have a good working environment and have no child employment.

However, the lack of child employment does not fit, but it does not fit just because there is no child employment.

Now that's not enough

I hope you'll agree with me on this, but children are the most important and the most vulnerable creatures in the world.

What can companies use to improve their children's lives and protect their rights if they use all the value chains?

IKEA has created a new company that protects the rights of children along with UNICEF and Save the Children.

More and more companies are joining us, but surveys show that many business leaders think their companies have nothing to do with child labor.

So we went to ask those who know the circumstances better than us to point out what we can do to improve their children's lives.

In addition, IKEA is trying to improve the lives of 100 million children by 2015 by establishing a fund and to protect the right.

You know the saying, "What can be measured can be handled"?

You should measure anything that interests you.

If you don't measure, you won't even realize you're ignorant

Let me give you an example. Let's measure what's important in your company.

Isn't it time for business managers to be 50/50 men and women?

(Applause) 47%of the 17,000 managers are women in IKEA.

I can't wait until 100 years from now

IKEA will launch an open network for female employees this week and promote this reform.

The key is to measure interest, drive reform, and not wait 100 years.

At IKEA, we've taken sustainability from a 'wish we could' to a 'must do'.

"I wish I could" and at the same time "I should do it"

Everyone can be involved in this movement in some way.

As a discerning consumer

Vote with what's in your wallet

Find companies that are committed to this movement

Other companies are already taking action

introduced renewable energy

Google and Lego want to be 100 percent renewable, just like us.

Some of the very good sustainable strategies are Nike and Patagonia Timberland Marks and Spencer.

None of these companies would say they're perfect, there's no such thing as perfection.

It is important to talk with a business partner who has a clear direction and understands the purpose, with a clear direction and understanding the purpose, and tackling it in a really important task.

If you're an industry leader and haven't made sustainability a core part of your business model yet, I encourage you to do so.

Let's work together to create a sustainable world, and hopefully we can make sustainability not a luxury for the few but a daily life for the many.

Thank you for your attention

(applause)

Africa is experiencing rapid growth

Per capita income has doubled since 2000, and this growth is affecting everyone.

Life expectancy has also increased by one year every three years over the past decade.

So a child born in Africa today will live a day longer than a child born three days ago -- one day longer.

It's that fast

And HIV prevalence has fallen by 20 percent, with 600,000 fewer people a year living with HIV in Sub-Saharan Africa.

We are also winning the battle against malaria. Malaria deaths are down 27 percent, according to the latest data from the World Bank.

Mosquito nets to prevent malaria have also been effective.

Not surprisingly, they all grow up.

Roman Empire 1 AD to 1 AD Roman Empire 1 AD to 1800 not much growth 1800 not much growth

But the Scottish barbarians, as the Romans call them, my ancestors started the Industrial Revolution, and in the 19th century, growth began to accelerate, and it grew faster and faster, and it affected everyone.

Whether it's the jungle of Singapore or the tundra of northern Finland,

For everyone. It was only a matter of time before growth came.

One of the reasons why growth is happening in Africa right now is high quality leadership.

As you all know, the best politicians in the world in the 1990s were Africans, but all my life, I've met great people across continents.

Western countries are also involved in this.

Debt forgiveness programs in Western countries have halved the debt of Sub-Saharan countries from 70% to 40% of GDP.

On the flip side, our debt level climbs to 120, and as a result, we feel a little miserable, and as a result, we feel a little miserable.

The more debt you have, the less political power you have.

If public sector debt is low, governments have no choice but to pay debt interest while investing in education and health.

And it's not just the public sector that's booming.

even in the private sector

In the West, private sector debt is twice as large as GDP, in Spain, in the United Kingdom, in the United States.

really big debt

But private sector debt in African countries remains between 10 and 30 percent of GDP.

If there's one continent that can do what China has done -- on this graph, China's private debt is 130 percent of GDP -- if there's one continent that can do what China has done in the last 30 years, it's Africa in the next 30 years.

Africa has huge government funding and very little private debt.

do you all know? of course

Foreign direct investment has been steadily pouring into Africa over the last 15 years.

In the 1970s, no one cared about Africa.

This investment is led by Western countries.

You hear a lot about China, and China lends a lot of money, but 60 percent of foreign direct investment in the last two years has come from Europe, the United States, Australia, Canada.

10% were from India

Investments are directed towards energy

Africa produces 10 million barrels of oil a day

That's comparable to the output of Saudi Arabia and Russia.

We also have investments in telecommunications and shopping malls.

I think there's demographics behind this amazing situation.

It's not just Africa's demographics

This is the 15 to 24 year old population around the world, and this is the 15 to 24 year old population around the world.

Ten years ago, let's say Foxconn set up an iPhone factory.

You might have picked China, where East Asia's blue line converges, with 200 million young people, and increasing every year until 2010.

So it's a situation where young people come one after another and say, "I want a job," and they say, "I don't need a high salary, just give me a job."

but not now

Over the last decade, China's 15- to 24-year-old population has declined by 20 to 30 percent.

So where should the new factory be built?

Focus on South Asia

Pakistan, Bangladesh and Africa

Africa is in focus because, as you can see from the yellow line, the number of young people in Africa continues to grow, and will continue to do so until 2050.

It's true that with so many young people flooding into any market, it can be a problem, especially as more men come.

can be a little dangerous

But what matters is how those people are educated.

You can see the red line here. In 1975, only 9 percent of children in sub-Saharan America had a secondary school.

Would you like to build a factory in Sub-Saharan Africa in the mid-1970s?

no one does that

Instead, they were setting up textile factories in Turkey and Mexico, because the education level in both countries was 25 to 30 percent at the time.

The level of education in Sub-Saharan Africa today is on par with Turkey and Mexico in 1975.

Get a textile job so you can move out of a world of poverty and into industrialization and affluence.

So what does Africa look like now?

this is a little strange

This is Africa through my economist's eyes.

One small square represents $ 1 billion. As you can see, I am paying attention to Nigeria in the middle.

south africa is important

But when I think about the future, I'm most interested in central, western and southern Africa.

If you look at Africa in terms of population, East Africa has the largest population, and the potential is enormous.

Let's look at it from another perspective, this map

Contrasting a democracy with a dictatorship

Even in a democratic country, unstable things are beige

The established ones are in orange.

As you can see, most African countries are now under democracy.

why is that important?

Because what people want is what politicians are trying to do -- to deliver even if they don't succeed.

Democracy reinforces virtuous circles

In the December 2012 elections in Ghana, the debate between two candidates was about education.

One candidate argued that secondary education should be free for everyone, not just 30%.

The other promised to build 50 new schools.

he narrowly won

Democracy drives governments to invest in education.

Education drives growth and investment, which in turn brings in budget revenue, which in turn increases government funding, and education leads to growth.

It's a virtuous circle

But this question made me very sad, "What about political corruption?"

“How can we invest in Africa when there is corruption?”

What is sad is that corruption is the most correlated with wealth, as shown in this graph.

I don't care about corruption when I'm poor

If you look at the countries on the right side, almost all of them with per capita gross domestic product under $5,000, almost all of them under $5,000, and almost all of them with a corruption index of about 3.

It's a 3 out of 10, so it's not good.

All poor countries are corrupt

rich countries are relatively uncorrupted

How can we go from poor and corrupt to rich and less corrupt?

We should raise the middle class

And for that, you have to invest. There's so much corruption out there, so why not invest there?

I'm not going to be an advocate for corruption.

I've been arrested before for refusing bribes, not in Africa.

But what I'm trying to say here is that you can change the situation, and by investing you can change it yourself.

It's a semi-open secret

economists are not good at forecasting

you can't predict what will happen next

Turning the clocks back to 2000, The Economist created a famous cover called "The Continent of Despair." They just looked at Africa's growth rate of 2 percent over the last decade, and they predicted what would happen in the next 10 years.

They assumed a growth rate of 2 percent, and they assumed the future was bleak, because the population had grown by a factor of 2.5.

Africa became even worse in the 1990s

What was on the cover of The Economist magazine in 2012?

The new cover is "Africa Promising" because it grew 5.5 percent over the last decade.

Let's see if you can be an economist. If growth was 5.5 percent over the last decade, what would the IMF expect to see in the United States over the next five years?

AUDIENCE: 5.5% CR: Yes, folks, you thought the next growth rate would be 5.5%.

You're all good economists, but like most economists, you're wrong.

please don't be offended

Now, I would like to find a country that is following the same trajectory that Africa has followed: 1,800 years of nothing, then booming.

India is one

This is India's growth from 1960 to 2010.

Forget the numbers below

In fact, in the first 20 years, the '60s and '70s, India didn't grow much.

Although the growth rate is 2%, the population has expanded by 2.5 times.

You've probably heard stories, and this is exactly what happened in Sub-Saharan Africa in the 80s and 90s.

And what happened in 1980

rapid growth! India begins to explode

Instead of "Hindu rate of growth" or "ungrowthable democracy", India grew rapidly.

When you superimpose Sub-Saharan growth on India's growth story, it's strikingly similar.

20 years of stagnation, and as the trend line shows, Sub-Saharan growth is better than India's.

So if you add developing Asia to this, you can see that India is 20 years ahead of Africa, and developing Asia is 10 years ahead of India.

So what we can say from this is that the African economy will go from $2 trillion today to $29 trillion by 2050.

In today's terms, it's bigger than the Western economy.

13 years longer life expectancy

Population will double from 1 billion to 2 billion, household income will increase 7 times in 35 years, household income will increase 7 times in 35 years.

When we presented this in Africa in Nairobi, Lagos and Accra, I got a question.

"Why are you so pessimistic?"

Please look be considered

There is a point in that point.

We can learn from the good of Asia and India, of course, from the bad, we can learn from the bad.

Surely Africa can avoid past mistakes

Of course, some of the technologies presented here over the past week, of course, some of the technologies presented here over the past week will also help drive further growth in Africa.

There is something we can do

technology makes it possible

Right now, you can download the great literature of Africa from the Internet.

But please wait another 30 seconds

you can buy nice music

it's on my ipod

buy african goods

Come on vacation and feel the change yourself

please invest

And hire people and give them the skills they can bring back to Africa so they can grow their companies faster than we did in the West.

And together, let's make the 21st century the century of Africa.

thank you

(applause)

Granny Rosalie was sitting in a nursing home when suddenly a spinning cloth appeared in her room.

The elaborate cloth turned into an animal or children's costume character.

My grandmother was anxious because I knew it was a real -like hallucination, not a real 闖 entain person.

Grandma had excellent cognitive function and had not taken any hallucinogenic drugs.

What's stranger than anything is that when a real circus troupe shows up, the old lady is totally blind, so she can't see it.

My grandmother was suffering from Charles Bonnet Syndrome, in which patients with low vision or blindness suddenly have hallucinations in vivid colors.

Hallucinations can come on suddenly and disappear within minutes, or they can recur for years.

We still don't know what causes it to appear and disappear, and why some people develop it and others don't.

What fMRI studies have shown is that this kind of hallucination activates the visual cortex, but leaves the area of ​​imagination inactive.

Smells, visuals, auditory hallucinations, and many other hallucinations -- smells, visuals, auditory hallucinations -- and many other hallucinations involve the same areas of the brain as the real experience of the sensations.

For this reason, it is thought that the cerebral cortex is a part of the hallucinations.

This thin layer of gray matter covers the entire brain, processing information from each sensory organ in different areas.

But even in people with perfectly normal five senses, the brain constructs the world from imperfect information.

For example, in the blind spot of the eye, the optic nerve blocks part of the retina.

When the visual cortex processes incoming light into a coherent image, it supplements with information from around the blind spot.

You'll only occasionally notice the lack of light

Even if visual input ceases, even if only temporarily, the brain will still attempt to construct a coherent picture, but it is at this point that the limits of its ability become more apparent.

One example is the lifelike hallucinations of Charles Bonnet Syndrome.

Because Charles Bonnet syndrome can only occur in people who have acquired blindness and not in people who are congenitally blind, scientists believe that the brain uses stored images to compensate for the lack of new visual inputs.

The same is true for other senses.

People with hearing loss often hear auditory hallucinations of music and voices, some of which are as complex as the cacophony that a marching band makes as a whole.

In addition to sensory deprivation, recreational and therapeutic drugs, conditions such as epilepsy and narcolepsy, and psychiatric disorders such as schizophrenia are just a few of the many causes of hallucinations, and new ones are being discovered.

Some of the worst hallucinations involve drugs like LSD and psilocybin.

It's so effective, it makes dry things wet and the surface feels like it's breathing.

As the dose increases, the visual world seems to melt, melting into vortices and suddenly fractal-like patterns appear.

There's also evidence that these drugs affect the cerebral cortex.

In general, blindness causes only visual hallucinations, deafness only causes auditory hallucinations, whereas substances like LSD derail the senses.

This is probably because it activates receptors in different areas of the brain, including different areas of the cerebral cortex associated with the five senses.

LSD and psilocybin act like serotonin in the brain, binding directly to specific serotonin receptors.

The role of serotonin in the brain is complex and poorly understood, but it appears to play an important role in integrating information from the eyes, nose, ears and other sensory organs.

So one theory is that LSD and psilocybin cause hallucinations by disrupting signals involved in sensory integration.

The hallucinations involving schizophrenia may be shared with the hallucinations related to LSD and syrosivin, and similar mechanisms.

People with schizophrenia often have high levels of serotonin in their brains.

By blocking the serotonin receptors that bind LSD and psilocybin, antipsychotics relieve symptoms of schizophrenia.

In some cases, antipsychotics have alleviated the hallucinations of patients with Charles Bone syndrome.

It takes time to understand all the causes and the mechanisms of the complex hallucinations

But it's clear that psychedelic experiences are more closely tied to normal perception than once thought.

By studying hallucinations, we can learn how our brains construct the worlds we see, hear, smell and touch.

As you learn more, I'm sure you'll realize how subjective and personal your island universe of perception is.

Dating back to Homer's time, tales of mighty warring tribes across the Mediterranean world terrified even the mightiest empires of antiquity.

Many epic poets have told their heroic tales

Fighting in the Troja War, the army attacked Athens

Jason and the crew of the Argo dodged their shores, dodging arrows for their lives.

These mighty warriors face off against legendary heroes like Hercules, Theseus, and Achilles.

And those warriors were all women

In ancient Greece, everyone knew about the Amazons, who were militant and equal to men in their courage and skill.

The Parthenon on the Acropolis of Athens was decorated with Amazonian battle scenes, and temples and public spaces were decorated with Amazonian paintings and statues.

The girls were played with Amazones dolls and Amazones was a popular material for Greek jar paintings.

He was portrayed in Greek art and literature as brave and desirable, and dangerous and terrifying, destined for destruction at the hands of the Greek heroes.

Was Amazones just a mythology?

For a long time, Amazones were thought to be fictitious like cucumber and Centaur.

But it's interesting to note that ancient stories from ancient Egypt, Persia, the Middle East, Central Asia, India, and China all feature Amazonian-like female warriors.

And there is a description of Amazones not only in myths but also in ancient history books.

The authors, such as Herdotos, Plato and Stravon, did not doubt their existence.

So who was the female warrior known as Amazones?

Ancient historians attributed the Amazons to Scythia, a vast region stretching from the Black Sea to the steppes of Central Asia.

It was a nomad who lived in this large area, and the center of his life was a fight against horses and bow.

The culture had blossomed for about a thousand years from around 800 BC.

Feared by the Greeks, Persians, and Chinese, the Scythians left no written record, but clues can be found in the writings and archaeological records of surrounding peoples.

The ancestors of the ski tai were the first ethnic group on the horse and invented an anti -bowing bow.

And as a mounted archer, a woman can become as fast and strong as a man, so every child should be trained in horseback riding and archery.

The women also fought together with the same weapons as men

Strict nature and nomating life have created their own form of equality.

For the Greeks, women lived mostly indoors, this was a surprise.

The early description of the skitians and Amazones may have been an exaggerated rumor.

As the Greeks began trading around the Black Sea and further east, the description became more realistic.

In the early days, it was drawn in a Greek weapon and armor.

Later, they carried bows and battleaxes, rode horses, and wore pointy hats and patterned trousers, characteristic of steppe nomads.

Until recently, it wasn't clear how strong the connection between the Scythians and the Amazons of Greek mythology was.

Many evidence came out due to archeological discoveries

More than one thousand ancient skited mound tombs have been excavated and bones and weapons have been found.

Until now, archaeologists considered weapons to belong to male warriors.

DNA analysis has shown that 300 remains buried with weapons belonged to women between the ages of 10 and 45, with more being discovered each year.

The wounds of the battle are also found in the remains of women

The terrible Amazones were always depicted as brave and pair of old paintings and sentences.

In ancient Greece, where men were the dominant force, the idea of ​​a strong woman proud to fight for freedom aroused mixed feelings.

But Greeks were also drawn to equality ideals.

The thrilling mythical world of Amazones may have been a way of imagining women and men as equal companions.

Come with me to visit some of the most beautiful cities in the world The Spanish Steps in Rome The historic districts of Paris and Shanghai The rolling hills of Central Park The narrow back alleys of Tokyo and Fez (Morocco) The steep slopes of Rio de Janeiro's favelas The dizzying stepwells of Jaipur The pedestrian arch bridges of Venice

Let's go to a newer city next time.

Six downtowns on six continents in the 20th century.

Why don't they all have the charming character of the old cities?

Or visit six residential areas that were born on six continents in the 20th century.

Why doesn't any place have the poetic quality that we feel for the places we love?

You might think I'm just being nostalgic.

Who cares about a creepy similar landscape will spread to this planet

This is important because most of the people in the world are drawn to urban areas.

And how we design these cities may determine whether or not we thrive as a species.

What is clear is that people who live in well-connected areas, people who live in apartments, have much lower carbon emissions than people who live in the suburbs.

What I can say from now on is, "If you love nature, don't live in nature."

(Laughter) But the dry statistics about transit-oriented development only tell part of the story.

Because a city has to be great in order to attract people.

It must have a strong and unique appeal that attracts environmentally conscious new urbanites.

And it's not just a matter of aesthetics

It's a matter of international repercussions.

Because today, literally hundreds of thousands of people move to one city or another every day, mostly in the developing South.

When you think about it, ask yourself, "Will they have to live in a dull city like the one built in the 20th century? Can't we offer a better city?"

To answer that question, we need to consider how it all came about in the first place.

First, mass production

Like mass consumer goods and chain stores, glass and steel and concrete and asphalt and drywall are being mass-produced and installed in tedious monotony around the globe.

Second is regulation.

take the car for example

the car can move very fast

prone to human error

As an architect, when I'm asked to design a new road, I have to look at a drawing like this, detailing the required curb heights, where pedestrians and cars should go, and where the loading docks should be.

What the car did in the 20th century was create this fragmented and detached landscape.

For example, a fire truck with a big ladder, the one that's used to get people out of a fire.

The turning radius is so large that you have to use a lot of pavement and asphalt.

Then there's the important wheelchair issue.

For wheelchairs the incline must be minimized and an extra spiral ramp must be added.

Where there are stairs, you'll need elevators and ramps.

Don't get me wrong, I think pedestrian safety comes first, and so do firefighting and wheelchair access.

Both of my parents ended up in wheelchairs, so I know how hard it can be.

But at the same time, we also have to consider the unintended consequences of these well-meaning rules making the old ways of building cities illegal.

An equally illegal example is that shortly after the elevator was invented at the end of the 19th century, beautiful urban buildings were built all over the world, from Italy to India.

In a shared house of about 10 to 12 units

There was a staircase spiraling around one small elevator with a skylight.

It's a charming building, and it's cost-effective.

This is no longer allowed to be built.

By contrast, today, when you build a new apartment, you have to put in a lot of elevators and a lot of fire escapes, and you connect them with these long, impersonal, boring corridors.

Developers want to build bigger buildings to spread the cost of pent-up common areas over more households.

As a result, cities all over the world will hear the construction noise of similar buildings being built.

This creates not only a physical identity, but also a social identity. Buildings like this are more expensive to build, which is why housing is not affordable in cities around the world, including here in Vancouver.

The third reason for urban identity is psychological.

It's a fear of being different. Architects often hear from their clients, "Will I get sued if I try that new idea?

Don't you think I'm stupid?

I don't want to take risks

And all of these things working together to create a blanket of homogeneity that I think is a serious problem.

So how can we do the opposite?

How can we create cities that are physically and culturally diverse again?

How can we design a city with character?

My suggestion is to start by incorporating locality.

This is already happening in the food industry and elsewhere.

Craft beer is competing with big corporate brands.

Anyone still eating national brand bread?

most of you are not eating anymore

probably because he doesn't want to eat processed foods

If you don't want to eat processed food, why would you want a processed city?

Why would we all want to live and work the same way in this mass-produced, bleached-out place?

(Applause) "Technology" was a big part of the problems the 20th century created.

When the automobile was invented, the world changed accordingly.

The landscape was remade to fit the car.

In the 21st century, if technology stands with the needs of the world, it will be part of the solution.

What is the meaning of this?

Take self-driving cars for example

Self-driving cars aren't great because they don't need a driver.

That seems to me to add to the congestion.

What's great about self-driving cars -- and I'm going to tell you this is just hope, given the recent accident in Arizona -- is that compact urban vehicles can safely blend in with pedestrians and cyclists.

Because it will allow us to redesign human-friendly roads, like curbless roads and wooden sidewalks on Fire Island.

Maybe we can design our roads with cobblestones in the 21st century, so that they can harness the energy of walking, melt the snow, and improve the fitness of walkers.

And the big ladder of the fire engine

Can rescue drones and robots replace the large amount of asphalt that is required for that purpose?

If that sounds silly, you'd be surprised to learn how much this technology is already being used to save lives.

I want you to imagine with me

If you could build a hovercraft wheelchair,

How about?

People with disabilities could move freely and design a 21st century Italian hill town.

You'd be surprised how a small invention that meets these human needs could change the way a city works.

Now, I'm sure you're thinking, "We still don't have kinetic energy cobblestones, we don't have flying wheelchairs. What can we do with today's technology?"

For that question, I was inspired by a completely different city: Ulaanbaatar, Mongolia.

Our client asked us to design a 21st century open-air village, using modern technology and sustainable heating, in the heart of downtown.

it has to deal with the frigid winter

This project is both poetic and prose.

What's poetic about it is that it evokes the terrain, the mountainous terrain, the majestic light colors, the nomadic traditions that bring the country of Mongolia to life.

The prose part is about developing a catalog of different buildings, creating small, affordable buildings using local building materials and techniques, offering new forms of housing, new workplaces, new shops, cultural buildings like theaters, museums, and even haunted houses.

As I was working on this in my office, I noticed how I was inspired by the work of others in the industry: Tatiana Bilbao of Mexico City, Pritzker Prize winner Alejandro Aravena of Chile, and this year's Pritzker Prize winner Balkrishna Doshi of India.

They're all building stunning new forms of affordable housing and, at the same time, creating unique cities, because they're responding to their local communities, adapting to their climate, and building in their own way.

For cities growing in the face of the pressures of gentrification, we're taking this idea a step further and exploring new models, based on that core core building model from the late 19th century, but transforming the prototypes according to local needs and local building materials.

All these ideas have nothing to do with nostalgia

It says that it is possible to build a city that can thrive while reflecting the diversity of its inhabitants, a city that thrives while welcoming people of all income levels, colors, creeds and genders.

We can curb urban sprawl and conserve nature while creating these wonderful cities.

It is possible to have a high-tech city that also responds to the timeless cultural needs of people's minds.

I am convinced that we can create a city of character, which will form the mosaic of diverse cities that we aspire to around the world.

thank you

(applause)

When I was eight years old, there was a new girl in our class. She's a very nice girl.

Make your overflowing hair sparkle Carry around a cute little pencil case Remember all the capitals Spelling words perfectly

That year I was filled with jealousy, so I plotted a trick.

I stayed a little bit after school one day, and I actually hid in the girls' bathroom until quite late.

When there was no one left, it was time to go to battle.

I did it

I messed with my rival's grades, just a little bit, just demoted some A's.

Actually, I got all A's (laughs). When I was about to put the report card back on my desk, I was told to wait a minute, and my other classmates were so good that it was scary.

In a frenzy, I fixed everyone's grades, and I did.

I gave everyone a D, and I gave myself an A.

I still feel guilty

Where did this idea come from

i don't know why i feel so good

I felt great

It's strange that it didn't come out

It should be obvious that you are wrong

Could not be located

What I didn't understand, in particular, was why it bothered me so much, when that little little girl was just a little smarter.

I was driven by jealousy

Jealousy is a very mysterious thing, and we all know it.

Even babies are jealous

Primates are also jealous, and thrushes are also very prone to it.

Jealousy is the number one cause of spousal murder here in America.

And yet, there's been no research on the loneliness, persistence, and trickery that jealousy can lead to.

So we have to turn to fiction, because it's a laboratory where we study jealousy from every angle.

In fact, it may be an exaggeration, but if it weren't for the feeling of jealousy, there might be no literature.

The Odyssey without the unfaithful Queen Helen

"One Thousand and One Nights" cannot exist without a jealous king.

So is Shakespeare

High school compulsory reading will disappear, because "The Sound and the Fury," "The Great Gatsby," "The Sun Also Rises," "Madame Bovary," and "Anna Karenina."

If it weren't for jealousy, Proust wouldn't have been on people's minds.

This year marks the 100th anniversary of his classic "In Search of Lost Time," which is an in-depth study of male-female jealousy, and rivalry.

A little boy desperately trying to fall asleep

It reminds me of the scene of dipping madeleines in hot tea.

We don't know how poignant his views are.

I forget how merciless I am

According to Virginia Woolf, these books are tough as gut cords made from animal intestines.

What is a bowel?

Now, let's see why novels and jealousy, jealousy and Proust, are such mutual love.

Is jealousy, when boiled down to people's desires and barriers, a solid narrative foundation?

I'm not sure, but I think it gets to the point. Now let's think about what we do when we're overwhelmed with jealousy.

When we feel jealous, we start telling our own stories.

We tell ourselves stories about other people's lives, and these stories make us feel bad because they're made that way.

Because the storyteller and the audience are one and the same person, they know what kind of information to include to hurt them.

Jealousy makes us amateur novelists, and Proust understood this.

In Book One, Towards the Swanns, in Book One, Towards the Swans, the main character, Swann, is fondly remembering his mistress and immersing himself in sensual memories. Suddenly, a few lines away -- a few lines -- Proust's narrative, it's as long as a river -- but after a few lines, Swann suddenly becomes upset.

Her love, which was formerly for me, may be given to another man, even at this very moment! ”

This is where Swan begins to tell his own story, and Proust put it this way: All the beauty that Swan admitted to his mistress, "He made himself one of the instruments of torture."

Swan and Proust, as we all know, are both notorious for their jealousy.

Proust's lovers had to leave the country if they wanted to separate.

But if it takes so much effort, you shouldn't be so jealous, right?

jealousy uses energy

It's a craving feeling, so I need food to heal it

What is Jealousy's favorite food?

it is information

details

Jealousy shines brightly I like rich hair Cute little pencil case

i like photos too

That's why Instagram is all the rage (Laughter).

When Swann goes mad with jealousy, he eavesdrops in doorways and bribes his mistress's servants, justifying his actions.

"It may be offensive to you, but it's nothing like deciphering ancient texts or interpreting monuments," he said.

"This is a scientific inquiry with real intellectual value."

What Proust wanted to show us was that jealousy was intolerable and made us look stupid, but at its core was the quest for knowledge, the desire for truth that might hurt us, and Proust's idea was that the more painful the truth, the better.

Suffering, humiliation and loss were for Proust the path to wisdom.

Proust also said, "What we need is a woman who can haunt us and evoke great and vivid emotions, far better than the intelligentsia who can interest us."

Are you telling us to find a cruel woman?

No, what he meant was that jealousy is about showing us who we really are.

Where else in all emotions do we expose ourselves in such a unique way?

No other emotion reveals so much hostility, hidden ambition, and a sense of entitlement.

No emotion other than jealousy can bring such a peculiar intensity.

Freud also wrote about jealousy

One day, Freud was visited by a young man who suspected his wife of being unfaithful.

Freud says this man is a little strange because he doesn't care what his wife is doing.

It was clear that she had no fault

Poor, unfounded suspicion was directed at me.

But this man seemed to have seen what his wife was doing unconsciously.

Did you smile more than you should? Did you intentionally touch the man there?

Freud analyzed that the man had become fixated on his wife's unconscious actions.

Novels are good at this point.

Fiction shows us how jealousy can make us perceive things emotionally -- but imprecisely.

In fact, we become so imaginary that we become captives of jealousy.

Jealousy, I think, not only drives us towards violence and illegality,

Inspires unexpected behavior

What I did when I was eight years old was wrong, but I also heard this story on the news.

A 52-year-old woman in Michigan has been arrested for creating a fake Facebook account for sending unscrupulous and offensive messages, even to herself, for a year.

It's been a year, it's been a year

Her plan was to make her ex-boyfriend's girlfriend the culprit, and I'll be honest with you when I heard this news, I was filled with admiration.

(Laughter) Because... let's be realistic.

What a wonderful imagination, even if it's the wrong way

i think it's a novel

It's like a Patricia Highsmith novel.

Highsmith novels are my favorite

American writer, very intelligent and quirky.

The author of "Unknown Passenger" and "The Sun is Full". In these novels, she portrayed the disturbing nature of jealousy.

Tom Ripley is especially famous.

When Tom Ripley admires a person and what he has, Tom Ripley admires a person and what he has, and then impersonates that person, kills him, and takes over his life, impersonates that person, kills him, and takes over his life.

but one way

what should we do? You can't imitate Tom Ripley's method

Even I can't give everyone a D, although I have a desire to try it someday.

I think this is unfortunate because we

'Cause we're living in an age of jealousy

We live in a world of social media, but envy is behind it, right?

Did the novel teach you how to deal with jealousy? I do not understand

So what do the characters in the novel do when something goes wrong?

Go to 221B Baker Street and ask Sherlock Holmes

When I think of Holmes, I think of my nemesis, Professor James Moriarty, yes, that villainous leader.

I'm on the side of Inspector Lestrade, but he's a mouse-faced cop from Scotland Yard, who leans on Holmes's brilliance, but doesn't like him.

I feel very close to you

Inspector Lestrade needs Holmes' help, but he's uncomfortable at the same time, and he's bitterly bitter as the case progresses.

But as we work together to solve the case, things change. Finally, in The Six Napoleons, Holmes succeeds in solving the case and captivates everyone around him.

I'm proud of you."

"Everyone in Scotland Yard, old and young, doesn't want to shake your hand."

And I think Holmes is unusually moved, and I think it's very moving. This little scene is also mysterious, isn't it?

We see jealousy here as a matter of geometry, not of emotion.

Not long ago, Inspector Lestrade looked upon Holmes as an enemy.

In the next moment, everyone became friends.

Suddenly the inspector praised and accepted what he had been uncomfortable with.

But is it really that simple?

What if jealousy is really a geometric problem, just an indicator of where you place yourself in relation to other people?

Then there's no need to be offended by other people's greatness, right?

I wish we could be friends

I like to plan just in case

Remember, until the jealousy is solved, there's a novel for comfort.

Fiction alone explains jealousy,

You can master jealousy, and it's a forum for discussion.

The gentle Inspector Lestrade The terrifying Tom Ripley The jealous Swan and Marcel Proust himself

we are surrounded by great friends

thank you

(applause)

July 4th of last year was a historic day when the Higgs boson was discovered in an experiment at the Large Hadron Collider (LHC).

It was a historic day when the Higgs boson was discovered.

From now on, 4th of July will no longer be the Independence Day of the United States, but the discovery of the Higgs boson, at least at CERN.

it will be remembered

But what surprised me most that day was the lack of surprising results.

For theoretical physicists, the discovery of the Higgs boson does a good job of explaining how other particles get their mass, but I don't think that's enough or a complete answer.

too many questions remain

The Higgs boson doesn't have the beauty, symmetry, and grace of other elementary particles. It doesn't have the beauty, symmetry, and grace.

For this reason, most theoretical physicists are convinced that there must be more to this discovery than the Higgs boson.

I expected new elementary particles and phenomena associated with the Higgs boson.

But so far, measurements at the LHC have detected no new particles or signs of unexpected phenomena.

Of course, this is not a clear decision.

In 2015, the LHC will collide with protons at nearly twice the energy they do today, and with these even higher-energy collisions, we'll be able to explore more of the particle world and learn more.

So far, no evidence of a new phenomenon has been found, so the only elementary particles that have been found so far, including the Higgs boson, are the only elementary particles that have been found so far.

Let's see what happens with that assumption

You'll see some surprising and interesting results about the universe. To explain this, I'm going to first tell you what the Higgs boson looks like.

According to the Higgs theory, at that moment, something dramatic happened in the universe.At that moment, something dramatic happened in the universe.

Space-time has undergone a phase transition

It's very similar to how water turns to ice when it's sub-zero, which is very similar to how water turns to ice.

A space-time phase transition is different from a change in the arrangement of molecules in a substance, and unlike a change in the arrangement of molecules in a substance, it is a change in the fabric of space-time itself.It is a change in the fabric of space-time itself.

During this phase transition, the empty space was filled with something called the Higgs field, filled with something called the Higgs field.

This may not be visible, but it clearly exists

It's always around us, like the air in this room.

Some elementary particles gain energy by interacting with the Higgs field.

This intrinsic energy is the particle's "mass." The discovery of the Higgs boson led the LHC to conclude that this field is correct, because it is what produces the Higgs boson.

Here's a quick explanation of Higgs.

But this story is much more interesting than that.

Theoretical physicists who study the Higgs theory have discovered, through the power of mathematics, not through experimentation, that the Higgs field does not necessarily exist in the way we see it today.

Just as matter exists in liquid and solid states, the Higgs field, which fills space-time, may also exist in two states.

Another state of the Higgs field besides the known Higgs state is billions of times more dense than we see today, billions of times more dense than we see today, and the very existence of such a Higgs field could be a problem.

Because, according to the laws of quantum mechanics, even if there is an energy barrier separating the two states, there can still be a transition -- between those two states -- and the phenomenon -- which is aptly named -- is called quantum tunneling.

Quantum tunneling could allow me to go through the wall from this room, and I could go through the wall from this room and appear in the next room.

Now, don't really expect me to do that, because the odds of that happening that I'm going through walls are shockingly insignificant.

If you're waiting for it to happen, you're going to have to wait numbly, but quantum tunneling is a real phenomenon, and we see it in every system.

For example, components used in electronic devices such as tunnel diodes, thanks to the amazing power of quantum tunneling.

return to the higgs field

If there's a super-dense Higgs field, then quantum tunneling -- at some point in space, this bubble of condensation could suddenly pop up -- it's like boiling water.

Just as a bubble of water vapor forms in water and expands, the liquid becomes a gas.

Quantum tunneling may reveal ultra-dense Higgs-state bubbles.

This bubble expands at the speed of light, filling space and changing the Higgs field from its old state to its new state.

Is this a problem? yes it's a big problem

You wouldn't notice it in your everyday life, but the strength of the Higgs field has a decisive effect on the composition of matter.

If the Higgs field were just a few times stronger, atoms would contract, neutrons would decay inside the nucleus, the nucleus would break apart, and hydrogen would be the only element in the universe.

The Higgs field in the super-dense Higgs state is not only several times stronger than it is now, it's billions of times stronger. If space-time were buried in this Higgs state, all atomic matter would collapse.

No molecular structure, let alone life, would be possible.

So, in the future, is it possible that the Higgs field undergoes a phase transition and transforms into such an extremely dense state as a result of quantum tunneling?

In other words, we question the fate of the Higgs field in our universe.

The determining factor in answering this question is the mass of the Higgs boson.

Experiments at the LHC found that the mass of the Higgs boson is about 126 GeV.

It's a small thing, only about 10⁻²² grams in terms of the units we use every day, but it's equal to the weight of all the molecules that make up a strand of DNA, so it's a big unit in particle physics.

Using information from the LHC, I and my colleagues at CERN calculated the probability that our universe would tunnel into the super-dense Higgs field, and we got some interesting results.

It turned out that the mass of the calculated Higgs boson is something very special.

It's just the right amount of mass to keep the universe in an unstable state.

The Higgs field seems to have existed all along -- it's in an unstable state -- but it's going to collapse someday.

By the calculations, by the calculations, we're like campers in tents on cliffs. We're like campers in tents on cliffs.

Ultimately, the Higgs field will — undergo a phase transition — and the matter will self-disintegrate.

Is this a doomsday scenario?

I'm afraid not

According to calculations, quantum tunneling of the Higgs field is unlikely to occur within 10¹⁰⁰ years. It is unlikely to occur within 10¹⁰⁰ years.

That's long before Italy has a stable government.

(Laughter) Even so, the human race will be dead by then.

About five billion years from now, our sun will become a red giant and swell to the point where it will almost reach Earth's orbit, which is the end of the world. In a trillion years from now -- if dark energy were accelerating the expansion of the universe at its current rate, everything around us would be expanding faster than the speed of light, and we wouldn't even be able to see our feet.

So humanity will never see the collapse of the Higgs field.

The reason I'm interested in the transition of the Higgs field is because I want to ask why the mass of the Higgs boson has such a special value.

Why is that mass value just enough to put the universe on the brink of a phase transition?

Theoretical physicists always ask the question, "Why?"

Rather than why things happen, what theoretical physicists are interested in is why things happen the way they do.

Because theoretical physicists think that this "why" question gives us a hint about the fundamental principles of nature -- this "why" question -- about the fundamental principles of nature.

In fact, the answer to my question will literally lead you to new multiple universes.

It's speculated that our universe is just one universe in a multiverse, like a bubble of soap, and that each bubble has its own fundamental physical constants and laws of physics.

Given this, the mass of the Higgs boson can only speak of the probability of discovering a particular value.

The key to that mystery may lie in the statistical properties of the multiverse.

It's like what happens on the sand of a beach —

In principle, a beach should have dunes of any slope, but typical slopes are between 30 and 35 degrees.

The simple reason is that the wind piles up sand, and then gravity slides it down again.

As a result, most of the dune piles are tilted at angles close to the critical value before collapse.

Something similar might be happening with the Higgs boson in the multiverse.

In most of the multiverse, the mass of the Higgs boson is close to the critical value, and the Higgs field may be on the verge of collapsing.

We don't know the end of this story yet — it's not the end.

It's a work in progress. We still need more data to solve this mystery, and I hope the LHC will soon bring us new clues.

The mass of the Hicks boson, it's just this number, but there's a lot to be learned from this.

We started with the assumption that the only known particles exist in the universe, even beyond what has been explored so far.

What we learned from this is that the Higgs field, which fills space and time, may be in a very unstable state on the verge of cosmic collapse, and we have a clue that our universe is just one grain of sand on the giant beach of the multiverse.

I don't know if this hypothesis is correct.

This is the world of physics, and either a single measurement can open the way to new understandings of the universe, or it can open new ways of understanding the universe, or it can keep us stuck.

Either way — one thing is for sure — the journey ahead will be filled with surprises.

Thank you very much

(applause)

What I emphasize in architectural design is "connection." I believe that community life becomes a part of the environment, and community life becomes a part of the environment, and in that environment, we create architecture based on the local conditions and traditions.

Today, I'm going to show you two projects as examples of this.

Both are in emerging economies, one in Ethiopia and one in Tunisia.

What they have in common is that the layers of analysis from different perspectives form the foundation of the finished building.

The first project started with a commission to design a high-rise shopping mall in Addis Ababa, the capital of Ethiopia.

We were shown this picture and said, "Please design this building." They said, "Please design this building."

My first thought was "I want to run away"

(Laughter) There were many buildings like this in the city, but as I looked at some of them, I realized three very important things.

First of all, these buildings are deserted. They have great big stores, but people can't afford that much stuff.

Secondly, it takes a lot of energy to maintain a building, because the exterior walls are made of glass, and the inside of the building gets hot, so it needs a lot of air conditioning.

I don't think this city needs much air conditioning, because Addis Ababa has a very mild climate, with temperatures around 20 to 25 degrees all year round.

And finally, the impression that comes from the exterior of the building has nothing to do with Africa or Ethiopia.

It's a pity that we have such a rich culture and tradition.

When I first visited Ethiopia, I was fascinated by the traditional marketplace called Mercato, an open-air market where thousands of people come and go every day, buying from small stalls.

Here's an outdoor public space that creates activity.

I thought, this is what I want to design, not a shopping mall.

The only problem was how to match a tall, modern building to this.

The next challenge was the planned construction site, a district in the city that was going to grow a lot in the future, and yet there were no buildings like the one you saw in the picture.

The land is also sandwiched between roads that run parallel to each other, but are impassable for hundreds of meters.

So the first thing we did was connect those two streets, and that's how we set up the entrances to the buildings.

This leads to a diagonal atrium that creates an open-air space within the building that protects the building from the sun and rain.The structure protects the building from the sun and rain.

And around this atrium, I made it look like a market with small shops.

Also think about how to surround the building.

I wanted to find a solution, a solution that suited the local climate conditions.

And that's where I came up with the idea of ​​woven fabric, which is a concrete outer wall with holes in it that let in just the right amount of air and light.

I was also inspired by the beautiful patterns on the dresses worn by Ethiopian women.

It's a kind of fractal geometry that we used to design the outer walls of the entire building.

When we built this building, we used these little prefabricated pieces to create windows to allow air and light into the building.

The building also has a small piece of colored glass that illuminates the building at night with the light inside the building.

It wasn't easy to convince the developers of the idea. Their response was, "This isn't the shopping mall you asked for."

But what I realized was that the idea of ​​this market was that it would be more profitable than a shopping mall, because there are a lot of shops.

And this look was pretty cheap, not only because the material was cheaper than glass, but because it didn't require air conditioning.

Thanks to that, I was able to free up my budget, so I was able to make my dream a reality.

So my first thought was to make this building self-sufficient in terms of energy, because we have power outages almost every day here.

We put solar panels on the roof, and that's a big advantage.

And under the solar panels, we've created new public spaces where people can gather and drink, like this kind of urban oasis.

And the porch on the roof collects rainwater so that it can be reused in toilets and other places in the building.

The construction work has progressed up to the fifth floor, so I think it will be completed early next year.

The second is the Tunis City Master Plan, which includes 2,000 apartments and facilities. The second is the Tunis City Master Plan, which includes 2,000 apartments and facilities.

In tackling something of this magnitude in my biggest project to date, I needed to understand the city of Tunis, not just the city, but its surroundings, its traditions and its culture.

In the process of doing this analysis, I was particularly interested in the Medina, a walled old city with a thousand years of history, connected to the outside by 12 gates, which are connected by almost straight lines.

At the planned construction site, the first basic design was to extend the existing roads into 12 lots, exactly the same size and character as the courtyard lots in European cities like Barcelona.

And then I took a few strategic points, like the gates, and connected them with straight lines, which changed the original pattern.

And finally, we thought of building blocks, smaller building blocks like apartments, which are an important part of the master plan.

And think about how you can orient your apartment to be most comfortable in this Mediterranean climate.

I chose to go north-south, because there's a temperature difference between the two sides of the house, which allows for natural ventilation.

I layered the patterns so that most of the apartments would be perfectly oriented that way.

And here's the result, just like a European parcel combined with an Arab city.

There's a lot with courtyards, and then on the first floor, there's these streets for pedestrians.

Also, this is in line with local regulations, with high density on the upper floors and low density on the lower floors.

This is also an image of the gates of the medina.

The whole thing is like this, connecting three different types of rooms to create shade, and even though it's very dense, the ground floor is lit with light.

My favorite thing about this project is the roof, and people can use the roof because the building is taking up land.

Neighbors can socialize on the rooftops and do different activities, like a two-kilometer run in the morning or jumping from one building to another.

I've given you two examples, but what they have in common is their approach to the design process.

And these are projects in emerging countries, where cities are literally growing.

In these cities, architecture affects the lives of people today and tomorrow, transforming local communities and economies at the same speed that buildings are built.

And that's why I think it's becoming more and more important in architecture to find simple but feasible solutions, to bridge the gap between society and the environment, and connect people with nature.

thank you

(applause)

Have you noticed that creative, innovative, wonderful, completely new types of companies like Apple, Google, Facebook, are born in one country?

When I say this, someone says, "Spotify too!"

I'm sorry, but the company is in Europe.

Not as affected as the companies previously mentioned

I'm an economist and I study the relationship between invention and economic growth at companies, industries and countries. I study the relationship between invention and economic growth.

What is the secret of Silicon Valley's economic growth that cannot be understood by the old economic model What is the secret of Silicon Valley's economic growth

Interestingly, even in the 21st century, we often come up with the idea of ​​government versus the market, government versus the market.

Now, people still say this, but behind the successes of Silicon Valley, there are several mechanisms that create markets and motivate entrepreneurs. One is agile venture capital -- a mechanism that allows innovative companies, often called gazelles, traditional banks to fund the risky businesses that they avoid lending to, or they can fund the risky ventures that they avoid lending to, or they're pretty awesome. You put an invention or a product on the market, and a lot of companies fail.

What I find very interesting about what's going on in the world today is the peculiar language of advertising, product presentations and posters, and the peculiar linguistics of the words that are actually used.

Because people in these private companies are so unconventional, they often describe us in those idiosyncratic terms.

they are more active

Remember Steve Jobs in his poignant 2005 Commencement Speech at Stanford University, where he said, "Be innovative, be greedy, be foolish."

These people are greedy, stupid, and lively.

Places like Europe are much neater, they dress better and eat better than America, and the problem is the public sector.

It's gotten a little too big, and it doesn't allow venture capital businesses and the like, even though they can be profitable if they're commercialized.

In some decent newspapers, like the one I subscribe to, they use the word Leviathan to describe their government.

A monster with big tentacles

The editorial said

"Governments certainly need to solve problems in the market when it comes to public goods (like infrastructure), about public goods (like infrastructure), about pollutants and other things, but what's the next big invention after the Internet?

Whether it's about solving environmental problems or about nanotechnology, what's expected and what it takes to make it happen is --" This is a feature article about the next industrial revolution.

infrastructure and schools

Fundamental research should be invested in, because these are generally perceived as public goods, areas where private companies are reluctant to invest, because private companies are reluctant to invest.

But leave the rest to the innovators."

These lively, unconventional people

They're often called garage inventors, because some of them actually invented in their garages, which is a bit of an exaggeration.

So what I want to tell you -- we only have 10 minutes left -- is to think about this symbiosis between the public and private sectors, because this is something that I often talk to policy makers about, because it has a bigger impact than things like innovation policy, things that I talk about a lot to policy makers.

Considering all the factors we've considered, public-private coexistence has important implications for policy decisions about where, when and why to reduce direct public spending and introduce alternative public services through greater use of outsourcing to the private sector.

The reason we need free schools and charter schools is to free children from rigid government curricula and things like that and to encourage them to be more innovative.

Coexistence of both public and private services is a term that is often heard in many places with innovation policy.

Think again. You don't have to believe everything I say. Think about all the cool, innovative things you have in your pocket. Pick up the iPhone in your pocket, but don't turn it on.

Do you know who invented the cool, revolutionary stuff that's in the iPhone?

What Makes Your Mobile Phone Not Boring - A Smart Phone?

Thanks to the Internet, you can see the web from anywhere in the world. GPS can tell you where you are. GPS can tell you where you are.

This is one of the very smart and revolutionary parts of the iPhone, and it's all government-sponsored.

The Internet was created by the Department of Defense's DARPA (Defense Advanced Research Projects Agency).

GPS is developed by military nabster plan

Even Siri, a speech recognition analysis app for iOS, was invented at DARPA

The touch panel was developed by two researchers at the University of Delware, with public funding from the CIS and the NSF.

You might think, "She's talking about defense and the military and all these crazy things." But the funny thing is that this was invented in departments and ministries.

The pharmaceutical industry is a field that I've been personally interested in, and I've had the opportunity to study quite deeply, and it's a great subject to ask about this innovator-government conflict, because you can tell whether all drugs are radically invented or step-by-step.

Newly discovered compounds that get good reviews are the class of innovative drugs, while variations on existing drugs -- slight variations in the color of Viagra, variations in dosage -- are the less innovative class.

And 75 percent of these drugs were made in absurd and boring public sector laboratories.

It's not that big pharmaceutical companies aren't investing.

they are marketing

Money is used for D in R (research) & D (development)

And the problem is, they're spending big bucks to buy back stock.

Companies like Pfizer and Amgen are buying back shares to boost their stock prices rather than spending money on R&amp;D's, but I'll save that for when I speak again at TED someday.

What's interesting is that governments do more than fix markets in the examples you've given.

They are shaping and creating markets.

We don't just fund basic research that makes people happy, but we fund applied research as well.

I'm finally a venture capitalist

Policies like SBIR and SDTR -- early stage financing of small companies -- have been very important to private venture capital, and are becoming increasingly important.

why? As we all know, venture capital takes place in a short period of time.

The invested company wants to make a profit in about 3-5 years

Invention takes longer than that, 15 to 20 years.

this is the most important thing

Who is making such a difficult investment?

Of course, it's not just the government.

There are also many private companies

But the story we've believed is that government is important for basic research, but it doesn't contribute to high-risk revolutionary ideas.

The public sector that was involved in creating and investing in Internet companies was investing in all the companies that invested in them. The public sector that was involved in creating and investing in Internet companies was investing in technology with vision and foresight.

It's very interesting to look at what's going on in the nanotechnology sector, and that's because the term nanotechnology itself came from the government.

So there's a lot of significance here.

Now, let me tell you, I'm not an old-fashioned market-versus-government person.

Dynamic capitalism requires government-private partnerships.

But the point is that we've always seen government as necessary but boring and dangerous like Leviathan, and that's what keeps us from building a dynamic relationship between government and the private sector.

Public-private Both start with a P, but we use the letter "P" for government as a justification for government action, because it serves to reduce risk to the private sector.

The public sector, in the examples I've given, in many more cases we've looked at, in many more cases we've looked at, rather than reduce their own risk.

rather you're taking risks

It's just out of the box

I'm sure you've seen local governments, national governments, and you've experienced it, and you're like, "I just met that absurd official."

All the problems of public and private misunderstandings are exposed here.

we have nothing to do with the government

We talk about it as boring and sometimes create an image of public institutions as such.

So what we're going to do is create institutions like government entrepreneurs.

DARPA, the creators of the Internet and Siri, thought a lot about how to embrace failure, because you make mistakes.

Challenges are bound to fail

About one in ten experiments manages to succeed.

Venture capital firms know this, and with that one success they make up for the other failures, and with that one success they make up for the other failures.

I'm going to talk about what probably had the biggest impact on me.

If government's job isn't just to improve markets, it's to create them, and if it's taking big risks, what about the rewards?

If you've ever taken an economics class, the first thing they teach you is the relationship between risk and reward. And some people are so stupid, or so smart, that they invest in stocks and wait patiently, because the more risk you have, the more money you can make over time than, say, a bond. That's the relationship between risk and reward.

So where was the government's reward for taking so much risk and being stupid enough to invent the Internet?

The Internet Was Really Ridiculous

The probability of failure was enormous.

You've got to be really stupid.

You can't even get to this question without recognizing that governments are risk takers.

Economists say the reward is taxes Economists say the reward is taxes

Businesses pay taxes, they help the economy grow by creating jobs, people with jobs earn more, and taxes go back to the government.

unfortunately that's not true

Because a lot of the jobs that are created are abroad.

Internationalization OK, you shouldn't be a patriot.

Let employment go where it should go

It is possible to think like that

But those companies -- companies that get government subsidies -- Apple is a good example.

First to get funding -- no, it wasn't the first, but $500,000 went into a company called Apple, which was funded by the SBIC policy that preceded the SBIR policy.

But as you know, these companies pay very little tax through legal means.

So we have to rethink the structure of returning what's worth to the public, something more direct than taxes.

stock holdings might work

Scandinavian Finland, Scandinavian Finland, and even China and Brazil are thinking strategically about this and investing while holding stocks.

Sitra invested in Nokia, held shares in it, and made a lot of money, and Finnish public institutions invested in Nokia for the future.

The Brazilian Development Bank has invested heavily in clean technology, announced a 600 billion yen plan a little while ago, announced a 600 billion yen plan a little while ago, and has a stake in the investment.

To put it in a provocative way, the U.S. government looked into this and brought up something called the Innovation Fund. If even 0.05 percent of the profits that the Internet makes were going into the Innovation Fund, there must have been more money for green technology, more money for green technology.

government budget that should actually be spent government budget that should actually be spent is being held back

More importantly, I've heard about 1% (contributors) and 99% (beneficiaries).

If, as we've discussed here, government can be recognized as the strategic leader in the mechanisms that create value - that's what we've been talking about, isn't it?

Who is it that creates economic value, and has the role of government been overlooked as a behind-the-scenes player?

If we take a broader view of value creation, recognize what governments have done, and give them something back, then we can move on to the next business creation. And I think what everyone wants next is a technological revolution in the green space.

thank you

(applause)

I was in New York during Hurricane Sandy and I had a little white dog named Maui with me.

Half the city was black because of the blackout, and I lived on the dark side.

Maui was afraid of the dark, so when he went up the stairs, he would carry Maui up the stairs.

He also hauled liters of water up to the seventh floor every day.

I did all this with a flashlight in my mouth.

The local store has run out of flashlights, batteries, and bread.

I walked 40 blocks to my gym to take a shower.

But these weren't my top priorities.

It was just as important to be the first to arrive at the neighborhood cafe with extension cords and chargers to charge multiple electronic devices.

I started looking for power under bakery benches and candy store entrances.

i wasn't alone

Even in the rain, people were holding umbrellas between Madison Avenue and Fifth Avenue, charging their phones from street power outlets.

We had just learned that the forces of nature were superior to any technology, yet we all had this urge to connect.

I don't think there's anything that teaches us more about what really matters and what doesn't matter more than a crisis. Sandy made me realize that electronics and the connections they make are just as important as food and shelter.

I would like to share with you what it means to believe that the self that we once knew no longer exists and that the abstract digital world is now part of our identity.

I'm a novelist, so I'm interested in the self, because the self and fiction have a lot in common.

Both are stories and interpretations.

You can also experience things without a story

It's like running up the stairs too fast and being out of breath.

But the greater feeling we have for life is a little more abstract and indirect

Our life stories are based on direct experience, but they're also dramatized.

The structure of a novel needs scene after scene, but the story of life also needs an arc to wrap it all around.

it will take months and years

Individual moments in life are chapters of a life story.

But the story isn't about each chapter being important.

the whole book is important

Broken heart and happy moment -victory and disappointment are not just important, but it is important to find a place in the world and change themselves, but sometimes.

So our stories need two timelines: the long arc of time, which is our life span, and the time of immediate experience, which is each moment.

The self that directly experiences exists only in the moment, but to tell a story you need moments, a series of moments, and therefore self-establishment requires both immersive experience and the passage of time.

The passage of time is embedded in all things, even in the erosion of a grain of sand, in the small bud that blooms into a rose.

There would be no music without the passage of time

Our emotions and states of mind often turn time into code, into regrets and longings for the past -- hopes and fears for the future.

I think technology has changed the course of this time.

The total amount of time we have to tell a story -- our lifespan -- is steadily increasing, but the smallest unit, the moment, is shrinking.

It's shrunk as tools allow us to measure time in smaller units. As a result, we're interpreting the physical world in finer detail.

All of this means that the gap between what we can perceive and what we can measure continues to widen.

Science accomplishes many things in picoseconds, but we don't experience a millionth of a second internally.

We need long -time arcs, including the past and future, because we can only respond to the natural rhythm and flow, so to look at things as it is -to hear the signals from the noise and feel ourselves from a sense of self.

Understanding causality also requires a direction of time, not just in the physical world, but for our own intentions and motivations.

What happens when that timeline is skewed?

What do you do if the time is broken?

Today, many of us have the feeling that time is heading somewhere and heading nowhere.

This is because time doesn't flow in the digital world the way it does in the natural world.

We all know that the Internet has shrunk time as well as space.

A place far, far away is now right here

Whether you are in New York or in New Delhi, the news from India will be displayed on your smartphone

that's not all

My previous job, last year's dinner reservations, all my old friends are on the same plane as my current friends, because the Internet records the past and distorts the past.

Because there is no difference left between the past, the present, the future, and here and there, wherever we are, we are with this moment - this moment that I call the digital now.

How do you put priority in "digital now"?

The "digital now" is not the present, because it's always seconds ahead. Twitter always catches trends, crosses time zones, and brings news.

This isn't the "now" when I feel a sharp pain in my leg, or the moment when I eat a sweet bun, or three hours gone by immersed in a great book.

This "now" rarely reflects our physical or psychological state

On the contrary, they try to distract us at every opportunity.

Digital landmarks are invitations to get away from what you're doing now and do other things elsewhere.

Are you reading an interview with the writer?

Why don't you buy the author's book? Please Tweet Please Share

nice! Click the button to find books similar to his

Find out who is reading this book

Traveling can be liberating, but if you do it consistently, it's always like being in permanent deportation.

Selection is free, but it is not free if it is always a selection.

The Digital Now is not only far from the present, it's at odds with the present, not only because I'm not involved in it, but so are you.

Not only us, but no one is there

That's where there is great convenience and fear

You can order a foreign language book in the middle of the night, or you can buy a macaroon in Paris. You can also leave a video message that the other person will see afterwards.

At any time, I can do things at a different rhythm and pace, and I can maintain the illusion that I can be involved in your real time.

Sandy reminded me how such illusions can be shattered.

Some had electricity and water, some didn't.

Those who have returned to their original life and have still been unable to return to the other day

For some reason, science and technology penetrate the illusion that everyone has it, and then do it like an ironic choho.

For example, it is said that more people in India have mobile phones than toilets.

If the lack of infrastructure and the spread of science and technology are already growing too much throughout the world, if you are not bridgeed, there will be a tear between the digital world and the real world.

For those of us who live in the digital now, where we spend most of our waking hours, the challenge is to live in two timelines that are parallel and almost simultaneous.

How am I supposed to live with distractions?

You might think that people younger than us -- those born in this era -- are more naturally attuned.

Maybe so, but I remember my childhood

My grandfather was reviewing the capitals of the world with me.

Buda and Pest were divided into the Danube, and there was a Spanish equestrian school in Vienna.

If I was a child now, I could easily find this information with the app and hyperlink, but I could not be the same experience. Why I visited Vienna later and went to a cavalry school in Spain.

Night after night, my grandfather took me to the porch on his shoulders and showed me Jupiter and Saturn in Ursa Major.

Looking at the Ogumaza here, I feel like I got back to my child who was grabbing on my grandfather's head and being balanced on my shoulder and returning to my child.

Most of my memories of my grandfather were wrapped in information and knowledge, but it was more than information, knowledge, and facts.

The science and technology that distort time also adds a difficult problem to our deepest nucleus, and we record the past, and it is difficult to forget some of them, but the current moment is gradually not remembered.

Even if we want to seize it, we'll just seize a series of static moments.

It's like a soap bubble that disappears when touched.

I feel like it can be saved by recording everything, but time is not data.

time cannot be saved

We know what it's like to live in the moment

It can happen when you're playing an instrument or looking into the eyes of someone you've known for a long time.

That's when our selves become complete.

In the long arc of time, the self that lives and the self that experiences the moment become one.

The present embraces the past and promises the future

The present connects the flow of time before and after.

The first time I experienced these feelings was with my grandmother.

When I wanted to learn to skip, my grandmother found an old rope, hooked the hem of Sally and jumped over the rope.

When I wanted to learn how to cook, my grandmother spent months in the kitchen chopping, dicing and chopping.

My grandmother taught me that things take time -I can't go out on time. The time is moving, so I have to concentrate on it now.

It's time to pay attention

One of my yoga teachers used to pay attention to love before, but considering my grandmother, I certainly have the same affection and attention.

In the digital world, I think that doing so will lack something from us.

You're threatening the flow of love

but you don't have to

you can choose another way

We have seen how science and technology can be creative over and over again. We can choose solutions, innovation, and moments that can be repaired instead of fragmenting the flow of time in life and actions.

You can slow down and listen to the waves that come and go as time goes by.

you can take back the time

thank you

(applause)

Three years ago, I was at the Chernobyl nuclear power plant, about 90 meters from Unit 4.

The Geiger counter, which measures the radiation dose, has been ringing and approaches the reactor, and the sound has grown and loud

I'm here to cover the 25th anniversary of the worst nuclear disaster in history. As you can see from my expression, I'm reluctant, because in 11 days the nuclear fire of 1986 released 400 times more radiation than the atomic bomb dropped on Hiroshima.

I took a picture

I wanted to finish my work quickly and leave.

But if you look far away, you can see smoke rising from the farmhouse. Does anyone live in a place like this?

This is the most polluted place on earth, the soil, the water, the air. Around the nuclear reactors, it's a highly restricted "dead zone" with guards, like a nuclear police state.

On top of the constant ringing of dosimeters and the need to be accompanied by officials, there were strict radiation controls and constant radiation dose testing.

In short, humans shouldn't be able to live near the dead zone...

but in reality there is

Impossibly, about 200 people lived in the zone.

They are the “independent settlers”.

Almost all of them are women because men have shorter life spans, and if it's not radiation, it's probably because of a lot of alcohol and cigarettes.

Hundreds of thousands of people were ordered to evacuate at the time of the accident, but not all of them followed the orders.

The women who live in the Zone, now in their 70s and 80s, are the last survivors of those who defied government and common sense and returned to their ancestral homes.

Of course it's illegal to go back

One woman is said to have told a soldier who was urging her to flee, "You're going to shoot me and put me in a grave.

Otherwise I'll go home

Why would you want to go back to polluted land?

Are you ignorant of the danger — did you choose to ignore it or both?

What is certain is that their way of life and their perception of danger are clearly different from ours.

The area around Chernobyl is dotted with uninhabited villages, eerily quiet and strangely rural, but completely polluted.

Much of the village was cleared immediately after the accident, but there are still places like this one that bear witness to the tragedy.

Some places have a few inhabitants, the Russian and Ukrainian words for "grandmother" -- "babushkas" and "babas."

Some villages have 6-7 inhabitants

So the zone's population is like a strange, isolated settlement.

I met Hannah Zavorotina on my way to where the smoke was rising.

She is the self-proclaimed mayor of Kapavati Village, which has eight residents.

(Laughter) When I asked her if she was afraid of radiation, she said, "I'm not afraid of radiation, but I'm afraid of food shortages."

Come to think of it, they survived many hells in the 20th century.

Millions of Ukrainians died in Stalin's Holodomor famine in the 1930s, and in the 1940s they experienced Nazi murder, burning, and rape. Many of them were actually forced to work in Germany.

So, decades after the Soviet rule, when the nuclear accident happened, so when the nuclear accident happened, decades after the Soviet rule, there was no temptation to run away from the invisible enemy.

And I came back to the village, warned that I would die of illness, but I decided that five years of happiness in my hometown would be much better than ten years of being stuck in a high-rise on the outskirts of Kiev.

For them, environmental pollution would not be a disaster.

the same applies to animals

Wild boars, lynxes and moose have returned in droves, and the benefits of massive population exodus far outweigh the actual ill effects of radiation for these animals.

The dead zone is now teeming with life

They're strong, resilient, honest and down-to-earth.

We end the day by drawing water from the well, hitting the bucket with a stick at midnight to ward off the wild boars that eat the potatoes, and the only pleasure we have is sipping our homemade vodka.

Also, they are full of rebellious spirit

"Like I said, my leg hurts, but I'm not worried about it."

Are they healthy?

Although there are positive aspects to a life of physical activity, the radiation that pollutes our surroundings is complex and there are many unknowns.

Difficult to determine impact

Health studies in this region are contradictory and unreliable.

The World Health Organization puts the death toll associated with the Chernobyl accident at 4,000.

Organizations such as Greenpeace report tens of thousands of deaths.

There is consensus that thyroid cancer is on the rise, and displaced displaced people are suffering from trauma, such as extreme anxiety and depression, alcoholism, unemployment, and, most seriously, broken relationships.

If I were you, I would have moved 20 or 25 times.

Home is just a temporary refuge

If anything, I feel more connected to my laptop than to the land.

It's hard for us to understand, but for the Babushkas, the world is their home, and their love for the land is clear.

The Ukrainian women, who were educated under the Soviet regime and were familiar with Russian poets, always spoke of their ties to the land.

"If I leave my hometown, I will die."

"The life of those who left is terrible

I will die with sorrow."

"Hometown is hometown, never leave"

You might think it's just belief, but here's the fact: there's a shocking truth. It's not a formal study, but they're living in the most radioactive places in the world for the past 27 years.

Why?

One way to think about it is that the connection to their ancestral land, which can be seen in the bits and pieces of their language, may influence their longevity.

The power of my hometown, which is unique in the world, seems to ease my suffering.

Even radiation can't compete with the power of home and community.

Now, regardless of radiation, they are ending their lives.

In 10 years, the zone will be empty of inhabitants and will return to the radiation-filled wilderness, where many animals will amaze scientists with occasional visits.

Three years after we've known each other, the Babushkas have halved in number, but their presence and spirit teaches us a powerful new way of thinking: that risk changes according to how we perceive it;

thank you

(applause)

When I was 10, I went camping with my dad in the pristine Adirondack Mountains of upstate New York.

that day was a great day

the forest glitters

The sun made the leaves shine like stained glass, and we felt we were the first to set foot on the land if there was no way to walk.

at the campsite

There was a simple hut on a sheer cliff overlooking a beautiful, clear lake, and there I saw a terrifying sight.

Behind the hut was a garbage dump, maybe 12 square meters, filled with rotten apple cores, rolled aluminum foil, and one pair of worn-out sneakers.

I was very surprised, very angry and deeply emotionally confused.

If the people who came to the campsite were negligent and didn't bring their belongings home, who would have thought they would clean up for them?

That question stuck in my head, and the question became an even simpler question.

who will clean for us

No matter how you define "us", who is cleaning Istanbul for us, wherever "we" are?

In Rio de Janeiro, in Paris, in London, who is cleaning?

Here in New York City, the Sanitation Department cleans up for us, picking up 11,000 tons of trash and 2,000 tons of recyclables every day.

i wanted to know about them

I wanted to understand the people who were cleaning.

What's it like to wear a sanitation uniform and pick up trash?

I started investigating with the cleaning crew.

I've ridden in cleanup trucks, walked recovery routes, interviewed people in offices and facilities across town, and I've learned a lot, but I'm still an outsider.

I want to go deeper into it

I got a job as a cleaner

I don't just ride in trucks, now I drive trucks.

I also operated the vacuum cleaner and plowed the snow.

It was an irreplaceable experience for me and an opportunity to learn a lot.

Everyone asks about the smell of garbage

Of course, it does have an odor, but it's not as bad as you might think.

It's the weight of the litter that takes time to get used to

I know people who have been janitors for several years, and they're still struggling with the burden of being physically supported and carrying tons of garbage each week.

And there are dangers, too.

According to Labor Department statistics, cleaning is among the top 10 most dangerous occupations in America, and I can see why.

The cleaners are in and out of traffic that's rushing by at breakneck speed all day long.

As is often the case when trying to pass a cleaning truck, the driver doesn't pay attention to the cleaner.

this is very dangerous for them

Trash itself is also a hazard, and can fly out into the back of a truck and cause serious harm.

I also learned that trash never ends.

When you get off the curb and look at the city with the truck behind you, you begin to think that trash is a force of nature in itself.

Garbage never ends

like breathing and blood circulation

Garbage must always be in motion

Also, the cleaners get insulted.

They don't wear the janitor's uniform and become particularly invisible until someone gets angry with them for some reason. Like, there's a janitor blocking the road, or the janitor taking a break too close to someone else's house, or you're having coffee at a restaurant, and someone comes up to the janitor and curses you or asks you to stay away.

I find this kind of insult particularly ironic, because I believe strongly that sanitation workers are the most important workforce on the road, for three reasons.

Cleaners are the first line of public health

If the janitor doesn't collect the garbage efficiently and effectively every day, the bins will start to overflow, and you're going to be really threatened by the hazards it creates.

Diseases that have been suppressed for decades and centuries are once again on the rampage.

Cleaners are needed economically

If we can't get rid of the old stuff, we can't buy new stuff, and then consumption will fall and the economy won't turn around.

I'm not speaking from a capitalist point of view, but I want you to focus on the relationship.

And then there's what we call the average, required daily speed.

Simply put, it's how fast we're used to moving in this modern world.

We don't usually care about our coffee cups, our shopping bags, our plastic bottles, we don't fix them, we wash them, we don't carry them around.

When we use them, we throw them away, so we forget they exist, because we know there's someone else to clean them up.

So today, I'd like to offer some ideas on how to think about cleaning that can help improve this problem and help us talk about how we can build sustainable, humane cities.

I think the job of a janitor is kind of a ritual.

They go out on the town at a fixed time every day.

In many cities they wear uniforms

we can figure out when they come

Thanks to their work, we can do our own work.

You could say they are reassuring.

Their line of work protects us from ourselves and from the city's garbage and discarded objects, and that flow must always be protected no matter what.

On that day, September 11, 2001, I was on the street hearing the sound of a garbage truck, holding my young son, and rushing down the stairs, and there was this man collecting paper, which he does every Wednesday.

I tried to thank you for working all day that day, but tears came to my eyes.

Then he looked at me and nodded and said, "I'm fine.

I'm sure you'll be fine."

Shortly after that, I started doing cleaning research, and I met the cleaners from that time again.

His name is Paulie, and we worked together a lot and became good friends.

I would like to believe what Paulie said is correct.

tell me it's okay

But as a species living on this planet, redesigning our way of life must take into account all the costs, including the sacrifices that cleaners incur in doing their jobs.

And we'll be able to get a lot more information out of our interactions with cleaners on how to think about and build sustainable systems, and by listening to the experts. The way we collect recyclables from the roadside, which has been very successful for 40 years, not just in the United States, but around the world, is that we may be able to see a different kind of new dimension where less waste is produced during manufacturing or from raw materials.

When we think of trash, we think of town trash, but that's 3 percent of the country's trash.

A number that cannot be overlooked

In the course of your day, in your life, the next time you see someone cleaning for you, stop for a moment and acknowledge their presence.

Please take a moment and say thank you

(applause)

In December 2010, the city of Apatingan, Michoacán, on the Pacific coast of Mexico, was awakened by gunfire.

The city of Apatingan then became the scene of a feud between the federal police and a well-established organization, the gunfire lasting two full days, believed to be the local criminal gang, La Familia Michoacana.

Citizens saw not only constant gunfire, but also explosions and burning trucks used as barricades to block the road.

After these two days, it was speculated that Nazario Moreno, the leader of La Familia Michoacana, had been killed during a fierce battle.

After such a horrific and violent incident, Mayor Apatingan decided to call out to the people and march for peace.

The idea was to try a peaceful approach to the criminal activity that was happening in Michoacan.

And on the day of the march, thousands of citizens gathered together.

As the mayor was preparing to deliver his opening speech, he noticed that there were some of his aides. Half of the marchers were wearing white costumes and holding placards proclaiming peace, as befits a march for peace.

The mayor was so shocked that he had to give up on leading the march because it looked like it was supporting a criminal gang.

Mayors withdraw from demonstration

Two marching lines marched together, without stopping, all the way to the State Capitol.

This horrific story of violence, and the failure of federal and local authorities to coerce citizens to the authorities, illustrates the current situation in Mexico. The Mexican civilian population is so deeply linked to criminal gangs that most of us don't really understand the violence that stems from the drug trade and what drives it.

If you spend 30 minutes searching the internet about the problem of drug trafficking and violence in Mexico and trying to figure out what's going on, the first thing you'll notice is that while the law says all citizens are equal, there are people who get more than they deserve, and who are evenly distributed far less than equally.

These numbers are eight times more dead than the wars in Iraq and Afghanistan combined.

It's also surprising that this number is close to the death toll from the Syrian civil war, which is currently underway.

This is happening just south of the US border.

And while you're doing your research, the number of deaths quickly becomes numb. You might find yourself shocked, because the death toll is just an abstract number, the number of people who don't know their faces or their names.

If I don't dare to say it, there are people involved in the drug trade who have lost their lives, and it's speculated that these people have either been tortured, killed by professional killers, or, in most cases, both.

Based on the way they died, these people must have been involved in crime.

These people were killed because they were meant to be killed.

because they were part of the bad guys

Thinking this way makes a lot of people feel better.

It's easy to dismiss us, the public, the police, the military, as the good guys, and the drug dealers, the cartels, as the bad guys, but think about it, the latter is just providing a service to the former.

Like it or not, the United States is the world's largest market for illegal drugs, accounting for more than half of global demand.

The United States and Mexico are separated by thousands of miles of border, and illicit drugs flow across that border. Mexico's former dictator, Porfirio Diaz, used to say, "Mexico is so far from God and so close to America, what a pity."

According to the United Nations, there are an estimated 55 million illicit drug users in the United States.

Even very conservative estimates place the illicit drug retail market at between $30 billion and $150 billion in annual transactions.

Even if an illegal drug organization were to do wholesale only -- which we know isn't true -- that alone would be $15 billion to $60 billion in annual revenue.

So what are these numbers? Microsoft's annual revenue is $60 billion.

In order to realize this kind of income, the nature of the product requires that the business model to secure this market must be able to guarantee the producers that the products will be delivered to the point of consumption.

Because the products we handle are illegal, it is necessary to have complete control over the geographical routes used for drug smuggling in order to ensure a stable supply.

therefore forced to commit violent acts

If you look at the distribution of cartel influence and violent behavior, you'll find that these overlap almost perfectly with transportation routes that mostly go from the south to the north.

Cartels are just trying to secure their own business.

It's not just a multi-billion dollar market, it's a very complex market.

The coca tree, for example, is very fragile and can only be grown in limited latitudes. So if you want to enter this market as a business model, you need a decentralized international production base.

So we need to ensure production and quality control in the south, and we also need efficient distribution channels in areas where illicit drugs are consumed.

If you've ever tried to get a drug that doesn't matter, and you've tried it, you'll find that it's so easy to get any drug anywhere in the United States, whenever you want. You'd be surprised how many sellers you can just send a text and promise delivery within 30 minutes.

just think about it

If you think about the extremely complex distribution network that I talked about,

Bridging the gap between groups building sophisticated distribution networks and the image of fearless thugs shooting each other with guns is very difficult.

As any business professor will tell you, effective organizations require a comprehensive strategy that includes strong organizational structures, strong motivation, strong identity and brand management.

And when you think about it that way, you see something else, if you do a 30-minute investigation into the drug war in Mexico.

You'll quickly find that three organizations are constantly making headlines, and you may find yourself baffled by that fact.

Los Zetas and I just talked about La Familia Michoacana, aka the Knights Templar, and the Sinaloa Cartel.

You may come across an article that says that Los Zetas is a hodgepodge of sociopaths that can shake up multiple cities and silence the media.

The way they do it is the result of a well-crafted brand image and business strategy.

You see, Los Zetas isn't just a collection of individuals, it's an organization created by another criminal organization called the Gulf Cartel, which ran the illegal drug distribution routes in eastern Mexico.

When the eastern route was in jeopardy, the organization decided to hire a professional execution force.

That's how Los Zetas was singled out. Los Zetas is the whole elite of the Mexican military's paratroopers.

Los Zetas was such a go-to enforcer for the Gulf Cartel. He was so powerful that he ended up running the whole thing instead.

Los Zetas were formed by treachery, so they lost out on production and distribution involvement in the highest-margin markets like cocaine, but their military backgrounds allowed them to effectively manage and operate multiple markets with their clear hierarchy, perfectly structured command system, and easy-to-understand personnel appraisal system.

The lack of access to the lucrative illicit drug market has pushed them into a corner and turned them into other types of crime.

These include kidnapping, prostitution, local drug dealing, human trafficking, and the recruitment of illegal immigrants from the South into the United States.

The form of business they do these days is exactly the franchise business itself.

Most of their talent is recruited from the military, and they hype up the promise of better pay, better treatment, better career opportunities, not to mention much better food than in the military.

Their common practice is to make their presence known when they arrive in an area, then go to the most powerful gang in the area and say, "I'm going to call you the Los Zetas brand - I'm going to make you an agent of the area."

If we can't agree, we'll end up in a situation we don't want to know, but if we both agree, in exchange for the royalties, we'll educate and supervise the agents on how to operate the most efficient criminal organization in each town.

The prerequisite for such a business model to succeed is to have a compelling brand of terror, and Los Zetas carefully orchestrates spectacular acts of violence, especially when you're new to the city.

I'm not saying that Los Zetas aren't violent, but even if it's written somewhere that they're the most violent organization, when you compare the number of people killed in drug conflicts, they're all very similar.

In contrast, the Knights Templar of Michoacán were formed as a counter-force to Los Zetas, who were trying to invade the state.

Michoacán's location is strategically important because it has Mexico's largest port and has a direct route to central Mexico, which leads directly to the United States.

The Knights Templar quickly realized that they could not win against Los Zetas through armed conflict alone, so they developed a strategy as a social enterprise.

They presented themselves as an organization to protect the people of Michoacán against organized crime.

To build a brand of social enterprise, participation in a variety of civic activities was essential, and they invested heavily in community services, such as domestic violence, in combating petty crime, in addiction care, in combating illegal drugs in Michoacán, and, of course, in protecting their citizens from other criminal gangs.

It's true that the Templars also killed many people, but when they did the killings, the Templars were very careful in explaining why they did it. Newspaper inserts, YouTube videos, and billboards explained why they killed.

It's our job to protect you

Like any social enterprise, they created a moral and ethical code and promoted it, and their hiring policies were strict.

For example, they explain it like this

The Knights are actually involved in the lucrative drug trade, but because they control the state of Michoacan and the port of Lazaro Cardenas, they're making good use of it. For example, they trade legally smelted and manufactured copper products from Michoacan and illegal ephedrine from China, which is an important precursor to their product, methamphetamine.

Well, the Sinaloa Cartel was the last

When you read about the Sinaloa Cartel, you may notice that it is written with awe.

The Sinaloa Cartel as a smuggling organization between the Mexican border and the United States

It started off, but it's now been successfully integrated into a multinational organization with partnerships ranging from manufacturing in the South to a global distribution network.

Brand strategy as a professional group We have pushed business insight and innovation

The Sinaloa Cartel has devised new drugs and new drug refining processes.

We've also created drug smuggling tunnels under the border.

They devised submarines and ships for drug smuggling that were invisible to radar.

They build anything from drones to catapults to smuggle illegal drugs.

One of the leaders of the Sinaloa Cartel is even on the Forbes list.

[Joaquín Guzman Loera, World's Billionaire] Like other multinational organizations, they focused and specialized on the most profitable trades, like cocaine, heroin, methamphetamine.

And like many Latin American transnational organizations, they used family ties to manage their operations.

When it came to opening new markets, the Sinaloa Cartel either sent families as overseers or partnered with new organizations to forge family ties through marriage and other ties.

And like other multinational organizations, they used outsourcing to protect their brand image. For the problematic parts of their operations, for example, when they had to go toe-to-toe with other criminal organizations, they hired other gangs and smaller organizations to do the dirty work, and they made a clear distinction between their normal operations and their conflicts.

Control the media coverage by having a full-fledged PR group to further strengthen the Sinaloa Cartel.

We also have a professional video creator

The Sinaloa Cartel has forged very productive ties with security agencies on both sides of the border.

Aside from the peculiarities of each organization, what all organizations have in common is a clear understanding that you can't impose top-down management on the organization.

Each organization had a high degree of coherence, to the extent that we found contradictions in government policies.

There are three things I want you to remember from my presentation today.

The first is that the cause of the illicit drug strife is, in fact, the high demand from the market and the organizational structure in which violence is absolutely necessary to secure access to this market.

The next thing to remember is that these are highly sophisticated and coherent organizations, especially corporate organizations, and I believe that analyzing and recognizing them as such is a valid approach.

The third thing I want you to remember is that it's easy to think of these people as bad guys, different from us, but in reality, by accepting the disagreement that they use drugs, that they're realistically tolerating policies against illegal drugs, that there's a climate that encourages the use of illegal drugs, that they're complicit with them, complicit with them.

Organizations provide services, find talent, and operate within our communities.

So the question I want to ask is not whether these dynamics will continue.

Given the nature of this phenomenon, it is clear that it will continue to operate.

The question is, are we going to continue to use strategies that don't work -- the easy-going strategies that remain oblivious to reality -- and that continue to cost the lives of thousands of young people?

thank you

(applause)

I'm a neuroscientist with a background in physics and medicine.

We study spinal cord injuries in our lab at the Swiss Federal Institute of Technology. Every year, more than 50,000 people around the world suffer from spinal cord injuries.

Played Superman - Christopher Reeve Raised my awareness of the suffering of people with spinal cord injuries Raised my awareness of the suffering of people with spinal cord injuries

My research in this field, my research in this field, started with the Christopher and Dana Reeve Foundation.

I still remember the decisive moment

One day I had just finished work as usual One day I had just finished work as usual

Chris said to us scientists and experts, "You have to be more realistic.

When you leave the lab tomorrow, I want you to stop by the rehab center and see the patients who struggle to take the first step and struggle to hold themselves up.

And when you go home, think about what you could change in your research to improve their situation." Think about what you could change in your research to improve their situation."

These words have remained in my heart forever

That was over 10 years ago, and since then our research has taken a practical approach to recovery from spinal cord injury.

The first thing I did was create a new model of spinal cord injury, and that model had to have the key features of human spinal cord injury, but also be ready for experimentation.

To do that, we cut the rat's spinal cord on both sides and made a hemisection.To do that, we cut the rat's spinal cord on both sides and made a hemisection.

This completely cuts off the communication between the brain and the spinal cord, which completely cuts off the communication between the brain and the spinal cord, resulting in complete, permanent paralysis of the legs.

But most spinal cord injuries in humans leave intact nerve cells that are available to repair nerve fibers.

But how?

The traditional approach is to use therapeutic interventions to encourage growth to reconnect the severed nerve fibers.

It's still the key to healing, but it just seemed too complicated to me.

Clearly, we had to change the way we looked at the problem in order to get results from clinical trials quickly.

Studies starting from the Nobel Prize winner Charles Sherrington for more than 100 years in spinal cord physiology for more than a hundred years in spinal cord physiology According to studies starting from Charles Sherrington, the spinal cord below the spinal cord injury is mostly necessary for walking movement, but most of the time. There are plenty of neural circuits required for row exercise, but information from the brain is cut off, so it is not functioning like a dormant state.

So I thought about waking up the circuit.

At the time, I was doing a postdoctoral fellowship in Los Angeles after my PhD in France. At the time, I was doing a postdoctoral fellowship in Los Angeles after my PhD in France.

(Laughter) I was scared to tell my new boss, but I decided to work up the courage.

I went to my advisor Dr. Reggie Edgerton to hear my thoughts I went to my advisor Dr. Reggie Edgerton to hear my thoughts

He listened to me seriously and then smiled and said,

"Why don't you try it?" This is definitely

I said, "Why don't you try?" This was definitely a pivotal moment in my career. I learned that great leaders believed in young people and new ideas. I learned that great leaders believed in young people and new ideas.

The idea is to use simple metaphors to describe complex concepts Use simple metaphors to describe complex concepts

Think of the movement organization as a car

the engine is the spinal cord

The transmission was disconnected and the engine stopped.

how do i reboot

First you need fuel, then you need to step on the accelerator and you need to steer.

A neural circuit from the brain governs exactly this function during walking.It governs exactly this function during walking.

My idea is to treat this damaged circuit, my idea is to treat this damaged circuit to do what the brain naturally does to walk.

To do this, I applied what I had learned in neuroscience for 20 years. First, I used drugs to replace the missing fuel.

Electrodes are implanted in the spinal cord Electrodes are implanted in the spinal cord to provide painless stimulation.

After many years, we finally developed a neural prosthesis that used electrochemical signals to change the neural circuits in the spinal cord from dormant to functional.

In no time, the paralyzed mouse was able to stand up.

When the treadmill started to move, I started to move my legs along with it, without any instructions from my brain.

The spinal brain, as I call it, cognitively processed the sensory information from the movement of the legs, cognitively processed the sensory information from the movement of the legs, determined how to move the muscles, stood, walked, and when running fast, could even stop if the treadmill stopped, and even stop if the treadmill stopped.

it was amazing

I was very impressed that I was able to walk without any direction from my brain.

Because this walking is not a voluntary movement.

The mouse has no control over its feet at all.

Clearly there is no system of "steering".

And then we realized that we had to get out of the box of conventional rehabilitation theory, and we had to break out of the box of conventional rehabilitation theory.

With this in mind, we've developed a completely new, state-of-the-art robotic system that allows rats to go in any direction.

it's very well done

You can connect a tiny rat that weighs 200 grams to a robot that weighs 200 kilos, but the rat doesn't feel the robot.

The robot is just a helper, the same way you help your baby when he first stands up, like you help him when he first stands up.

I mean, this is, spinal cord injury in rats, that's this, spinal cord injury in rats.

A neuroprosthesis that uses electrochemical signals to prime spinal motor neural circuits.

Thanks to this robot, it's okay for a rat to move its paralyzed leg.

To motivate me to move, I used the strongest medicine in Switzerland: delicious Swiss chocolate.

(Laughter) Actually, I was very, very, very disappointed with the initial results.

She's a great physiotherapist, but she's failing horribly at getting a rat to take a step. She's failing horribly at getting a rat to take a step.

we felt anxious

But as you know, the most sought after quality in a scientist is perseverance.

After many months of tenacious refinement of our theory, the paralyzed rat stood of its own accord, and the paralyzed rat stood of its own accord and ran, bearing its weight, toward its reward.

This was the first voluntary foot movement seen, and this was the first voluntary foot movement seen, and it was the first sign of recovery after the paralysis model.

Actually... (Applause) Thank you.

And not only did the rats keep walking on the ground of their own volition, but they were also able to regulate their leg movements, defying gravity to climb stairs, for example.

This was a really moving moment in the lab This was a really moving moment in the lab

I've been trying for 10 years to reach this goal I've been working for 10 years to reach this goal

But the remaining problem is how this works.

How is this possible?

In fact, what we discovered was totally unexpected In fact, what we discovered was totally unexpected

This groundbreaking training allowed the brain to create new circuits, a kind of relay circuit that relayed information from the brain through the lesion to restore cortical control of the motor circuits beneath it.

One example of this is this, I've highlighted the fibers coming from the brain in red.

Blue neurons connect to motor centers. What this cluster of synaptic connections means. What this cluster of synaptic connections means is that the brain reconnects to the motor centers with just one relay neuron. The brain reconnects to the motor centers with just one relay neuron.

But this reconstruction wasn't limited to the damaged area, but this reconstruction wasn't limited to the damaged area.

It's happening across the central nervous system, including the brainstem, and it's happening across the central nervous system, including the brainstem, and there's up to a 300 percent increase in density of fibers coming from the brain.

The goal wasn't to repair the spinal cord itself, but it's rare that we've been able to successfully reconstruct this level of axonal projections in damaged central nervous system in an adult mammal.

This discovery has an important hidden message This discovery has an important hidden message

That's a credit to a talented young team. That's a credit to a talented young team of physical therapists, neurobiologists, neurosurgeons, engineers from all walks of life.

A truly cross-disciplinary team

Because we worked closely together and shared our expertise,

There's a new generation of medical doctors and engineers who can put experimental findings into practice.

What is my role?

I'm just the conductor of this beautiful orchestra.

Now, I'm sure you're wondering, can this help patients?

i think about it everyday

To be honest, we still have a lot we don't know.

It's certainly not a cure for spinal cord injuries yet, but I believe it can help recover from spinal cord injuries and improve the lives of patients -- but it can help recover from spinal injuries and improve the lives of patients.

Just daydream with me Just daydream with me

Imagine a person right after suffering a spinal cord injury.

After a few weeks of recovery, implant a programmed pump to deliver drugs directly to the spinal cord. Implant a programmed pump.

At the same time, we're going to incorporate an electrode array, like the skin that covers the area of ​​the spinal cord that manages the movement of the foot. It's like the skin that covers the area of ​​the spinal cord that manages the movement of the foot.

This is an individualized electrochemical neuroprosthesis that enables ambulatory rehabilitation with new assistive systems.

My hope is that after a few months of rehabilitation, the post-injury circuitry will be sufficiently reshaped to enable movement without a robot, possibly without medication or stimulation.

What I'm trying to do now is create an individualized environment to increase the flexibility of the brain and the spinal cord, to create an individualized environment.

This is a revolutionary idea, and one that may also apply to other neurological disorders. It's what I call a "personalized neuroprosthesis." It's a sensory, stimulating, repair-promoting interface that is implanted throughout the nervous system, from the brain to the spinal cord to the nerve endings.

But it doesn't replace lost function, it helps the brain to heal itself.

I hope this has caught your imagination. This revolution isn't about if it will happen. This revolution isn't about if it will happen. It's about when.

You can't achieve what your heart can't imagine.It's important to dream big.

thank you

(applause)

The greatest inventions of our generation are the internet and mobile phones.

it changed the world

But what many people didn't expect was that it would be a perfect tool for a surveillance state.

Its power to collect data, information and relationships from anyone and everyone has been revealed. Through a series of revelations that dominated the news all summer long, we have learned more about the surveillance of other countries by Western intelligence agencies, primarily the United States.

It was revealed on June 6th

Because Edward Snowden started leaking top-secret information from the U.S. Intelligence Service, and because he started leaking top-secret information, and we learned about things like PRISM and XKeyscore.

These are examples of the programs currently being run by US intelligence agencies against every country in the world.

If you look back at George Orwell's predictions about the surveillance society, it's clear that he was an optimist.

(Laughter) What we're seeing now is tracking individual citizens on a much larger scale than he imagined.

This is the infamous NSA data center in Utah.

It's going to start operating soon, and it's a supercomputer center and a data center.

Imagine a huge room full of hard disks with all the information they've collected.

it's a very big building

As for how big it is, it's 140,000 square meters, but that might not make a lot of sense.

It is better to think in terms of comparison

Consider the largest IKEA store

This building is five times the size of that

How many hard drives can fit in the IKEA building?

it's so big

Running this data center is estimated to cost tens of millions of dollars a year in electricity alone.

This kind of mass surveillance means that they can store the data that they collect about us indefinitely, keeping it for years, decades.

This poses a whole new kind of risk for all of us.

That is, comprehensive mass surveillance of all individuals.

Not exactly every individual. U.S. intelligence agencies are legally only authorized to spy on foreigners.

They can monitor foreign data traffic to and through the United States.

You might think that foreign surveillance isn't so bad, but think about it: I'm a foreigner, and so are you.

In fact, 96% of the human race falls under this "alien" category.

(laughs) Right?

So this is all-encompassing surveillance for all of us who use telecommunications and the internet.

Please don't get me wrong, sometimes surveillance isn't bad

I like my freedom, but even I don't mind some kind of surveillance.

If the police are looking for a killer, or trying to catch a drug boss, or trying to prevent a school shooting, and they've got leads and suspects, then tapping the suspect's phone and intercepting his internet transmissions makes a lot of sense.

We don't care about those cases, but programs like PRISM aren't like that.

We're not monitoring suspected criminals.

to monitor someone who is known to be innocent

There are four main types of arguments in favor of such surveillance. First, there are cold-hearted people who try to underestimate the importance of something like this when it comes to light.

It's not right, don't let me say that I knew this, because I didn't know.

The worst thing I was afraid of might have been something like this, but I didn't know it was actually happening.

Now I know it as a fact

I didn't know that before We also have PRISM

Both XKeyscore and Cybertrans

DoubleArrow also

I didn't even know about Skywriter, both of which are programs run by US intelligence agencies.

But now I know

No one thought that US intelligence would go so far as to infiltrate a standards organization and deliberately undermine cryptography.

What I mean by that is a very secure encryption method—anyone can't decipher a file encrypted with it.

It would take millions of years to decipher a single file using every computer on earth.

Totally secure and virtually unbreakable

They deliberately weakened something so great that it made us all less safe.

A real-world analogy for this would be to have intelligence agencies put a PIN code into each home's alarm system so they can get in at any time, just like it's okay for bad guys to set alarms in their hideouts, but at the same time it's compromising the safety of ordinary homes.

It's nothing short of amazing that you would put a backdoor in a cryptographic algorithm.

they are just doing their job

As ordered, they conduct wireless intelligence, intercept communications, and monitor Internet communications.

That's what they do, and a lot of internet traffic today is encrypted, so they're looking for ways to get around encryption.

One of them is tampering with cryptography, which is a great example of how American intelligence agencies can do whatever they please.

I'm totally out of control, so I need to put the reins on.

So what do we actually know about this leak?

All based on files exposed by Mr. Snowden.

In early June, the first slide on PRISM detailed data collection activities from Internet service providers, not only did they list the names of those that had access,

It was specified for each company up to the date the data collection started.

For example, Microsoft on September 11, 2007, Yahoo on March 12, 2008, Google, Facebook, Skype, and Apple.

Both companies deny

They say they don't provide a backdoor to access your data.

But now I have this file

Are either of them lying or is there another explanation?

One possibility is that these companies aren't working together.

it means it's been hacked

If so, it makes sense

Hacked instead of cooperating — and by their own government

It sounds very bizarre, but there is already such precedent. For example, the Flame malware was created by the US government and is believed to have breached the security of the Windows Update network in order to propagate. So Microsoft was hacked by its own government.

There is more evidence to support this theory

Germany's Der Spiegel has exposed operations carried out by elite hacker squads within intelligence agencies.

The NSA has a division called TAO, and the NSA's British version, GCHQ, has a similar NAC.

And these three recently exposed slides detail the operation by the British GCHQ to target a telephone company here in Belgium.

What this means is that the intelligence services of an EU country are deliberately violating the security of a telco in a fellow EU country.

"This is the first goal, this is the second goal, this is the team composition"

Maybe you're doing team building in the pub on Thursdays.

And when they've successfully broken in, they even have some cheesy PowerPoint clip art that says, "Success!"

What are you thinking?

There's an argument that, "Maybe that's the case, but that's what other countries are doing."

every country is spying

maybe

Many, if not all, countries are spying.

Consider Sweden, for example.

I use Sweden as an example because it has similar laws to the United States.

If network traffic passes through Sweden, they can legally intercept that communication.

So how many of Sweden's decision makers, politicians and business leaders use US-based services every day? You run Windows and OS X, use Facebook and LinkedIn, store your data in the cloud like iCloud, Skydrive and Dropbox, and use online services like Amazon Web Services and Salesforce.

I think the answer is that all Swedish business leaders use it every day.

vice versa

How many US leaders are using Swedish webmail and cloud services?

the answer will be zero

not quite equal

not even close

And sometimes, even if a successful service comes out of Europe, it's usually bought by an American company.

For example, Skype used to be secure.

It was end-to-end encrypted

It was acquired by an American company

Now it's no longer secure

We're taking what's safe and intentionally making it less safe, and the result is that we're all in a less secure situation.

There are claims that the United States is only trying to prevent terrorism.

in the fight against terrorism

Ordinary people shouldn't worry

It's not a war on terrorism

In part, that may be true. Terrorists do exist, they kill people, they hurt people, and we need to fight them. But from that leak, we know that they're using the same tactics to wiretap the phones of European leaders, read the emails of the presidents of Mexico and Brazil, read emails from the United Nations headquarters and the European Parliament.

It's not a war on terrorism

Some may be, and terrorists do exist, but does terrorism endanger our very existence to the point that we would do anything to fight it?

Are Americans going to trash the Constitution just because there is terrorism?

And will we abandon the Bill of Rights, the Amendment, the Universal Declaration of Human Rights, the Convention for the Protection of Human Rights and Fundamental Freedoms, the Fundamental Freedoms, the Freedom of the Press?

Is terrorism such an existential threat as to do anything?

But people fear terrorism, they have nothing to hide, they don't mind being monitored.

If it helps, please keep an eye on me.

People who say they have nothing to hide are simply not thinking about it enough.

(Applause) We have a thing called privacy. If you really don't think you have anything to hide, please be the first to say it.

And yet, people are very transparent on the Internet, and when the series of leaks began, many people asked for their opinion.

i have nothing to hide

I didn't do anything wrong, I didn't do anything illegal

Still, I don't want to teach intelligence agencies anything in particular, especially foreign intelligence agencies.

If you need to have a Big Brother, it's still better to have a homegrown one than a foreign one.

When the leaks started, one of the first things I tweeted was a comment saying that when you use a search engine, it's all leaked to the intelligence agencies of the United States.

Two minutes later, I got a defiant reply from an American named Kimberly. What are you worried about?

What are you sending to worry about? Are you sending nude photos too?

I replied to my Kimberly that what I am sending is none of your business, nor your government.

That's what privacy is

Privacy is not to be negotiated

It should be built into every system we use.

(Applause) What we need to know is that we are very honest with search engines.

If you could show me your search history, you'd find something in five minutes that would make you feel guilty or embarrassed.

We're more honest with search engines than we are with our families.

Search engines know you better than your family.

And we're passing that information on to America.

Surveillance can change history

We can see this in the example of corrupt presidents like Nixon.

Imagine if Nixon had the monitoring tools we have today.

Let me quote Brazilian President Dilma Rousseff.

she was under NSA surveillance

They were reading my emails. She said in a speech at the United Nations Headquarters, "Without the right to privacy, there can be no true freedom of expression and speech, and therefore no democracy."

that's the essence

privacy is the foundation of democracy

Security researcher Marcus Lanham said, "America is now treating the Internet like a colony.

So we foreign Internet users must go back to colonial times and see Americans as masters."

Mr. Snowden has been accused of many things.

Some have accused the leak of wreaking havoc on the U.S. cloud industry and software companies. Blaming Snowden for wreaking havoc on the U.S. cloud industry is like blaming Al Gore for causing global warming.

(Laughter) (Applause) So what should we do? Should I worry?

no you shouldn't worry

You should be angry, because this is wrong, it's disrespectful, and it shouldn't be done.

But saying that won't change anything

For the rest of the world, the only way to change things is to leave the American-made system.

This is easier said than done

How can I do that?

No country in Europe can replace US operating systems and cloud services.

But you don't have to do it alone

If we cooperate with other countries, we might be able to do it.

The solution is open source

By building together an open, free and secure system, we can avoid that kind of scrutiny without one country having to solve all the problems.

each one has to solve part of the problem

In the words of security researcher Harun Meer, "One country can make a small wave, and those small waves pile up into a tide, and a tide that lifts all ships high at once. A tide created by a secure, free, and open source system that will lift us all above the Surveillance Nation."

thank you very much

(applause)

Why learn mathematics?

There are essentially three reasons: to compute, to apply, and to invent.

Mathematics is the science of patterns, from which we can learn to think logically, critically, and creatively. On the other hand, mathematics taught in schools is not as effective as motivating.

I'm often told that I'll use it in class someday, or that I'll be on the test.

But don't you think it would be wonderful if you could have the opportunity to learn mathematics because it's interesting, beautiful, and exciting?

But I've also heard people say they don't know how to create those opportunities.

wonderful

You can enjoy this sequence from many angles.

Mathematically, it's a straightforward sequence: 1 plus 1 is 2.

1 plus 2 for 3 — 2 plus 3 for 5 3 plus 5 for 8 and so on

Fibonacci, whose real name is Leonardo of Pisa, introduced this sequence in his book The Book of the Abacus, and it was through this book that the methods of calculation that we use today were introduced to the Western world.

From an application point of view, Fibonacci numbers are abundant in nature.

The number of petals is normal — it's a Fibonacci number, and the number of spirals you see in sunflowers and pineapples is also a high Fibonacci number.

These numbers can be found in many other things, but what is most inspiring is the beautiful regularity of this number sequence.

I would like to introduce one of my favourites.

We all love square numbers, right? (Laughter) Let's square each of the first few Fibonacci numbers.

1 squared is 1 — 2 squared is 4 3 squared is 9 — 5 squared is 25 and so on

Now, if we add successive Fibonacci numbers, we get the next number, right?

That's how it's made

But you would think that adding the squared numbers together wouldn't do anything.

but please see

1 + 1 = 2 — 1 + 4 = 5 —

4 + 9 = 13 — 9 + 25 = 34 and the pattern continues.

actually there is one more

Let's start by adding the squared Fibonacci numbers.

what will happen

1 + 1 + 4 = 6

Add 9 to this and you get 15

Add 25 to get 40

Add 64 to get 104

Let's find out how many came up

It's not a Fibonacci number, but if you look closely, you can see the Fibonacci numbers hidden.

do you understand? let's see

6 = 2 x 3 15 = 3 x 5 — 40 = 5 x 8 2 3 5 8 … do you understand?

(Laughter) It's a Fibonacci number.

Now, finding these regularities is fun, but it's even more fun when you understand why they happen.

see the equation at the bottom

Why do the squares of 1 1 2 3 5 8 add up to 8 x 13?

Illustrated in a simple diagram

Start with a 1 x 1 square and put a 1 x 1 square next to it

Together we get a 1 x 2 rectangle

Below that, a 2 by 2 square — next to a 3 by 3 square, and then a 5 by 5 square below — next to an 8 by 8 square, you get a big rectangle.

Now let me ask you a simple question: What is the area of ​​the rectangle?

One way is that the area is the sum of the areas of the squares.

I made it so

1 squared plus 1 squared plus 2 squared plus 3 squared plus — 5 squared plus 8 squared

this is the area

On the other hand, it's a rectangle, so it's area is length x width.

So the area is 8 x 13

We could calculate the area two ways, and the results are the same for each other, so we can say that the squares of 1 1 2 3 5 8 add up to 8 x 13.

Now, if we continue this process, we can keep making rectangles like 13 x 21 and 21 x 34.

Now let's

13 divided by 8 is 1.625

When you divide the larger number by the smaller number, the result gradually approaches approximately 1.618. This number is called the "golden ratio," and it has fascinated many mathematicians, scientists, and artists for centuries.

The reason I bring this subject up today is because, like most things in mathematics, there's something beautiful about it.

You learn how to do math over a long period of time, but don't forget to apply it, and most importantly, apply mathematics when you learn to think.

If I were to sum it up in one word, it would be this: "Mathematics is not just about finding the answer to x, it's about figuring out why."

thank you very much

(applause)

One day, I got off the bus and was walking west to the intersection to go to my braille lesson.

It was the winter of 2009, and I had been blind for a year.

life was going pretty well

Without incident, I made it to the other side of the street, turned left, pressed the button on the audible pedestrian signal, and waited for the signal to change.

When the traffic light turned green, I continued walking and safely crossed the pedestrian crossing.

As I stepped onto the pavement, I heard the sound of a steel chair sliding in front of me.

I knew there was a cafe on the corner and there was a chair in front of it, so I turned left and got closer to the road.

And at the same time the chair moved.

I thought maybe I just misunderstood, so I went back to the right side, and the chair moves exactly the same.

When I got to this point, I started to feel a little strange.

I try to move to the left again The chair moves to the left and blocks my way

I finally panic

I shouted, "Who are you, what are you doing!"

And then, over my screams, I heard something familiar.

It's a familiar sound. I quickly thought of another possibility. I reached out with my left hand, and my fingers touched something like fur, and I found an ear. It's a dog's ear, probably a golden retriever.

The dog was on a leash on a chair while its owner went out to buy coffee. He was just trying to say hello to me. Maybe he had a stroke behind his ear.

Maybe you wanted to do a guide dog service.

(Laughter) But this little anecdote is about the fears and misconceptions that blind people have about walking down the street, and it's easy to assume that the environment around them is oblivious to people.

Now let's go back in time for a moment.

It was St. Patrick's Day in 2008. I had an operation to remove a brain tumor.I had an operation to remove a brain tumor.

Surgery was successful

After two days my vision began to decline

And on the third day, I completely lost my sight.

I was immediately terrified, confused, and fragile, and I think everyone does.

But I was able to stop and think, "I have so much to be grateful for."

I thought especially of my father, who died from complications following brain surgery.

At that time my father was 36 and I was 7.

No matter what fears may come my way, no matter what I can't predict, I'm still alive

my son still has a father

And I'm not the first person to lose sight.

I also knew that with a variety of systems, techniques and training, I could live a full, meaningful and active life even though I was blind.

So, before I was discharged from the hospital a few days later, I had a goal in mind: to just get out there, get the best training possible, and rebuild my life as soon as possible.

In less than six months I was back at work

my training started

I started riding tandem bikes with my old cycling buddies, and I walked around town alone and took the bus to work.

it took a lot of effort

But what I didn't expect in the midst of this rapid change was the incredible experience of being able to see myself and being blind at the same time, in the same environment and with the same people.

That experience gave me insight into not only the inside, but the outside as well, something I learned from my blindness.

Their insights ranged from the trivial to the profound, from the mundane to the humorous.

As an architect, my short-term experience of being blind and sighted in the same place, in the same city, has given me a lot of great insight into the city.

And one of the great things about it was realizing that the city is such a wonderful place for blind people.

I was struck by how the city tends to be kind and concerned with blind people, instead of being cold and indifferent.

And blind people seemed to have a positive effect on the city.

that was very interesting to me

I want to take a step back and think about why cities are blind friendly.

The essence of training blind people to rebuild their lives is to learn to rely on all of their non-visual senses that they were unaware of when they were sighted.

It's like opening up a whole new world of sensations.

The city is full of a symphony of subtle sounds The city is full of a symphony of subtle sounds If you listen to it, you know where you are, how you move, where you go

In the same way, you can feel the different textures of the ground beneath your feet from the cane you hold, and over time you build up a pattern of where you are and where you're going.

Similarly, from the warmth of the sun on one side of your face, or the wind on your neck, you can get hints about the direction you're heading, where you're walking, and how you move in space and time.

And your sense of smell also helps.

Just as the things and places around you have scents, so do the neighborhoods and cities that have them.

It hit me hard, because my experience since being blind has been much more sensory than when I was sighted.

I was also amazed at how much the city was changing around me.

With sight, everyone's focus is only on themselves Everyone's focus is only on themselves

But when you lose your sight, this is completely different.

I don't know who's looking at who, but I doubt a lot of people are looking at me.

It's not that I'm delusional, but wherever I go, I get all kinds of advice.

thank you so much for such information

Some things are very helpful, and in many cases it's the other way around.

you have to think about what it means

Some information is wrong and unhelpful

But all things considered, it's all good.

But this happened to me when I was in Oakland, and I walked down Broadway to the crossroads.

I was waiting for an acoustic pedestrian signal, and when the signal changed and I was about to start walking, suddenly someone grabbed me by the right hand, pulled me by the arm, and dragged me to a pedestrian crossing.

(Laughter) I couldn't get away from that tight grip, but he got me across safely.

I can't complain

But if you could help me, I think you should have been a little more polite.

Even if you're by my side, you won't notice me, so first say "Hello"

I would appreciate it if you said, "Can I help you?"

Even so, I was surprised at how much the city of Auckland would change for me, who had become blind while in Auckland.

It was my favorite city when I could see, and it was never a problem.

very nice city

But as soon as you're blind, you can walk down Broadway and be greeted, block by block, saying,

"I wish you luck"

"Do your best, buddy."

"God bless you"

This never happened when I was sighted. (Laughter)

This never happened when I was sighted. (Laughter) Now that I'm blind, this never happened in San Francisco.

Some of my blind friends don't like this, and I'm not the only one.

I think it's mostly the feelings of pity that make them do that.

And I think this comes from our common compassion and our sense of solidarity, which I think is very nice.

In fact, if you're feeling down, if you go down to Broadway in downtown Oakland and walk around, you'll feel better in no time.

But it also shows that physical disability and blindness transcend ethnic, social, racial and economic boundaries.

Disability is an equal opportunity

anyone is welcome

In fact, I've heard it said in the disability community that there are only two types of people: people with disabilities and people who haven't yet discovered their disability.

It's a new way of thinking, but I think it's kind of a beautiful way of thinking, because it's much more inclusive than "Are you like me or not?" or "Are you able-bodied or disabled?"

Now, the last thing I want you to hear is that it's not just a blind-friendly city, it's a city that needs us.

I'm very proud of myself, and I'm here today to propose to you that when you think of a new great city, think of the blind as a model citizen, even after you've shaped the city and then think of the people who live in it.

it's late

When designing a city with blind people in mind, we need a rich network of walkable sidewalks, with a variety of options, and they need to be level with the roadway.

When we design cities with blind people in mind, sidewalks should be predictable and accessible to everyone.

The spaces between buildings will be well balanced between people and vehicles.

Who really needs a car?

You wouldn't drive if you weren't blind, right? (Laughter) People wouldn't like it.

If we design cities with blind people in mind, there will be many job opportunities.

blind people want to work

I want to work and make a living

So I hope you're aware that designing cities for the blind means being more inclusive, fairer, and simply making cities for everyone.

From my experience when I was sighted, it seems like a very nice city.

thank you

(applause)

I'm going to tell you a story about a village boy.

I don't know his name, but I can talk about him.

I lived in a small village in Southern Somalia.

near the capital Mogadishu

The effects of the drought pushed the small village into poverty and into the brink of starvation.

He had nothing left, so he left for the Somali city of Mogadishu.

When he got there there was no chance, no job, no hope.

He ended up living in a tent village on the outskirts of Mogadishu.

It's been a year and nothing has changed

One day a gentleman approached him and said he would buy him lunch and dinner and breakfast.

His encounter with this active group marked a turning point for him.

He got some money to buy new clothes and send money back to his family.

Then I was introduced to a young woman

and got married

a new life has begun

I found my purpose in life

On a beautiful sunny day, under the blue sky of Mogadishu, a car bomb exploded.

A small town boy who came to a city with big dreams and became a suicide bomber, and that active group of people was a terrorist group called al-Shabaab, which was linked to al-Qaeda.

How could a small village boy just want to make it in the city end up with a suicide bomber?

he was waiting

I was just waiting for a chance, a time to hope for the future, a chance to move forward... this was my first chance.

For the first time, I moved him out of waiting.

Stories like this boy are repeated in cities around the world.

This is the story of disenfranchised, unemployed, inner-city young people who have sparked riots in Johannesburg and riots in London in a desire to get out of a hopeless life.

For young people, cities are places where there are opportunities for jobs and wealth, but young people do not enjoy the affluence of big cities.

Young people often suffer from high unemployment.

By 2030, three out of five people living in cities will be under the age of 18.

If we don't involve young people in the development of our cities, if we don't give them a chance, these aimless young people will become involved in terrorism, violence and gangs, which will become the future of our cities.

In my hometown of Mogadesh, 70% of young people are suffering from unemployment.

70% can't work, they don't go to school

there's nothing to do

When I returned home last month, I visited the Madina hospital where I was born.

Standing in front of a hospital full of bullets What would have happened if I hadn't left? or

I was wondering what would have happened if I had to be like that hopeless young man.

could have been a terrorist

I don't know what's going on

The reason I went to Mogadishu at that time was to host a summit of young leaders and entrepreneurs.

Gathering about 90 Somali leaders

We all talked about the challenges facing their town.

One man, Aden, who came here

Graduated from a university in Mogadishu

But there were no jobs or opportunities

I remember him saying that despite being a college graduate, he was unemployed and stressed, making him a prime target to be recruited by al-Shabaab and other terrorist groups.

terrorists were looking for someone like him

But his story is a little different.

Mogadishu had a big problem with its transportation system.

The 23-year civil war has completely destroyed the transportation system, and the motorcycle is the most convenient mode of transportation.

Adan found an opportunity there

he founded a motorcycle company

We started renting motorbikes for locals who can't normally afford to buy them.

First, he bought 10 bikes with the help of family and friends, and plans to grow to hundreds over the next three years.

How is it different from the first story?

Why is his story different?

Because he had the ability to see new opportunities and seize them.

This is entrepreneurship. I believe that entrepreneurship is the most powerful force against waiting.

It's this spirit that drives young people to create the very job opportunities they've been looking for.

And through training young people can become entrepreneurs.

I have a story about another man who was at one of my meetings, Mohamed Mohamoud, a florist.

He helped train young people at the Entrepreneurship Summit on how to innovate and develop an entrepreneurial spirit.

He's the first florist after 22 years of civil war. Until Mohammed recently became a florist, if he needed flowers for his wedding, he used a bouquet of artificial flowers imported from abroad.

Ask someone, "When was the last time you saw a real flower?"

For many people who grew up in a civil war, the answer is probably "never seen it."

Mohammed saw an opportunity here.

Started a landscaping and flower design company

He set up a farm on the outskirts of Mogadishu and started growing tulips and lilies, which he said could grow in the harsh weather of Mogadishu.

I started delivering flowers for weddings, I designed gardens, I started businesses all over the city, and now I'm working on designing Mogadishu's first park.

Mogadishu didn't have a park for 22 years.

He wants to create a rose-filled space where families and young people can come together and experience the happiness of everyday life.

By the way, he doesn't grow roses that require a lot of water.

Well, the first thing is to motivate the young people. Mohammed's presence had a really big impact on the young people who were present at the meeting.

Young people never thought of starting a business.

All they could think of was working for an NGO or working for the government, but his story and his innovations had a big impact on them.

Young people came to see their cities as places of opportunity.

It gave me the confidence that anyone can start a business and make a difference.

By the end of the day, they had come up with an innovative solution to some of the biggest challenges facing their town.

They found an entrepreneurial solution to a local problem.

Inspiring young people and creating an entrepreneurial culture is a really great step, but what young people need is the capital to bring their ideas to life.

And we need experts, people we can talk to, who can help us develop and start a business.

By connecting young people with the resources they need and by providing them with the support to shape their ideas, doing so is a catalyst for urban development.

For me, entrepreneurship is not just about starting a business.

to have a great impact on society

Mohammed doesn't just sell flowers

he gives people hope

Peace Park, as he called it, will change the way people see the city when it's done.

Aden hires street kids to rent and repair bikes.

I gave them a chance to break out of their aimless stagnation.

These young entrepreneurs are having a tremendous impact on their cities.

So my suggestion is to encourage young people to become entrepreneurs, to work with and nurture the innovative ideas they have, so that there will be more stories of flower shops and peace parks than suicide bombings and poor, hopeless youth.

thank you

(applause)

How many of you have visited Oklahoma City?

yes raise your hand

So who hasn't been there or who doesn't know who I am? (Laughter) I think most of you do. Let me give you a little background.

Oklahoma City started out in the most unique way imaginable.

Back in the spring of 1889, the federal government did a "land run."

They literally lined up immigrants in a line along an imaginary line and fired their guns. At that signal, the immigrants yelled and put up signs throughout the countryside, which became their new homes.

By the end of the first day, Oklahoma City's population had gone from zero to 10,000, and the city's planning department that made this plan is still paying for it.

Citizens met on the first day to elect a mayor.

Then I shot the man

(Laughter) I don't think I should be laughing. (Laughter) But now I know what kind of people you are today. Thank you for your feedback.

The 20th century was a pretty good time for Oklahoma City.

Our economy was based on agricultural commodities and minerals, so the price of cotton and wheat, the price of oil and natural gas mattered.

Supported by them, it became a city of technological innovation.

The shopping cart was invented in Oklahomaty.

(Applause) Parking meters were also developed in Oklahoma City.

you're welcome

But the economy, which is tied to commodities like produce, inevitably has its ups and downs, and that's been evident in the history of Oklahoma City.

Since the 1970s, the price of energy has been rising, the economy has been on the rise, and by the early 1980s, it was in a sharp downturn.

energy prices have started to fall

banks started to go bankrupt

About ten years later, 100 banks in Oklahoma had failed.

there was no way out

The financial industry, the oil and gas industry, the real estate industry, they were all in deep recession.

Young people left Oklahoma City and went to Washington, Dallas, Houston, New York, and Tokyo to get jobs that matched their level of education, because Oklahoma City simply didn't have good jobs.

But at the end of the '80s, an aspiring entrepreneur came along and became mayor: Ron Norick.

Ron Norick ultimately discovered that the secret to economic development wasn't to attract companies up front, but to create places that people would want to do business with first. So he pushed this idea forward, calling it MAPS.

It's built a new sports arena, built a new canal downtown, renovated an arts center, built a new baseball stadium downtown, and built a lot of things that would improve the quality of life.

And it seemed that the economy was finally starting to show signs of recovery.

A new mayor emerges

He started MAPS for children as well, completely rebuilding the city's school system and building or renovating 75 buildings.

Then, in 2004, in what seemed like a civil rebellion, in a state of collective collective indecision, the people elected me mayor.

At that time, the city I took over was just about to emerge from its dormant economy, and that's when we started to appear on that list for the very first time.

The list I'm talking about is the one you all know.

The media and the internet love to rank cities.

Oklahoma City had never been on the list before.

I just thought it would be cool to be on that list, if it was on a positive list.

Even if we're not near the top of the list, being on the list means we're being evaluated.

The best city to get a job, the best city to start a business, the best business district, Oklahoma City.

Listed in the list of the most obese cities in our country

yes it was there

Now what I want to point out is that it was listed with a lot of very nice cities.

(laughs) Dallas Houston New Orleans Atlanta Miami

As you know, in general, these cities are not at all embarrassed to be told that they have something to do with you.

Despite this, I didn't want to be on that list.

At that time, when I got on the scale

i was 220 pounds

So I went to a federal website, entered my height and weight, hit enter, and the answer was "obesity."

"What a stupid site," I thought.

(Laughter) "I'm not obese. If you're obese, you should know."

After that, I became honest with myself and began to wonder why my life was fighting obesity. I noticed a pattern: I was gaining two to three pounds a year and losing 20 to 30 pounds about every 10 years.

and gain weight again

My big closet is full, and I only ever wear a third of it.

Even so, I took it for granted and got on with it.

And so I finally decided to lose weight. I had done it many times before, so I knew how to do it. First, I simply stopped eating so much.

Also, I always exercised.