There's no time to find a shepherd. Instead, Borakutin rolls up his sleeves and greases his arms to help the ewes give birth, and two new sheep join the empire.

Leaving the lambs and the mother sheep behind, Boraktin rushes back to the camp.

At the camp, the packing is finished and the wagons are starting to line up.

The procession is led by the empress, followed by 200 carriages filled with the empress' treasures.

Then the young princess and her companions and concubines - this is all Boraktin's camp.

Behind that is a second side of the royal family led by another wife, and two more sides by other wives.

Boraktin has been in touch with them for weeks to ensure smooth departures and orderly lines.

Up to this point in the procession, it's all about the royals, but after that there's a whole winding street of civilians, with clergy families, merchants, shepherds, etc. who carry movable chapels and mosques.

Boractin finally settles down on the carrier.

It takes weeks to reach her destination, but during the journey she deftly manages her own noble children and courtly servants, all the way to the stray sheep at the end of the procession.

Curiosity—Blessing or Curse?

That ambivalence is embodied in the mythical figure of the ancient Greek Pandora.

Legend has it that Pandora was the first human woman, and her insatiable curiosity led to events that shook the human world.

Pandora is a wondrous woman created by Hephaestus, the god of fire, who infused her with the combined power of the other gods.

Rich emotions from Aphrodite, ability to control language from Hermes

It was Hermes who was given the craftsmanship and the delicate attention given by Athena and named after him.

And Zeus gave Pandora two things.

The first was curiosity, which took root in her soul and sparked her curiosity about the outside world.

The second was a beautifully carved, heavy box with a tightly closed lid.

Zeus said humans shouldn't look inside

Pandora never tried to open

On Earth, Pandora met and fell in love with Epimetheus, a mighty giant god whom Zeus entrusted to design the natural world.

Epimetheus used to work with his brother Prometheus, the god who created mankind, but he was punished endlessly for giving mankind fire.

Epimetheus mourned the loss of his brother, but he made up for it by making a passionate connection with Pandora.

Pandora's heart, living on earth, was filled with excitement.

I have a strong desire for knowledge and a strong inquisitive mind about things around me, and I was always tormented by my uncontrollable desires.

I often wondered what was inside that tightly closed box.

What is the treasure that is too great to be seen by human eyes? Why do I have it?

My fingers tingled because I wanted to open the box and look inside.

Sometimes I was convinced that I heard whispering voices and clattering sounds from inside, as if they were desperately trying to get out.

That mysterious box has become something that drives Pandora crazy.

As time went on, Pandora's mind became less and less about the box.

Within the box, the echo of the voice calling Pandora grew with each passing day, and there seemed to be an irresistible force that attracted her.

One day my patience reached its limit

When Epimetheus wasn't around, I stared at this mysterious box.

One look inside, and you'll be forever free from that vexing temptation...

But as soon as there was a crack, the box burst open.

Monsters and terrifying sounds swirled in a cloud of smoke and roared high-pitched around Pandora.

Trembling with fear, Pandora struggled desperately to lock her back in the box.

The monsters rushed out one after another, furiously, into the ominous dark shadows.

The monsters were gone and Pandora had a bad feeling.

Zeus had put all the evil and suffering he had created in that box, and once it was released, it could no longer be contained.

As I cried, I realized that the sound was echoing inside the box.

It wasn't the ominous whisperings of demons, but the bright bells that soothed my anguish.

When Pandora opened the lid again and peered in, a warm beam of light gushed out and drifted softly.

After letting go of evil, Pandora's pain eased as she saw the flickering light.

Pandora had thrown things out of control, but she not only sent a "calamity" into the world, but also sent out a "hope" to alleviate the "calamity."

Today, when we say "Pandora's box," we mean that dabbling in the unknown can lead to disaster, but Pandora's burning curiosity also describes two opposing qualities of the human inquisitive mind.

Should one dig under one's feet and discover all the unknown, or are there some mysteries that are better left unsolved?

Everyone thinks that saving money is important and that we should save money.

Still fewer people are saving money

Series How To Work I Know What To Do

the problem is how

let me tell you that

It doesn't matter how smart or strong your will is when it comes to saving money.

The amount you save depends on environmental factors.

Let's take an example

In one study, one group was presented with monthly income.

Another group presented per week

The group that figured out their income per week was better able to make ends meet throughout the month.

The important thing here is that the amount of income itself hasn't changed, it's just the conditions by which income is measured.

These environmental factors have an impact

So I won't give you any hints you already know.

I'm not going to tell you how to open a savings account or how to save for retirement.

What I'm going to teach you is how to turn your will to save into actual action, how to turn your desire to save into actual action.

Are you ready?

First of all, let's use the power of pre-determined things.

Basically, we think of ourselves in two ways: who we are now and who we might be in the future.

my future self is perfect

I'll save for retirement, I'll lose weight, I'll call my parents more.

But it's easy to forget that your future self is the same person you are today.

The best time to save is after you file your tax return.

I did an AB test there.

I contacted the first group in early February, before the final tax return.

I asked, "How much would you like to save if you got a tax refund?"

this is a really hard question

I don't know if I'll get a refund or how much I'll get back.

but i heard anyway

The second group was asked immediately after receiving their refund, "How much do you want to save?"

The result was

The second group, who had just received a refund, said they wanted to save 17%.

In the first group, which I heard in February, before filing their final tax returns, they estimated a higher amount, not 17%, but 27%, of the amount they wanted to save.

I wonder why?

Because I envision my future self, who should be able to save 27%.

The big shifts in saving behavior come from changing the decision-making environment.

use the same power

Take a moment to think about what you can promise your future self that's a little difficult for you today.

Try using an app that determines your savings amount in advance

The point is to keep your promises

Secondly, "Let's take the time of change on our side."

We conducted an experiment on a website that allows seniors to share a house.

We ran two ads on social media, targeting 64-year-olds.

One group said, "You are approaching old age.

Are you ready for retirement?

House share helps

Another group was more specific: "You will soon be 65.

Are you ready for retirement?

House share helps

The second group emphasized that change was coming.

In no time at all, just by highlighting the changes, click-through rates and registration rates went up.

It's called the "fresh start effect" in psychology.

At the beginning of a new year and a new season, we are motivated to act.

Now let's write the schedule on the day before the next birthday

Think about what you want to do most financially.

let's get it done

The third point is "Let's manage small daily expenses"

After doing some research, we found that, next to bank fees, eating out was the last expense people regretted.

Eating out is an almost daily expense that pays off slowly.

Coffee, burritos...

It keeps piling up until you can't save

When I was living in New York, when I reviewed my spending, I was spending $2,000 on a ride-sharing app.

It was more than the rent in New York.

decided to change

But the next month, I spent another $2,000. Information alone didn't change my behavior.

because they didn't change the environment.

I spent $4,000, so I did two things.

First, I deleted my credit card information from the app.

Instead, I registered a debit card that only allows me to spend $300 a month.

If you need more, you have to go through the steps of adding new cards. More clicks, more distractions, behavior changes.

we are not machines

I can't keep walking around with an abacus and adding up my actual expenses and comparing them to the amount I can afford.

But what the brain is good at is counting the number of times it's done something.

We set an upper limit

Limit ride sharing to 3 times a week

I restricted my means of transportation.

I was able to control ride-sharing costs for my husband by changing environmental factors.

Find out what you tend to spend your money on and change your environment to make it less likely.

that's my advice

but remember one thing

As humans, we tend to do irrational things when it comes to saving, spending, and budgeting.

But fortunately, I am aware of it, and I can also predict how it will behave in a given environment.

So do your savings

Why don't you change the environment for your future self?

What exactly is Brain Magic?

My interpretation is magic that deals with psychological effects and mind-reading effects, to create the illusion of the sixth sense, unlike traditional magic.

It uses the power of words, verbal deception, non-verbal communication, and many other techniques.

I'm going to show you how easy it is to manipulate human perception.

Everyone at the venue should also participate

First, reach out like this

let's hit it once

Now turn your hands over

imitate me

For some reason, half of them raise their left hand

change to right hand

Cross your right hand over your left hand and intertwine your fingers Place your right thumb outside your left thumb

It's the opposite, so turn it inside out

Extend your fingers forward like this

Let's clap our fingers together for once, if you haven't been fooled by me

(Laughter)

Once you know how to do it, you can see how easy it is to manipulate human perception.

(Laughter) When I was 15, I read an article in Life magazine about a Russian woman who was 75 years old and blind, but she could read the type by tracing it with her finger.

she was blind

Moreover, it is said that he could read the numbers on the reversed banknotes placed on the hard surface.

I was intrigued, but I didn't believe it.

Can you read with your fingertips?

Just think about it. I'm totally blind. You saw a demonstration yesterday where you could hear something when you closed your eyes.

Some people can read with their fingertips

I feel weird just thinking about it

I did a similar demonstration the other day for an MTV show called "Second Sight."

Look at this

come on

guide me to the car

(laughs) It's okay, come in.

fine?

I'll take you to a place

You can't see anything with your blindfold on, can you?

don't be too threatening

are you OK? yes

Can't you see anything with your blindfold on? yes

Then take off the blindfold

Can you take off your eye mask?

it's ok so try to remove it

I'm scared of what I'll see

it's okay there's nothing to be afraid of

Ever heard of second sight?

no

Mind control specialists refer to seeing through the eyes of others.

i will try now

Oh my God!

go? I can't see anything anymore

(beep) Oh my God! Do not say anything

I rely on your eyes

There is a wall!

Look at the road!

OK OK OK Oh my God!

Are there any obstacles? no no no no

Really?

It's true, I'm watching the road

looking at the road

I don't take my eyes off the road

(beep) (beep) (beep) Oh my God!

Where are you now?

Are you uphill?

Look ahead! (beep) You're still blindfolded

what?

how are you doing

I lose my concentration

It is ok, is not it? yes

it feels so weird

I'll be there soon Oh my God!

Oh my god!

I stopped the car

i feel creepy

you're too scary

It's the first time I've felt such fear

(Applause) Thank you.

As an aside, I was on the racetrack two days ago to record this magic, and I had this guy in the car, and there was a cameraman in the backseat, and halfway through, he said he had a pistol on his leg, so I hurriedly stopped there.

through the eyes of others

Do you think it is possible to see

That's the problem, although the vast majority of people will automatically answer no.

this is the only fact

I couldn't see through the blindfold

car is not modified

It was the first time I met that girl

So I want you to think about it

Although many people try to find a logical explanation for what happened,

Your brain isn't programmed to deceive, so your guesses are 99% likely to be wrong. The magic is where you direct your attention.

For example, if you don't want me to look at your right hand, I don't have to.

If you want me to look at your right hand, I can look at you.

It's very simple if you know how to do it, otherwise it's very complicated.

Now let's demonstrate it here.

I need your help, can you come over here?

who sits on the edge

will you come too bothersome? About you

welcome with applause

please use the stairs

(Applause) I want to let everyone know that I'm not rooting for these two.

That's right? please stand here

Name is?

nicole you?

(Ringtone)

I have a great idea! Pick up the phone!

(laughs) Girl? got cut

oh sorry

Change your standing position, because it's easier

You said it was the ace of spades

A little more here (laughs)

A little closer (laughs) A little closer I'm nervous.

Come closer Do you believe in magic?

no

What about voodoo magic?

no ghost?

no let's get started

Stand here, roll up your sleeves if you can, and see if there's a strange feeling-

Please be aware I will try voodoo magic

Be mindful of your senses, don't say anything until I say it, and close your eyes.

Now close your eyes, don't say anything, keep your eyes closed, pay attention to the sensations

did you feel anything?

yes

what? touched on the back

How many times have you been touched?

twice

Twice, stretch your left hand forward

left hand forward

leave it alone

Don't say anything, keep your eyes closed and pay attention to your sensations

did you feel anything?

yes what?

3... Feeling ticklish? yes

where's that feeling?

ok open your eyes

i didn't touch you

I just touched his back and arm

It's a voodoo experiment (laughs)

I'm hanging around the club like this

(Laughter) I need you to help me again.

please sit down

you go here

Here it is OK

sit down

look straight at me take a deep breath through your nose exhale through your mouth relax

I want to close my eyes 5 4 3 2 1...

yes close your eyes

I'm not hypnotizing you, I'm trying to induce our minds to synchronize.

Place your left hand here as you drift into a relaxed mood

Keep your hands still for a moment, and in a relaxed state of mind, lower your hands to the table at a steady speed. Lower all the way to the table.

yeah all the way down all the way down

more more more more more more more

Hands firmly on the top of the wonderful table

leave as is

You should soon feel some pressure, pay attention to the pressure.

Concentrate, when the pressure is released

Please lift your hand slowly up from the table, see?

Answer please

yes

keep your hands in place

Now only when you feel the pressure return slowly lower your hand to the top of the table, only when you feel the pressure.

(Laughter) It worked. See you again.

Great, now that you're used to it, let's do something more interesting.

Stand with your hands firmly on the table and your eyes closed.

stand in front of the stage

please point to his forehead

Imagine that you and him have a connection

Only when you want to release the pressure, signal up like this, but only when you want to release the pressure.

Move it whenever you like. It's time to release the feeling of oppression.

Then imagine that there is a connection again

Point straight at your forehead

let's do it again

It worked this time

both of you stay

Signal down only when you want to return the feeling of oppression

Please when you like

It was fast, but it worked

If I snap my fingers, I'll open my eyes

It's okay to forget what happened

most people ask what happened

But you don't have to be hypnotized, because you forget everything that happened. (Laughter)

5 4 3 2 1 open your eyes

to the two of you

(Applause) Please go back to your seats.

The movie "Miracle World Bushman"

Have you seen it? (applause)

Remember that scene where the Coke bottle you threw from the plane didn't break? because coke bottles are hard

It's almost impossible to break a Coke bottle.

Would you try it? well done

(smile)

It's out of your mind. Psychokinesis is the paranormal influence of the brain on physical events and processes.

Magicians and mind readers bend spoons and move objects on a table.

may not succeed

Because the amount of stored energy varies from day to day.

please come to my side

Thank you, a normal one with a hole-

Make sure it's a hard cola bottle

You can hit me, be careful

Just in case, I'll leave for a while

please pinch here

nice, here's a piece of glass

Please observe carefully

It's dangerous so be careful

have it here

Come on, remember the old lover you broke up with

Remember the negative energy of the man and the relationship with him and put the energy into the piece of glass that stands for the man.

please do this seriously

Stare at the glass, don't worry about your surroundings

You're going to feel a sensation very soon, and when you feel that sensation, drop the glass into the jar.

Think of that guy, that bastard... that guy

(Laughter) You have to behave yourself.

If you feel the sensation, drop the piece of glass into the bottle.

you can drop it

Negative energy in a bottle -

remember his name

Release negative energy by shaking the bottle.

(Laughter) There was a lot of negative energy in there.

(Laughter) (Applause) Think of his name.

May I? how many letters is his name guess how many letters

it's 5 letters

I didn't respond so it's 4 letters

think of one letter in it think of one letter

he has a K in his name

You know my name starts with a K too But please say hello to Mike, a name that doesn't start with a K and starts with an M

Is it right? yeah

clap her

(Applause) Thank you.

(Applause) There's one more thing I want to do.

I need Chris to help me, can you come over and pick the victim for the next experiment?

make me a man

yes

I tried to make you a victim, but I want to come back again

(Laughter) The reward for saying "Eureka" and Steve for choosing Michael as the narrator.

steve come here

(Applause) You knew, sit behind me.

You can check down there, there's no one hiding inside

You say I'm a magician, so use a black cloth

I was told

(Laughter) And here's a wooden pedestal.

1 2 3 4

They're all the same, but with one nail.

Make sure it's sturdy

satisfaction?

Yes, I will stand in front of the table

Place the paper cups on the pedestal like this. Arrange them in any way you like and make sure no one knows where the nails are.

Don't let the audience know?

That's right, I'll cover it with my jacket so no one can see it.

I don't see it either, so sort it out

Please let me know when you're done (laughs).

Are you ready? A little longer

You have a cautious personality

you did it

(Applause) So let's just leave it at that.

(Laughter) I will have the last laugh. (Laughter)

You're the only one who knows where the nails are, aren't you?

But I want to keep a secret from you, so please turn around.

I won't play pranks so it's okay

please turn your back

please turn this way

Now you and I don't know where the nail is - you don't know.

There's no trick to the eye mask, right?

do you wear this? Make sure you can't see through

yes

I can not see anything? yes i can't see

If that's the case, then I'll do this eye mask No stacking paper cups

mix again

Do not touch the paper cups so that the nails cannot be seen.

Put on your eye mask Mix it again

No mischief, please mix it up

because my hand is in it

(Laughter) Tell me when you're done.

Where? give me a hand

Lend me your right hand and tell me where the paper cup is

it's down there it's down there

So do you think the nail is in this paper cup?

Oh!

(Laughter) I told you I'd be the last one to laugh.

(Laughter) I don't think it's there, is it? good decision

(Laughter) (Applause) Do you have paper cups here too?

Can I change to my left hand?

Absolutely no, it has to be your dominant hand

(Laughter) Do you have it here too? Yes, we have it

where is it ok

There?

yes

Is there a nail in this? this is your decision

(Laughter) There's no nail here. You made a good decision.

(Laughter) Hands up

Put your hands on the paper cup

Are the nails under your left hand? Or under your right hand?

Neither

Really

But what if it's either?

(laughs) Under the right hand, under the right hand?

all decisions are yours

psychologist how do you see this

look inside

Wow!

(Applause) Thank you.

Thank you. I'll do some magic outside later. If you're interested, come along.

thank you

(Applause) Thank you.

thank you

(applause)

"It was fun to light the fire

It was an extraordinary pleasure to watch things get swallowed up and turned black." "Fahrenheit 451" opens with an ecstatic scene at the sight of flames, but then it becomes clear what's on fire.

In Ray Bradbury's novels, I imagined a world in which books were forbidden in every aspect of life, and even books and reading were forbidden.

The main character Montag's job is to burn books to the ground.

But when he begins to question his work, the story raises important questions about how to sustain the human mind in a society where free will, self-expression and curiosity are stigmatized.

In the world of Montag, the mass media has a monopoly on information that almost completely robs us of our ability to think independently.

In the subway, the advertisements on the walls are screaming

At home, my wife, Mildred, spends all day listening to the radio and screens mounted on three walls.

At work, co-workers who smell of kerosene smoke cigarettes and play with robot dogs hunting mice.

When the alarm goes off, they can go out in a fire lizard-shaped vehicle and burn an entire library to the ground.

But while he was setting books on fire every day, turning them into sparks like "black butterflies," Montag was occasionally distracted by the contraband he hid in the house.

And gradually I started questioning my work.

Montag finds himself in constant anxiety, but he has no way of expressing his feelings in a world where even saying "Once upon a time" can be fatal.

"Fahrenheit 451" depicts a world controlled by surveillance and robotics VR (virtual reality), a perspective that was not only prescient, but also reflective of what was happening at the time.

This novel was published in 1953, right during the Cold War.

It was a time when paranoia and fear spread like wildfire in Bradbury's home country, the United States, fueled by speech control and state scrutiny.

This witch-hunt-like mentality has been particularly traumatic for artists and writers who are suspected of being communists.

Bradbury felt threatened by this cultural oppression.

He believed this was a dangerous harbinger of widespread censorship, recalling the destruction of the Library of Alexandria and the book burnings of the fascist regime.

He explored this chilling relationship in "451 degrees Fahrenheit," titled after the temperature at which paper burns.

Although the accuracy of this temperature has been questioned, it does not shake the story's reputation as a dystopian novel.

A dystopian novel is about framing problems in society, exaggerating them, and imagining the consequences of putting them in extreme settings.

In many dystopian novels, governments forcefully strangle reluctant citizens.

In "Fahrenheit 451," Montag learns that people's indifference created the current system.

Governments simply exploited people's boredom and thirst for silly entertainment to keep ideas from circulating and into oblivion.

First, culture disappears, followed by imagination and self-expression.

It's like when my boss, Beatty, talks about the spread of popular culture, "Fast forward the film, click it? Pictures? Look, pay attention now, burst here, there, hurry, slowly, up, down, in, out, why, who, what, where, ah! Oh!"

Bang! Basi! Boom! bottle! Bon! Bang! Digest summary A further summary version of the summary

Political issue? A one-column, two-line heading is enough! You will be forgotten anyway! ”

Montag finds it hard to resist in this devastated world with nothing left to hold on to.

All in all, Fahrenheit 451 is a peculiar ideological depiction of a precarious lighting situation, and a parable of a society that contributes to the burning of society itself.

The range of effects of a nuclear explosion is unimaginable.

I just hope that no one ever goes through this devastating experience again.

There's a science-backed course of action that could save hundreds of thousands of lives in areas surrounding nuclear explosions.

What are those guidelines and what do they protect against?

Nuclear weapons harness the power of nuclear fission to create devastating explosive force when the nucleus splits in two.

An enormous amount of energy is released. In some materials, fission neutrons are absorbed by nearby atoms, triggering further nuclear fission.

This chain reaction can lead to explosions of various sizes, but let's consider an explosion equivalent to 10,000 tons of TNT.

The fireballs produced by such explosions can obliterate blocks of towns, and the shockwaves can damage buildings for miles.

There's nothing you can do about the extent of being swallowed by the fireball.

For areas affected by shockwaves and other impacts, scientifically-backed procedures may save lives.

It may seem surprising, but the best way to stay safe before, during, and after a nuclear detonation is to stay indoors.

As with tornadoes and typhoons, solid buildings provide protection from the shock wave, heat, and radiation of the explosion.

In the first few seconds, the shock wave travels beyond the range of the fireball and reaches several kilometers.

Solid buildings can withstand shock waves, and being in the center of a building or in the basement can protect you from heat and flying objects.

Finding shelter is especially important when a fireball is near the surface, and can lift thousands of tons of dirt and debris several kilometers into the sky.

As the fireball cools, unstable atoms from nuclear fission mix with the debris to form fallout, the most dangerous long-term effect of a nuclear explosion.

These sand-sized particles emit ionizing radiation that separates electrons from molecules and atoms.

Exposure to high doses of radiation can lead to cell damage, radiation burns, radiation sickness, cancer and even death.

Dense clouds of radioactive material can form several kilometers above the surface, spread by upper winds, and carry dangerous levels of radioactive fallout tens of kilometers downwind.

Luckily, the same buildings that protect you from the blast are even more effective defenses against the fallout.

Radiation weakens as it travels through space and matter.

Broken windows and closed windows don't do much against radiation, but thick steel, concrete, and compacted soil offer great protection.

Because fallout releases half the energy in the first hour and 80 percent in the first day, staying indoors for 24 hours dramatically increases your chances of avoiding severe radiation effects.

After the explosion, you'll have 15 minutes to find shelter before the radioactive fallout begins.

The most dangerous fallout particles are heavy and fall through the air, accumulating on roads and roofs, so the ideal shelter is in the basement or between the middle floors of tall buildings.

Even if you get caught in the fallout, there are steps you can take.

Once you've found a safe place, remove your shoes and outer clothing, wash any exposed skin, and isolate the contaminated clothing far away.

Stay indoors for at least 24 hours

If the building is collapsing or someone needs immediate attention, wait an hour before calling for help.

Preferably, stay indoors and seek information from emergency responders.

Even if you can't use electricity, mobile phones, or the Internet, there is a high possibility that you can use the radio.

Listen to emergency broadcasts and decide what is the safest course of action.

Nuclear weapons are the most powerful tools of destruction on the planet, and it may seem naive to resort to such naive means.

The benefits of staying indoors have been repeatedly shown in studies and simulations.

I hope you never need this, but remember to enter the building, stay indoors, and stay informed.

I would like to look back on myself about seven years ago.

A few days before Christmas in 2009, on a Friday afternoon, I was working as a business unit manager for a consumer goods company in San Francisco, and I was called into an ongoing meeting.

That meeting turned out to be a retirement interview.

I was fired along with some others.

I was 64 years old at the time

I predicted to some extent

I signed a stack of papers, packed up my belongings, left work, and stunned headed to a nearby restaurant where my wife and I were meeting.

Fast forward a few hours and we were completely drunk.

(Laughter) The days of 40-plus years of working for companies big and small are coming to an end.

I have strong connections and fame, so I thought I would be fine.

I had a strong background as a manufacturing and product packaging engineer.

Like many people, retirement wasn't an option for me, and after a couple of years of consulting and stuff, it just didn't really motivate me.

And then my interest in the environment grew, and slowly the idea began to take root.

I decided to start my own business, designing and manufacturing biodegradable packaging out of paper, agricultural waste, textile waste, and replacing the toxic, single-use plastic packaging we've all grown accustomed to.

This is called clean technology, and I found it very rewarding.

It's a vision to eliminate hundreds of thousands of tons of single-use plastic packaging that is thrown away each year. Plastic waste pollutes the soil, waterways and oceans, leaving future generations with a problem -- our grandchildren -- my grandchildren.

So at the age of 66, I started my first business again, using my 40 years of professional experience.

(Cheers) (Applause) Thank you.

there is more

(Laughter) There are so many challenges to tackle: manufacturing, outsourcing, job creation, patents, partnerships, fundraising -- these are all challenges that come with any new business, but for me, they were completely different.

about fundraising

I live and work in San Francisco, and if you're looking for funding, you're typically competing with very young people from the tech industry. It's demoralizing and intimidating.

Even though I have the shoes I bought my youngsters before they were born

(Laughter) It's true (Laughter)

But five years later, I'm excited and confident to tell you that our sales are doubling every year. We have no debt. We have a few big customers.

But above all, it's made a small impact -- it's made a small impact on the global plastic pollution crisis.

(Applause) Right now, I have a job that makes me feel worth doing and living.

I can tell you that there are a wealth of resources available to entrepreneurs of all ages, but five years ago, my craving was to find other first-time entrepreneurs my age, and I wanted to connect with them.

I didn't have a single role model.

The 20-something-year-old Silicon Valley app developer wasn't my role model.

(Laughter) You're smart, but -- (Laughter) I want to do something about it, and I want you to do something about it.

I'd like to hear more about people starting their own businesses for the first time in their old age.

Basically, when people are quitting their jobs, we talk about the people who dare to start.

We create communities by connecting with all these people across industries, regions, and borders.

According to the Small Business Administration, 64 percent of new jobs created in the U.S. private sector are in small businesses like mine.

But I'm not saying you'll stay small forever.

We have a funny culture where people think that when you reach a certain age, you're going to spend all day playing golf, playing checkers, and taking care of your grandchildren.

Of course, my grandchildren are adorable. (Laughter) I also like doing meaningful things in the global marketplace.

I plan to expand my company

According to the Census Bureau, by 2050 there will be 84 million older people in the United States.

That's an amazing number

almost double the current

How many of these 84 million people do you think will start a business for the first time?

We all have 40 years of professional experience.

(Laughter) And when I say, "Let's talk more about great entrepreneurs," I mean, just like we're talking about much younger startups, let's talk about older people.

America's late-blooming entrepreneurs are 70% successful in new ventures 70% success rate

(Laughter) (Applause) For young entrepreneurs, the success rate drops to 28 percent.

Figures from UK-based CMI

Aren't the accomplishments of a 70-year-old entrepreneur just as every bit as meaningful and every bit as press-worthy as a 30-year-old's?

Of course there is

So I want to take the phrase "70 entrepreneurs over 70" for granted (Laughter) and do the same with "30 entrepreneurs under 30."

(Thank you for applause

(Cheers) (Applause)

When I was president of the American Psychological Association, I got to speak on TV.

This episode epitomizes what I'm about to tell you, it was a CNN show about the eleventh reason to be an optimist.

The editor-in-chief of Discover magazine was supposed to speak up to number 10, and I was to cover number 11.

A CNN staffer came and asked me, "Professor Seligman, can you tell us about the state of psychology?

I will interview you." I reply, "With pleasure."

The staff member said, "But it's CNN, so you have a few seconds to speak."

"How long can you talk?"

"That's one word."

(Laughter) The filming has begun. "Professor Seligman, what is the current state of psychology?"

"good"

(Laughter) "Cut cut, you don't know

Let's make it a little longer."

"So how much can you speak now?" "Um, two words?

Professor Seligman: What is the current state of psychology? ”

"Not Good"

(Laughter) "Well, Professor Seligman, it seems like this is going to be difficult.

Allocate a little more decent length of time

You can speak three words next time.

Professor Seligman: What is the current state of psychology? ”

"Not Good Enough" That's What We're Talking About Here

Why psychology was good, why it wasn't, and how it could be better in the next decade

In parallel, I'd say the same thing about technology, entertainment, and design, because they all have very similar problems.

What's so good about psychology today?

For over 60 years, psychology has been based on the pathological model.

Ten years ago, I was on a plane, and when I introduced myself to the people sitting next to me and told them what I did, they tended to distance themselves from me.

But when I tell you what I'm doing now, people jump in and get interested.

There's a good thing about psychology that we've had in the past, thanks to the $30 billion investment in the National Institute of Mental Health, and research that's based on pathological models that has allowed us to do classic psychology. Sixty years ago, we couldn't treat any disease.

Now, we can treat 14 ailments, two of which are actually curable.

In addition, the scientific method for mental illness has evolved.

I realized that I could scrutinize vague cases like depression and alcoholism, and I could create a taxonomy of mental illnesses, and understand their cause-and-effect relationships.

For example, by observing people who are genetically predisposed to schizophrenia over time, we've been able to look at the contribution of parenting and genetics, and we've done experiments with mental illness to isolate irrelevant factors.

Especially in the last 50 years, we've developed medications and psychological treatments.

Through rigorous testing in a randomized, blinded trial, we were able to stop ineffective treatments and retain only effective treatments.

The conclusion of the last 60 years of psychology and psychiatry is that we can certainly claim that we can alleviate the suffering of those who are suffering.

this is amazing i'm proud

But as a result of these, three bad things happened.

The first is about code of conduct. Psychologists and psychiatrists have become victimologists and disease hunters, perceiving difficulties as external and incapable of anything to do with them.

Forget that people make choices and decisions

I forgot about responsibility.

The second price is that we stopped thinking about ordinary people.

I forgot to make my ordinary life better

We forgot to make less needy people happier, happier, more productive, and genius and talent became a taboo.

no one is dealing with it

And the third problem with the pathological model is the compulsion to do something for people in difficulty, the compulsion to do something for their recovery.

These are the things that are not good

This is why Etkov, Gilbert, Csikszentmihalyi, and I started working in a field called positive psychology, which has three goals.

First, psychology should be as concerned with strengths as it is with weaknesses.

We should be as concerned with developing strengths as we are with healing wounds.

for the best things in life

And we should also be concerned with making ordinary people's lives more fulfilling and cultivating genius and high talent.

So, in the last decade, positive psychology, the science of purpose in life, has begun, and will continue to do so.

It has been discovered that different kinds of happiness can be measured

Anyone can go to this website and take the full happiness test.

You can literally compare it to tens of thousands of how you reach positive emotional and meaningful flow.

I've created a diagnostic chart that's the exact opposite of mental disorders, a chart of strengths and strengths, percentages by gender, how it's defined, how it's diagnosed, what makes it grow and what hinders it.

I realized that I could figure out what causes positivity — how activity in the left and right hemispheres of the brain influences happiness.

I've worked with people who are in a lot of pain, and I've wondered what makes these people in pain different from normal people.

From 6 years ago to very happy people

What makes them different from other people? I started asking

And it turned out that there was a reason why they weren't particularly religious, they weren't physically fit, they didn't have a lot of money, they didn't look good, they didn't have a lot of good things, and they didn't have a lot of bad things.

The only difference is that they are very social.

I don't attend seminars on Saturday mornings.

(Laughter) I don't spend time alone.

I have a good relationship and I have many types of friends.

Just be careful, it's not just a correlation, it's a cause. Also, I'm talking about plain happiness, like in a Hollywood movie.

I'm going to show you that happiness isn't enough, over the centuries, from Buddha to Tony Robbins.

We started by looking at intervention techniques

There are about 120 different interventions that make people happy.

Many of them were able to be manualized and randomized to verify efficacy and efficacy.

In other words, "Which one really makes people lastingly happy?"

I'll show you the results

The point of this story is that, in addition to its mission of treating mental illness and of alleviating the suffering of those who are suffering, it is the mission that I hope psychology has: Can psychology really make people happy?

In order to ask that question, I have to decompose the word "happiness," which I don't use very often, into a form that can be discussed.

I believe that there are three different types of happiness, and the reason for distinguishing them is that they are formed by different recipes, and among them you can aim for one particular type of happiness.

The first happy way of life is a life of pleasure

It's about spending your life with as many positive emotions as possible and strengthening them.

The second is a life in pursuit of passion, where time stops for your work, your children, your love, your leisure activities.

This is what Aristotle said

The third is a meaningful life.

I'll tell you what I know about each of these three ways of living.

The first, the pleasure life, is a life where you simply do your best to get pleasure. It's a life where you have as much pleasure as possible, and as many positive emotions as possible, and master the techniques to make them stronger, such as tasting and enriching your consciousness, so that pleasure and emotions transcend time and space.

But a life of pleasure has three drawbacks: positive psychology is not happiness science, and that's why the talk doesn't end here.

One of the downsides of a life of pleasure is that positive emotions are heritable, about 50 percent of them are hereditary and you can't really change them.

There are different ways that Matthew and I and some others know about increasing positive emotions in our lives that can help us gain about 15 to 20 percent more positive emotions.

The second thing is that positive emotions are habituating, and you get used to it pretty quickly.

I like French vanilla ice cream, the first taste is 100 percent, but not the sixth bite.

And like I said, it's very difficult to stretch

This is where the second happy way of life comes into play.

To explain why positive psychology isn't just about accumulating positive emotions and joy, let's talk about Ren.

By the time he was 30, Ren was very successful in two of the three stages of his life, the first being work.

By the time I turned 20, I was trading options.

By the time I was 25, I was a millionaire and the president of an options trading company.

The second stage is play. He was the national bridge champion.

But when it came to the third stage, love, Ren was a total failure.

Because Ren was the very emotionless one.

(Laughter) Ren was an introvert.

An American woman said when she dated Len You're not happy at all You don't have any positivity Just go away

Len was so wealthy that he went to see a psychoanalyst on Park Avenue, who spent five years trying to find the sexual trauma that trapped positive emotions in Len.

but there was no sexual trauma

All we know is that Len grew up on Long Island, played football, watched football, played bridge.

Ren is in the bottom 5 percent on the positive emotion axis.

Is Ren unhappy? i think different

Contrary to what psychology tells us about the bottom 50 percent of people who are positively emotional, Ren is probably one of the happiest people I know.

He doesn't get caught up in misfortune, and he's just as good at using flow as you are.

At 9:30 in the morning, when Ren walks into the American Stock Exchange, his time stops, and it continues until the end signal.

Once the first card is played, Ren's time will stop until the tournament ends 10 days later.

This is exactly what Mihaly Csikszentmihalyi was talking about about flow, and the difference between flow and pleasure is very important.

Pleasure comes with a raw feeling of what is happening there, there is thought and feeling.

But as Mihai said yesterday, you don't feel anything while the flow is happening.

You become one with the music and time stops.

I am intensely focused

This is certainly a hallmark of a good life

And there's a recipe for creating a better life: knowing your highest strengths. Again, there's a test that works for you to know your highest five strengths. Modify your life to make the most of those strengths.

Work, romantic relationships, hobbies, friendships, and raising children

Let's take the grocery store cashier as an example.

she hated her job

I worked all through college

His greatest strength was his social intelligence

I tried to change the way I worked so that I could give my customers the best social experience of the day.

it doesn't work like that

But she found her greatest strength and made the most of it in her work.

It doesn't mean you have to smile all the time.

Don't be like Debbie Reynolds

You wouldn't laugh so much. The point was to be more involved.

This is the second method. The first method is positive emotions.

The second method is the flow state of eudaimonia (happiness) and the third is meaning.

This is traditionally the most revered form of happiness.

Prev item Parallel to Eudaimonia Consists of knowing your highest strengths and using them to dedicate yourself to something greater than yourself

Now that we've introduced three ways to live a life of pleasure, a life of fulfillment, and a life of meaning, you're all wondering: is there a way to live these lives permanently?

I think the answer is yes. Let me give you an example.

These are in a rigorous way

It's been tested in the same way that drugs that really work are tested.

We're doing a randomized, blinded, long-term study of different interventions.

Here are some of the interventions that we've found to be effective. When we teach about the pleasure life, we teach them the art of concentration and the art of enjoyment as a learning exercise to increase the pleasure in life.

Next Saturday put your worries aside and have a nice day Enjoy and fill your spirit and increase your pleasure

By doing so, the quality of life of pleasure will be enhanced.

Let's talk about thanksgiving visits.

close your eyes

Think of someone who has done something very important that changed your life for the better, but has never been able to properly thank you.

Only for those who are still alive.

Now open your eyes

I hope you found the right person

What you do when you make a thank you visit is write that person a 300 word thank you note and call Phoenix and ask if you can visit them without saying why.

Please read the letter of appreciation Everyone sheds tears at this time

After 1 week, 1 month, and 3 months, I was happier and less depressed.

Another example is a strengths date, where each couple is tested to see what their strongest strengths are, and then asked to plan a night that leverages their strengths.

This leads to stronger relationships

On the Contrast of Fun and Charity

It's really inspiring to be in a place like this where so many people are so committed to philanthropy.

Now, neither my students nor my collaborators have been able to figure this out, so we're actually asking people to do something altruistic or fun, and then compare the two.

What I've learned is that when you do something you enjoy, that feeling is like a square wave, and after a while it goes away.

When you do charity to help others, the benefits are long lasting.

These are examples of positive interventions

One last thing I want to talk about is how satisfying people can be in life.

And that's what really matters, and that's the variable we're aiming for.

We asked how satisfying life can be as a function of three different ways of living.

We tested 15 different conditions with thousands of people: a life of pleasure in pursuit of pleasure and positive emotions; a life of immersive experience where time stops; a life of meaning-seeking; how did each affect life satisfaction?

The results were surprising and contrary to expectations.

The pursuit of pleasure had little to do with life satisfaction

The search for meaning was the most powerful

There was also a strong connection to the pursuit of obsession

Pleasure is useful only when it is infatuated and meaningful, and then joy is garnished like whipped cream and cherries.

In other words, a life with all three is greater than the sum of the three, and a life without any of the three is empty.

become smaller than their lives

And the question we're exploring now is whether physical health, morbidity, longevity, and productivity are the same relationships that we just talked about.

So, in a company, does productivity have anything to do with positive emotions and preoccupation?

Health is indulgence Pleasure Does it have anything to do with the meaning of life?

I have reason to think that both answers are "relevant"

Chris said that the last speaker will get the chance to wrap up all the talks, which surprised me because I've never been to a talk with such a diverse group of people.

It's the first time I've ever seen a speaker who expands my horizons in such a way, and it's amazing.

But I've come to realize that the problems of psychology are similar to the problems of technology, entertainment and design, which have been and may continue to be treated for destructive purposes.

At the same time, they can be used to get rid of hardships and misfortunes.

By the way, the distinction between removing suffering and unhappiness and building happiness is very important.

When I first became a therapist 30 years ago, I thought I could make my patients happy by keeping them out of depression, out of worry, out of anger.

But it never happened. All it could do was bring people to zero, but they were left empty.

And so I realized that the art of being happy, the art of living a life of pleasure, the art of living a life of indulgence, the art of living a life of meaning, is different from the art of getting rid of suffering and unhappiness.

I think the same is true for technology entertainment design.

So these three driving forces in the world can increase happiness and positive emotions.

commonly used as such

But if you break down happiness like I said, you'll find that positive emotions aren't enough, and life also needs flow and meaning.

As Laurie said, in addition to design, entertainment and technology can add meaningful immersion into our lives.

In summary, the eleventh reason to be an optimist is that in addition to space elevators, through technology, entertainment and design, we can actually increase the total amount of happiness for the human race on this planet.

It would be very nice if technology could increase the number of lives of pleasure, lives of fulfillment and lives of meaning in the next 10, 20 years.

It would be great if entertainment could be repurposed to increase positive emotions, meaning and eudaimonia.

If design can increase positive emotions eudaimonia and flow and meaning — it would be great if we could come together. Thank you.

(applause)

We're interviewing everyone from CEOs to cops to truck drivers to cooks to engineers.

I hear from all working people

So what I can say is that the happiness of working people is shared.

Series How we work There are 3 billion people working in the world

About 40% say they are satisfied with their jobs.

That means 1.8 billion people -- almost 2 billion people are dissatisfied with their jobs.

What does this mean for these people and the organizations they work for?

let's talk money

Companies with happy employees grow revenue three times faster than those with unsatisfied employees.

3x better performance in the stock market

Employee turnover is half that of companies with dissatisfied employees

The great thing is that it doesn't cost you extra money to do it.

No ping-pong tables, no massages, no pets.

it's not about perks

It matters how you are treated by your boss and co-workers.

Here are some ideas for creating happy employees.

Idea #1: There are two things you see in a company where employees are happy: trust and respect.

Leaders often say, "We trust our people."

They say, 'We empower our employees.'

But when an employee wants to buy a laptop -- this is a true story -- it needs the approval of 15 people.

Then, the employees will think that the person above them is just talkative, 15 stages of approval for a 150,000 yen PC.

The approval process probably costs more than the PC itself.

Employees feel less trusted

What should a company do to build a strong relationship of trust?

The first thing that comes to mind is the Four Seasons.

We have great hotels all over the world

Employees are told, "Do whatever you feel is best for your customers."

Show your employees that you trust them to do whatever you think is right, and they will feel great.

And that's why it's known for one of the best services in the world.

Idea #2 Fairness

The number one thing that hurts trust in an organization is when employees feel they're being treated unfairly.

We want our employees to be treated fairly, just like everyone else, regardless of rank, seniority, age, experience, or occupation.

When it comes to fairness, the first company that comes to mind is Salesforce.

When it is found that there is a difference in salary received between men and women despite having the same job and the same level of skill

We calculated the difference on the spot, and are investing 300 million yen to ensure fairness.

Idea #3 Listen

To be a listener that connects with all types of people, there's one thing you have to forget.

We've been taught to actively listen, to make eye contact, to stare, to show empathy.

It is different

Repeating what the other person said—that's not it either

Being humble and always looking for the best ideas is listening.

Employees know if this is what we're doing

When people tell you about an idea, they want to know if you've considered that idea when making a decision.

What people want when they speak is whether what they say is meaningful enough to change the other person's mind.

If not, what would the conversation mean?

We know we need to change, we know we need to do things differently

How you behave, how you treat others, how you react and how you support them determines the work experience of those around you.

The world is full of examples of people trying to become better people and failing.

To change for what you believe in, a purpose you have, something you're willing to sacrifice anything for, something so important, that's why you change.

If you don't have that, you should look for another place to work.

The basic problem with working in an office is that you can't control your work environment.

Series How I Work Hello I'm Matt I'm the CEO of Automattic We do WordPress.com, Jetpack WooCommerce and more.

We have 800 employees, and we live in different locations: California, Alabama, Mississippi, and Texas, where I live.

Scattered in 67 countries around the world

Canada Mexico India New Zealand

There are also nomads, people who don't settle down in one place.

Whether they're living in campers or traveling on Airbnbs, they're moving to new places day by day, week by week, month by month.

I don't care where you are as long as you have a good Wi-Fi connection

This decentralized form did not happen by chance.

It was a conscious choice from the beginning.

I don't use the term "remote work" because I feel like I'm making a distinction between core people and people who aren't.

I call our method "decentralized," and everyone is on equal footing.

I think a decentralized workforce is the most effective way to structure a company.

The important thing is that you do it consciously.

When we launched WordPress, many of the first 20 employees had never met.

They were people who had been together all along the internet.

The reason I wanted to continue in that format is simple.

I believe that talent and intelligence are evenly distributed around the world.

opportunity is not

Silicon Valley is like tech giants fishing in the same little pond.

A decentralized company can fish the entire ocean.

We can hire people who were born and raised in Japan and now live in California, but who live, work, wake up and sleep anywhere in the world.

They bring a culturally different way of thinking and a different life experience.

Part of the decision to decentralize was the desire to give people autonomy in how they do their work.

You can make your own schedule, unless you have a position that doesn't require time slots.

You can work in a corner room with windows, eat whatever you want, play music, or choose to do it in silence.

You can also set the room temperature freely.

Save time on your commute so you can spend more time doing what matters

A decentralized workforce is ideal for technology companies.

I'm sometimes asked, "It's fine for companies that do well, but what about companies that don't?"

If you already have an office, there are a few things you can do to create a decentralized environment.

First, record everything

In the office, it's easy to make decisions on the spot, in the kitchen or in the hallway.

But some people are working from home, and if you don't participate in those conversations, you don't know how the decisions were made.

If you always keep a record of where you were and what you were thinking

Others will be able to take over

It allows us to interact with people in different time zones, and we can adapt to organizational changes and personnel turnover.

“Communicate online as much as possible”

Newcomers can learn quickly when everything is open and shared.

"Finding Good Tools"

There are many apps and services that you can use for everyday communication, video conferencing, project management, etc.

It's not the things that are changing the way we work now

for use on a computer

Experiment with tools that help you collaborate and see what works for you.

"Set up productive face-to-face time"

In a traditional office, you'd be together 48 weeks a year and only be apart for three or four weeks.

We do the opposite, creating short, intense moments together.

There is a big meeting once a year, and all employees spend a week together.

half work half play

The main purpose here is the bond between people.

Everyone is on the same page when they leave, and there is a deep bond between co-workers.

This understanding and empathy will come to life as we work together for the rest of the year.

And finally, "Be flexible so that each person can create their own working environment."

At Automattic, we have a coworking allowance that allows you to buy coffee to use for your coworking space and not get kicked out of the coffee shop.

A group in Seattle collects the allowance and rents a workshop on the fishing pier.

There is also a home office allowance

You can use that money to buy better chairs, better displays, better desks to create the most productive working environment for each of you.

Few companies are still prioritizing decentralized forms.

I predict that in the next ten or twenty years, 90% of the companies that will have an impact on the world will be in that form, whether they evolve into a decentralized form or are weeded out by such companies.

Whatever you're building next, think about how you can bring people from all over the world together and give them autonomy so that they can work where they want to work, and do their best to build something together.

In South Africa, wire has been used for decoration for hundreds of years.

However, along with communication, modernization has brought with it a completely new "material": wires for telephone lines.

Rural-to-urban migration has allowed new industrial materials to replace hard-to-find natural grasses.

You can see the change with the new material.

This is from the late 1940's to late 50's

In the 90s, I was interested and passionate about changing art forms, and I came across a new form brought from the villages on the outskirts of Durban.

I had the opportunity to work with the community there, where I developed and coached on design and scale.

The project increased from 5 craftsmen to 50 in about a year.

We exceeded the size of the scrap yard we were getting the material for, so we begged the wire manufacturer to supply us with not only regular wire wound on spools, but also wire that matched our color specification.

At the same time, I thought, there's a lot of potential for modern products here.

So we developed a product that, apart from mass-produced products, was obviously more suitable for the high-end adornment market, not only for the local market, but also for export.

As you can see, we started experimenting with shapes and forms. Size is very important. It's become an important project, a success, and it's been going on for 12 years, supplying Conran Shops and Donna Karan.

This is our group, the main weavers

They come to Durban once a week

I have a bank account

Everyone is returning to the country where they came from

We bring in products every week.

This is the village that I first showed on the slide

Now it's modernized and supports 300 weavers.

Just look at this and you'll understand

Thank you very much

(applause)

When I was 21, I had a lot of physics homework.

I needed a break from my physics homework, and Wikipedia was relatively new to me, so I used to look at it during breaks.

I would always go back to the same articles and read them over and over again, about glaciers and Antarctica and Greenland.

How nice would it be to go there? what would it take to get there?

Now this is a NASA-operated repurposed U.S. Air Force cargo plane flying over the Greenland ice sheet.

There's so much to see here, but there's so much more hidden out of sight, waiting to be discovered.

What the Wikipedia article didn't mention is that the ice sheets hide liquid water, which was unknown at the time.

I learned from Wikipedia that the Greenland ice sheet is huge, the size of Mexico, and that the ice is three kilometers thick from top to bottom.

But the ice isn't static

It flows like a river down to the ocean

Ice warps and cracks as it flows through curves.

I came to study this amazing ice dynamics, which happens in some of the most remote natural environments left on the planet.

Studying glaciology today is like joining Facebook in the early 2000s.

(Laughter) Thanks to the ability to fly aircraft over ice sheets and to observe satellites, glaciology is revolutionizing.

Science began to do exactly the same thing that smartphones did to social media.

Satellites are reporting a plethora of observations, revealing more and more hidden facts about the ice sheet.

For example, we've been measuring the size of the Greenland ice sheet every month since 2002.

If you look at the bottom of this screen, you can see the years and months of observation advancing.

In some areas, we can see ice sheets melting or disappearing during the summer.

In other regions, winter will bring snow and return ice.

But the overall rate of ice loss is so high that it obscures this seasonal cycle, which would have baffled a glaciologist 50 years ago.

No one could have imagined that the ice sheets would disappear into the ocean in such a short time.

Since these measurements began in 2002, so much ice has melted from the ice sheet that if the smallest continent, Australia, were to stagnate, it would be knee-deep in water.

How can this happen!

Beneath the ice is bedrock

We used radar to photograph hills, valleys, mountains, depressions, over which ice flowed.

Underneath the ice sheet is a channel the size of the Grand Canyon, through which ice and water from Greenland flow into the ocean.

The reason bedrock is detectable by radar is because the ice is completely transparent to radar.

Experiment

Microwave ice cubes at home

Ice doesn't melt, because microwaves and radar don't do anything, they just pierce through the ice.

If you want to melt ice, make it wet, because liquid water heats up easily in the microwave.

Microwave ovens are designed based on this principle.

water can be seen on radar

Radar has revealed the existence of a giant pond of liquid water, seven stories deep under my colleague Olivia's feet.

Here, Olivia is using a pump to bring some of that water to the surface of the ice sheet.

Just six years ago, we didn't even know aquifers existed.

Aquifer formation occurs when melted snow drips from the summer sun.

The water accumulates to form a large pond.

From there, the snow acts like an igloo, insulating the water in the pond from the cold and wind on the surface.

So water can hide in the ice sheets and stay liquid for years.

the question is what happens next

Will the water stay there forever?

there is a possibility

Or does the water find a way out and end up in the ocean?

A possible route for water to reach bedrock and out into the ocean from there is through cracks in the ice called crevasses.

When the crevice fills with water, the weight of the water deepens the crevice.

Using this principle, fracking extracts natural gas from deep underground.

It puts pressure on the fluid and crushes the rock.

It all starts with one crack

Now, what we recently discovered is that the Greenland ice sheet near this glacier's aquifer has cracks.

If you fly a plane over the Greenland ice sheet, you won't see anything, no crevasses, no signs of cracks.

Are these crevasses filled with water?

If so, how deep is the water?

Will it reach the bedrock and reach the ocean?

Answering these questions requires something beyond remote sensing data.

Numeric model required

I wrote a numerical model and ran it on a supercomputer.

A numerical model is just a collection of mathematical formulas that are used to describe a model of something.

It could be a simple sequence of numbers like 1, 3, 5, 7, or it could be a more complex set of mathematical formulas that predict the future based on the current known conditions.

In our case, what is the mathematical formula for how the ice cracks?

Engineers already know very well how aluminum, steel, and plastic shatter under pressure.

This is an important issue in our society

What I found was that the engineering formulas for how materials were fractured weren't all that different from my physics homework.

Using engineering mathematics, we've come up with a numerical model that can be applied to ice to show how it breaks up when water from an aquifer accumulates in a crevasse.

this is the power of mathematics

Mathematics helps us understand real-world processes.

Let me show you the results of my numerical model. First, let me point out that the width of a crevasse is roughly one-thousandth of its depth, so in this main panel I've zoomed in to better see the details.

If you look at the small panel on the right, you can see the true scale of the depth and thinness of the crevasse.

When aquifer water flows into a crevasse, it partially refreezes at -15 degrees Celsius.

This is the temperature of a home freezer

However, if the flow from the glacial aquifer is sufficient, it will outweigh the loss of refreezing.

That's the case in Greenland, where water from the aquifer breaks up the crevasse and reaches bedrock at a depth of 1,000 meters.

If you get there, it's straight to the ocean

So the water in the aquifer is part of the sea level that we're experiencing in the world, rising three millimeters a year.

But that's not all, the water in the aquifer may be doing more than it can.

Glaciers flow in complex ways.

In some places the glacier flows very rapidly

There is often water under the ice sheets.

Elsewhere the flow is not so rapid.

There is usually no water at the bottom of the ice sheet.

Now that we know that the water in the aquifer is reaching the bottom of the ice sheet, the next question is, is it causing the ice itself to flow faster toward the ocean? is

We're trying to unlock the mysteries hidden within the Greenland ice sheet so that we can better plan to deal with sea level rise caused by the ice sheet.

The amount of ice that Greenland has lost since 2002 is only a fraction of the total ice in the ice sheet.

Ice sheets are huge, powerful machines that operate on long timescales.

Over the next 80 years, global sea level will rise by at least 20 centimeters, maybe a meter, maybe more.

We have a pretty good idea of ​​how much sea level will rise in the future, but there's a wide range of projections.

Our role as glaciologists and scientists is to reduce this uncertainty.

How much is the sea level rising? How fast does it go up there?

We need to know the magnitude and rate of rise so that the world and affected regions can cope with future sea level rise.

thank you

(applause)

About 50 years ago, psychiatrists Richard Ray and Thomas Holmes made a list of the most painful events in humans.

what was the top? "Bereavement of spouse"

Divorce is next, followed by separation from your spouse.

Not always, but most of the time, there needs to be a seventh event for those three things to happen: marriage.

(Laughter) Number four is "incarceration in prison."

Some would say it's the same as "marriage"

(Laughter) I don't think so.

When life's stresses were cataloged, long-term relationships were almost synonymous with marriage.

it's different now

In this talk, the marriages I talk about include common-law marriages, common-law marriages, same-sex marriages, and same-sex relationships that hope to lead to marriage.

I work with same-sex couples in my work, but what I'm talking about here generally applies.

same for any relationship

In modern society, we know that prevention is better than treatment after the fact.

Polio, diphtheria, tetanus, whooping cough, and measles.

Melanoma, stroke, and diabetes awareness campaigns are all important.

But I won't touch on one of these things that 45 percent of us experience.

45% is the current divorce rate.

Why isn't there an anti-divorce campaign?

I think policy makers are thinking, "We can't change or educate people about what attracts us to each other and how we relate to each other."

Why?

Today's policy makers are Generation X people.

people in their 30s to 50s

When I'm talking to them about these issues, I can see the gloom in their eyes, and they're thinking, "Why can't this crazy psychiatrist understand?

You can't control how people are attracted to each other or how relationships are built."

Millennials aren't like that.

Millennials are the most informed, analytical, skeptical, and informed decision-makers of any generation.

When you talk to millennials, you get a different response.

they want to know

They want to know how to build lasting relationships.

For those of you who can embrace the post-“Romance of Destiny” era, here are three tips for avoiding divorce.

There are two times when you can avoid divorce: one after the fact, after the relationship has cracked, or before, before you enter into a relationship and have children.

I'm talking about the latter here.

Tip number one is that millennials spend more than seven hours a day on their devices.

This is US data

Some people say that this affects their face-to-face relationships, in a somewhat pertinent point.

Yes, and there's a culture of casual sex, apps like Tinder. It's no surprise that the twenty-somethings I work with say they feel more comfortable having sex than having meaningful conversations with people they've just met.

Some say this is bad

i think it's very good

Especially good is having sex outside the institution of marriage.

Before I preach to you, let me tell you about Generation X, according to the American Public Report, 91 percent of women had had premarital sex by age 30.

91%

It's a good thing that the age at which relationships start is getting older.

Baby boomers in the '60s were married at the average age of 20 for women and 23 for men.

What will Australia look like in 2015?

Now the age of marriage for women is 30, for men it is 32.

This is a good thing because the later you marry, the lower the divorce rate.

Why do you think?

Why is it good to marry late?

there are three reasons

First, because late marriage helps two other factors that prevent divorce.

It's higher education and higher income, which are related to each other.

these three are related to each other

The second reason is that neuroplasticity research shows that the human brain continues to grow until at least the age of 25.

So what you think and what you think can change until you're 25.

The third reason, the most important to me, is personality.

The personality you have at 20 doesn't correlate with the personality you have at 50.

But your personality at age 30 correlates with your personality at age 50.

When people who marry young are asked why they broke up, "differences in direction" is a very accurate answer, because your 20s are a decade of rapid change and maturity.

The first thing you should do before getting married is to get older.

(Laughter) Second, psychologist and marital relationship researcher John Gottman tells us many of the factors that correlate with happy and successful marriages.

I'd like to introduce you to a big problem: 81 percent of marriages end when this problem exists.

The reason I want to talk about this here is because it's something you can measure in a relationship.

According to Gottman, long-term, stable and happy relationships are those in which both sides share strength.

It's a relationship of influence, in big decisions like buying a house, traveling abroad, buying a car, having a baby.

When Gottman looked deeper into this data, he found that women, in general, were much more susceptible to peer influence.

Do you know what the problem is?

(Laughter) You only have two options.

Yes, men are to blame

Another thing Gottman found was that susceptible men were more likely to be "great fathers."

Ladies, is your partner susceptible?

Dear men, you chose your partner because you can respect them.

Remember that respect when making decisions

it's the third

I'm often fascinated by why couples who have been married for 30 or 40 years come to talk to me.

This is the age when we are approaching old age, when we are weak and prone to disease.

It's time to put extra effort into taking care of each other.

There are things that have bothered me for many years that I can forgive

We forgive all kinds of betrayal, even infidelity, because we focus on caring for each other.

Then why are you leaving?

The short word for this is "reliable" -- or lack thereof.

Will my partner support me?

there are two ways

First, whether you can be trusted to do what you say you will do

will it be done

Second, if someone verbally attacks you while you're out, or if you're suffering from a major disability because of an illness, is your partner willing to do what they need to do to make you feel cared for and protected?

And with that comes a complication: when you're getting old and your partner isn't doing it to you, and you're doing it, you feel like being together is better than being together in an already fragile relationship.

Does your partner support you when you really need it?

Even if it's not always, maybe 80% of the time, but when it's important to you.

Think twice before you promise to do something for yourself.

It's much better to promise as much as you can get through than to promise something pleasant to hear and disappoint you.

If it's important to your partner and you promise to do it, be prepared to do it no matter what.

I wish I could find out about these things

It's okay, it's all about building new things in existing relationships.

The most important decision you'll ever make is who will you choose as your life partner, who will you choose as the parent of your child?

Of course, you also need romantic feelings.

The feeling of love is a great and beautiful and strange thing

But in addition to a romantic, loving heart, you also need informed, thoughtful thinking, because it's the most important decision you'll ever make in your life.

thank you

(applause)

When my 91-year-old mother Elia moved into our home, I thought I was going to take care of her.

but it was actually the other way around

My mother had memory problems and didn't accept her age.

mother seemed devastated

I tried to make her as comfortable as possible, but when I was painting on the easel, I would look up and see her just "there."

My mother wasn't looking at anything in particular.

I watched my mother walk slowly up the stairs, but it wasn't the mother who raised me.

Instead, what I saw was a weak, small old woman.

After a few weeks, I decided to put my brush down for a bit.

I wanted to try working with the new camera I just bought.

I was so excited to learn all the different dials and button settings, and when I set up my tripod in front of a mirror this big, I ended up blocking the only doorway to the bathroom in my house.

(Laughter) After a while, I heard someone say (imitating an Italian accent), "I want to go to the bathroom."

(Laughter) "Mom, wait five minutes, I have to do this."

15 minutes later, I heard the voice again, "I want to go to the bathroom."

"Wait another five minutes"

This is what I took

(Laughter) (Applause) And here it is.

(Laughter) After that, this is it.

(Laughter) That's when I suddenly realized

we were connected

We had something certain that we could do together.

My mother was born in a small mountain village in central Italy, where her parents owned farmland and sheep.

Her father died young of pneumonia, leaving his wife and two daughters to do hard work on the farm.

If three people can't make a living

made a very tough decision

A 13-year-old mother, who was the first child, had to leave home to marry a total stranger who was twice her age.

My mother, who was a young child, was forced to become an adult.

I gave birth to my first child when I was only 16.

A few years later, we moved to Toronto, where I live now, and my mother got a job in a textile mill and soon became a manager in a very large garment department.

It was full of migrant workers, so my mother learned the language by teaching herself from translated books.

I practiced French, Greek, Spanish, Portuguese, Danish, Polish, Russian, Romanian and Hungarian around the house.

I was blown away by her focus and determination to succeed in whatever she loved.

After the realization in the bathroom, I put my newly acquired camera skills into practice with my mother as a portrait model.

All the while, my mother talked and I was the listener.

My mother told me about her early childhood and how she felt at that time.

We were interacting with each other with mutual interest.

My mother's recent memories are fuzzy, but she remembers her youth well.

told me i would ask

I listened and became my mother's listener

I got a lot of ideas

I wrote it down and turned it into a sketch.

Demonstrate your scenario and show your mother what you're going to do.

then we tried it together

My mother posed, and I learned more about photography.

My mother loved the process of acting.

My mother felt her worth again, she felt wanted and needed.

I never felt embarrassed in front of the camera.

(Laughter) (Applause) This is what made my mother laugh so hard.

(Laughter) This image was inspired by an old German movie I saw a long time ago, about submarines, "U-Boat."

As you can see, this is more like "E.T."

(Laughter) I thought it was a complete failure, and I ignored the image because it wasn't what I had imagined.

But my mother was laughing so hard that I ended up just playing around and posting this online.

And it got an incredible amount of attention.

Now, with Alzheimer's disease, everyone experiences some level of disappointment and sadness.

This is my mother's silent cry

My mother said to me one day, "My head is full of things I need to say, but why do I forget what it is when I try to say it?"

"My head is so full of things I need to say, why do I forget what it is when I try to say it?"

(Applause) Now, as a full-time caregiver and painter, I had my own frustration.

(Laughter) But to try and erase all the hardships, we took a picture.

This was my mother's blissful place.

And I wanted my mother to be there, too.

(Laughter) (Laughter) (Laughter) My mother was worried about getting old.

I used to say, "How did you get old so quickly?"

(crowd sighs) "I'm so old."

"Really fast"

I also got my mother to be a model for my oil paintings.

This picture is called "Sewing Craftsman"

When I was a kid, I remember my mom sewing clothes for the whole family on this big, heavy sewing machine bolted to the basement floor.

Many nights I used to go downstairs with my school supplies.

I was sitting on the armchair behind my mother.

The low roar of the big motor and the repetitive sound of sewing the cloth felt good to me.

When my mother moved in, I pulled out this sewing machine and kept it in my studio.

This picture reminds me of my childhood

It's funny, 50 years ago, I used to sit behind my mother and watch her sew on a sewing machine, but now she sits behind me and I watch her sew on the very same machine.

I also gave my mother a job to keep her busy and busy.

I handed him a small camera and told him to take at least 10 shots every day of whatever he wanted.

This is the picture that my mother took

In all her life, my mother had never held a camera.

was 93 at the time

we sat together and talked about our work

(Laughter) I would try to explain why and how I do this, the meaning of the photograph, the emotion, why the photograph is important --

But my mother would just bluntly say, "Yeah," "No," "Nice," "No."

(Laughter) I stared at her face.

With or without words, my mother always had the final say.

This journey of discovery never ended with my mother.

My mother now lives in a nursing home, which is a 10 minute walk from our house.

I visit my mother every other day

My mother's dementia had progressed to the point where she could no longer feel safe in our home.

because there are many stairs

My mother doesn't even know my name anymore

(Voice hoarse) But hey, it's okay.

My mother still recognizes my face and always smiles when she sees me

(Applause) (End of applause) I'm not taking pictures of my mother anymore.

If you do something like that, it's not worthy of respect or morality.

I don't think my mother knows why I'm taking pictures.

My father, my brother, my nephew, my partner, my best friend, they all passed away suddenly.

I never got the chance to tell them how much I appreciated them and how much I loved them.

That's why I want to be close to my mother and slowly say goodbye.

(Applause) (End of applause) For me, it's about being with my mother and listening to her.

When you have to rely on someone, you want to feel like you're part of something.

You don't have to share something special, it can be something as simple as a walk.

Interact with people, create opportunities to get involved in something, and let them feel a bond.

make time meaningful

Life is about wanting to live, not waiting to die

(Applause) (End of applause) Ladies and gentlemen, can you wave and smile?

(Laughter) This is a gift for my mother.

(camera shutter sound) (applause)

When I was 13, I lost my grandfather to an asymptomatic heart attack.

What was even more shocking was that my 75-year-old grandfather was healthy and active with no abnormalities, just diabetes.

This experience was so painful that I decided to explore what I could do to combat this "silent killer."

If you read through recent research, you'll be surprised to find that an estimated nearly eight million people die each year from heart attacks.

There are many causes of myocardial infarction, but the most common is an arterial thrombosis, when the blood clot blocks blood flow and oxygen-starved heart muscle cells begin to die.

We all know the symptoms of a heart attack: chest and arm pain, shortness of breath, fatigue...

But there's another very common myocardial infarction, which is also life-threatening, but it's harder to detect because you don't feel any symptoms.

People who have asymptomatic myocardial infarctions are unaware of what's happening and don't seek treatment, meaning they are less likely to receive the care they need, even if they are in critical condition.

If you happen to be in the hospital before or after you have a heart attack, you may have to undergo time-consuming and expensive tests and treatments that are the diagnostic criteria for heart attacks today.

But even more worrisome, asymptomatic myocardial infarctions account for nearly 45 percent of all myocardial infarctions.

Patients with diabetes and related conditions have damaged nerves and cannot feel the pain that signals they might have a heart attack.

Without realizing it, or even feeling it at all, you may be suffering damage from a heart attack.

High-risk patients already have nerve damage and don't seek immediate medical attention.

They are completely oblivious to the signs of seizures.

My grandfather was also a high-risk patient.

I researched this question more and more, reading as much material as I could, meeting researchers and working in laboratories across India to understand the heart.

After three long years of patient research, I'm finally here today to share with you a solution that works.

It's a non-invasive, inexpensive device that's portable and can be worn by high-risk patients at all times.

Drastically reduces the need for blood tests, works 24/7, collects and analyzes data at set intervals

We're collecting this data for one purpose only: to detect myocardial infarction.

This is a promising solution that will help save our lives in the future.

Your heart is smarter than you think, before you go into heart failure

You repeatedly warn your body through symptoms like chest pain.

These symptoms are triggered by the loss of oxygen-rich blood flow to the heart.

But remember, nerve damage.

And because it drowns out those early signs of a heart attack, it makes you even more likely to die.

Sometimes patients don't know what the specific symptoms of the disease are.

On the other hand, the heart releases specific biomarkers, cardiac biomarkers, or proteins that act as SOS signals, that are released into the bloodstream to tell the heart that danger is imminent.

As the danger increases, the cardiac biomarker protein becomes more and more extreme.

my device only uses this data

The key is the presence of these cardiac biomarkers in the early stages of myocardial infarction, when prompt treatment is always life-saving.

my device is based solely on its existence

How the device works

Place the silicone patch around your wrist or chest

No need to stick a needle for biomarker testing. This patch can detect, isolate and track only H-FABP, a biomarker specific to myocardial infarction.

Tracking biomarker concentration data in such a system, as further research progresses, could significantly reduce the need for high-risk patient hospital visits for biomarker blood tests, because the device could be worn at all times to detect rises in biomarkers in real time.

So if the device detects that biomarker levels have crossed a critical threshold, high-risk patients can be warned that a seizure is imminent and they need to go to the hospital urgently.

Even if the device doesn't provide a complete analysis of the patient's myocardial damage, it can be of great help to the patient simply by alerting them to the fact that they are in danger and need urgent medical attention.

High-risk patients can buy time to seek treatment in order to survive.

As a result, you can avoid the expensive and invasive treatments that are required after a heart attack.

When the device was tested in high-risk patients in an observational study, clinical trials confirmed nearly 96 percent accuracy and sensitivity.

I thought about making two kinds of devices, one that could analyze biomarker values, and a simpler biomarker for rural people that would just vibrate when the biomarker crossed a critical value.

The current state of advances in heart care is centered around symptomatic care rather than preventative self-care and technology.

We're waiting for a heart attack to occur, so to speak, and then devoting extensive medical resources exclusively to symptomatic treatment.

But by then, irreparable damage has already been done.

I believe now is the time to rethink healthcare.

It is necessary to establish medical technology to take the initiative

The time for change to come is now, not in 10 years, not in five years.

I hope one day, thanks to a device like this, no one will lose their grandfather like I did.

thank you

(Thank you for applause

(Thank you for applause

Right now, with every breath we take, cities in the world's major deltas continue to sink, including New York, London, Tokyo, Shanghai, New Orleans, and my city, Bangkok.

This is the general image of climate change

this is the case in my city

It's not a big deal, just an alligator on the road.

(Laughter) This is the rapid impact of climate change, a sinking city.

This is Bangkok's urbanization, and you can see it growing in all directions, transitioning from permeable agricultural land -- land that can breathe and absorb water -- into a concrete jungle.

This is what part of the land looked like after about 30 minutes of rain.

I wish my car would turn into a boat every time it rained

There is no room for water in this land

loses its ability to absorb water

The reality of central Bangkok is that the city, where 15 million people live, work and commute, sits on a delta of muddy rivers that change their course.

Bangkok is sinking more than a centimeter a year, which is more than four times faster than the expected sea level rise.

And by 2030, it could be below sea level, and we're on the verge of it.

It's no coincidence that I'm here as a landscape architect.

As a child, I grew up in a tenement house, bordering on a busy road that was always congested.

There was a concrete parking lot in front of my house, and that was my playground.

The only creatures I could find there, and which gave me pleasure, were tiny, elusive plants trying to grow through cracks in the concrete.

My friends and I used to play a favorite game, digging through this chasm and making it bigger and bigger so that this little plant could sneak out and grow more.

And yes, landscape architecture gives me the opportunity to keep my passion for chasms -- (Laughter) -- the opportunity to bring this concrete land back to nature.

Once upon a time, the Thai people, "the people of my country," adapted to the cycle of wet and dry seasons, so they were amphibians.

(Laughter) We lived both on land and on water.

adapted to both

The flood was a happy event for us, because water makes the land fertile.

But now the flood

means disaster

In 2011, Thailand was hit by one of the most damaging and costly flood disasters in its history.

Floods turned central Thailand into a giant lake.

This is the scale of the flood, and the yellow box in the middle of the image shows the scale of the flood in Bangkok.

Water flooded in from the north and the flood spread to multiple provinces.

Millions of people, myself and my family included, were forced from the land and left homeless.

Some people had to flee the city,

Fearing the loss of their homes and property, many returned to live in flooded areas without electricity or clean water.

To me, this flood is a clear reflection of the problems of modern infrastructure, especially the idea of ​​fighting floods with concrete, which has made us very vulnerable to climate change.

But in this disaster I found my vocation

I can't just sit and wait when my city keeps sinking

The city needed me, and I had the power to solve this problem.

Six years ago I started my own project

Our team won the Chulalongkorn University 100th Anniversary Park Design Competition

This was a large and bold project to offer the city a piece of land for a public park on the centennial anniversary of Thailand's oldest university.

Having a park sounds like a very normal thing in many other cities, but it's not the case in Bangkok, which has one of the lowest public green spaces per capita of any megacity in Asia.

Our project was the first new public park in almost 30 years.

This four-and-a-half-hectare park, a large green "cleft" in the heart of Bangkok, opened only last year.

(Applause and cheers) Thank you.

(Applause) For four years, at countless conferences, we persuaded hard and never gave up, persuading that this park should not only be for beautification and recreation, but it should also help cities manage their floods, and help cities fight climate change.

Here's how it works

Bangkok is a flat city, so in order to collect every drop of rain, we resorted to the power of gravity by tilting the entire park.

Gravity forces water to flow from the highest point to the lowest point.

The park has three main elements that work as a system.

The first is a green roof

This is the largest in Thailand with a rainwater tank and a museum underneath.

During the dry season, the collected rain can be used to water parks for up to a month.

The water that runs off the roof flows down through wetlands that are lush with indigenous aquatic plants that help filter and purify water.

And at the bottom, a reservoir collects all the water.

There is a water bike in this pond

As people pedal, they help purify the water.

It means that their movement becomes part of the park's water control system.

You can enjoy the water even if it floods you

(Laughter) Centennial Park offers space for people and space for water, which is exactly what we and our cities need.

Designed for amphibious use

This park isn't meant to be flood proof.

Create a way to live with the flood

And not a single drop of rain is wasted in this park.

This park can collect and store 4,000 kiloliters of water.

(Applause) Thank you.

(Applause) For me, every project I'm given is an opportunity to create more green fissures in the concrete jungle. Green roof almost completed

Severe flooding is now a common occurrence, endangering much of the region near the Southeast Asian coastline.

Creating parks is just one solution.

Climate awareness means that no matter what profession you're in, you realize that you have a growing obligation to understand the risks to climate and to make whatever you're doing a part of your response.

Because if our cities continue the way they've always been, the same catastrophe will happen again and again

because it wakes up

Creating solutions in these sinking cities is like making the impossible possible.

And to that end, I would like to share one word that I always keep in mind: tangjai.

Translated literally, 'tang' means 'standing firm' and 'jai' means 'mind'.

“Set your mind firmly on the goal you set for yourself.”

In Thai, if you promise to do something, always remember the spirit of tangjai, and your actions will be heartfelt.

No matter how steep the road, no matter how big the chasm, you'll make your way to the goal, because that's where your heart lies.

and thailand is home

This land is my one and only home, and my heart is firmly set there.

Where are your hearts headed?

thank you

(Thank you for applause

Kop Kung Ka (thank you)

(applause and cheers)

who are we?

that's the big question

Fundamentally, we're upright, big-brained, super-intelligent monkeys. Fundamentally, we're upright, big-brained, super-intelligent monkeys.

he is one of us

we belong to the hominid family

It's a species called Homo sapiens (Human). What's important is in this world, in thinking about the future of the earth, in this world, in thinking about the future of the earth.

We are one of the 5,500 living mammals, one of the 3,500 living mammals.

Considering all the species that have ever existed, it's really tiny. Considering all the species that ever existed, it's really tiny.

We are one of at least 16 species of upright walking monkeys that existed in the last 6 to 8 million years. We are one of at least 16 species of upright walking monkeys that existed in the past 6 to 8 million years.

Today, with the exception of bonobos, humans are the only species that walks upright. Today, with the exception of bonobos, humans are the only species that walks upright.

The thing is, bonobos are very human-like and share 99 percent of their genes with us.

We share an ancestor with the few extant great apes

What matters is that we have evolved

For those of you who don't want to hear it, we evolved from a common ancestor with gorillas, chimpanzees and bonobos. We evolved from a common ancestor with gorillas, chimpanzees and bonobos.

we have a common past and future

More importantly, like us, great apes have gone through a long evolutionary journey. More importantly, like us, they have gone through a long evolutionary journey. And more importantly, just like us, great apes have gone through a long evolutionary journey.

It's been a trip that's been three generations in my family's journey.

It's like searching for fossils

A devoted young man walks very slowly across the African land A devoted young man walks very slowly through the African land looking for tiny fossilized bone shards that peek above the ground

This is looking for fossils in northern Kenya This is looking for fossils in northern Kenya

Can you see the fossils in this photo? Can you see the fossils in this photo? If you look very carefully, you can see the jaw here.

(Laughter) It takes a lot of time and effort. It takes a lot of people to build the past.

The full details have not yet been revealed

Keep records when you find fossils

Today we take advantage of GPS technology

We establish geographic information with GPS, then we take a digital photograph of the specimen, so we can put it back on the surface we found, so we can put it back on the surface we found.

All this information can be stored in GIS

When you find something very important, like the bones of human ancestors, when you find something very important, like the bones of human ancestors, you use a dentist's pick and a paintbrush and excavate very carefully and slowly.

Sediment is sifted for further examination Sediment is sieved for further examination Look for small bone fragments and wash them if found

The moment you find something is special It's rarely found The moment you find something is special It's rarely found

It's a very special moment when my mother and I are digging for traces of human ancestry.

It's really special to spend time with your mother It's really special to spend time with your mother

(Laughter) I don't think many people will experience this.

Let's look at Africa two million years ago.

If you look at the continent of Africa, it really does look like a human skull If you look at the continent of Africa, it really looks like a human skull.

It is a rift valley in eastern Africa.

From the Gulf of Aden to Lake Malawi From the Gulf of Aden to Lake Malawi

The rift valley is a low-lying area with rivers flowing into it.

The rift valley is a low-lying area where rivers flow into the basin, where the bones of the animals that lived here are preserved along with the sediments.

If you want to be a fossil, die where your bones are easy to bury. If you want to be a fossil, die where your bones are easy to bury.

After that, entrust it to the movement of the strata and pray for the bones to rise to the surface.

All you have to do is wait, isn't it easy? Some of us will find you fossilized.

(Laughter) The knowledge we have about our ancestors today is amazingly rich given how difficult it is to collect. The knowledge we have about our ancestors today is amazingly rich given how difficult it is to collect.

It's only been 50 years since I started putting together a narrative of the time and evolution I spent collecting samples.

Let's go to Lake Turkana It's a lake in the northernmost basin of Kenya Let's go to Lake Turkana It's a lake in the northernmost basin of Kenya

There is a large river that flows into the lake from the north The river carries fossils and sediments from former animals The river carries fossils and sediments from former animals

Fossil sites are all over the lake, and the area is about 50,000 square kilometers.

Vast land to excavate

Two million years ago, in the area around Lake Turkana, one of the ancestors of humans, Homo erectus, lived.

To the north you can see the main fossil sites that we excavated.To the north you can see the main fossil sites that we excavated. Two million years ago, Homo erectus in the upper right lived with three other human ancestors. Two million years ago, Homo erectus in the upper right lived with three other human ancestors.

It's a Homo erectus skull, I got it off the shelf over there.

(Laughter) It's rare to have only one species on the planet.

Going back in time, it was common for multiple species to coexist at the same time in the genus Homo, our ancestor.

Where did it come from?

We still haven't found the answer. The important thing is that all species have diversity, and our ancestors were no exception.The important thing is that all species have diversity, and our ancestors were no exception.

This is a reconstruction of what it looked like at that time from fossils found in Lake Turkana This is a reconstruction of what it looked like at that time from fossils found at Lake Turkana

I was lucky to grow up in Kenya.My parents took me to Lake Turkana for human remains.My parents took me to Lake Turkana for human remains.

Growing up, we were excavating together, like this long-nosed crocodile fossil.

We found giant turtles, elephants, etc.

This picture was taken when I was 12 years old, and there was a very groundbreaking excavation going on in the West Bank, where the full skeleton of Homo erectus was discovered.

I felt a kinship with this Homo erectus, because he was the same age as I was when he died.

He must have been tall and dark-skinned.

The brothers must have run long distances and sweated profusely in pursuit of their prey.

I was able to master the stone as a tool

The one I'm holding now actually had a problem with its back, I think it was injured when I was a kid.

I think I had scoliosis and was cared for by my family and women.

Unfortunately I got stuck in the swamp Unfortunately I got stuck in the swamp Unfortunately I got stuck in the swamp

That's why the bones were so quickly buried and so well preserved, so they were so quickly buried and so well preserved.

So, 1.6 million years later, a very famous fossil hunter, Kimeyu Kamoya, was walking along the surface of a mountain when he found a tiny fragment of a skull, which was lost among the pebbles, but turned out to be a human fossil.

It corresponds to this part of the top of the head

Excavations soon began, and little by little, small skull fragments were unearthed in the sediment. Little by little, small skull fragments were unearthed in the sediment.

Interestingly enough, the skull is very close to the roots of the tree, and quite recently, as the tree grew, the roots were entwined around it, sucking up the water that had accumulated in the skull, so the bones didn't run off the slope, but instead stayed together.

We found limbs, finger bones, pelvis, spine, ribs and collarbones. We also found limbs, finger bones, pelvis, spine, ribs and collarbones.

it was really groundbreaking

The skeleton is very similar to ours, almost human.

Shortly after this, the species left Africa for the north. Shortly after this, the species left Africa for the north. So Homo erectus fossils were found in parts of Georgia, China, and Indonesia. So Homo erectus fossils were found in parts of Georgia, China, and Indonesia.

Homo erectus was the first human ancestor to leave Africa and spread around the world.

A breakthrough fossil found in Dmanisi, Republic of Georgia A breakthrough fossil found in Dmanisi, Republic of Georgia

Recently, a similar discovery was made on the island of Flores, Indonesia Recently, a similar discovery was made on the island of Flores, Indonesia This ancestor became dwarfed while being isolated from other ancestors and was only about 1 meter tall This ancestor was isolated from other ancestors and became dwarfed and was only about 1 meter tall

He lived just 18,000 years ago, which is truly amazing.

We're not good at thinking in terms of time, so let's put it in terms of generations. We're not good at thinking in terms of time.

we evolved from an african family

Evolved into humans 200,000 years ago

We left Africa only 70,000 years ago.

And up to 30,000 years ago, at least three species of A. erectus coexisted.

So that brings us to the question of who are we now?

We are undoubtedly a wasteful, warlike species that pollutes the environment, although we may have some good sides.

(Laughter) Most of them aren't particularly fun to watch.

They have much larger brains than their monkey ancestors.

Was this an evolutionarily good fit, or a factor in the shortest-lived species in history? Was this an evolutionary good fit, or a factor in the shortest-lived species in history?

What makes a human human?

i think it's a collection of intelligence

Our ability to write, our language, our emotions, etc.

From very primitive beginnings with primitive stone tools, we've become very versatile, and our tools have advanced like never before.

And we can talk to each other anywhere in the world, and we can talk to each other anywhere in the world.

You can report the situation from the excavation site in northern Kenya You can also report the situation from the excavation site in northern Kenya

As Al Gore clearly points out, the population of the planet has grown by leaps and bounds The population of the planet has grown by leaps and bounds.

Fossils tell us that our ancestors lived, on average, one million years per species. Fossils tell us that our ancestors lived, on average, one million years per species.

We're only 200,000 years old as a species, and yet we've reached 6.5 billion people.

The population increased by 80 million people in the last year.

It's a staggering number

Let's go back to Al Gore's book.

What happened is that our technology has loosened the checks and balances on population growth.

We have to control the population, one of the most important challenges in the world today. We have to control the population, one of the most important challenges in the world today.

We need population control because it's difficult for us to continue as a species any longer We need population control because it's difficult for us to continue to exist as a species.

The father aptly said, "We are the only animals that make consciously consciously wrong choices when it comes to the survival of our species."

Do we have a future?

The point is that we all evolved from Africa.

all of them originate from africa

We have a common past, we have a common future

We are nothing but dots in the process of evolution

We are in danger. But we also have the tools and the technology to tell the work to be done. But we also have the tools and the technology to tell the work to be done. But we also have the tools and the technology to tell the work to be done.

If you feel like it, you can tell everyone in the world

Will you really do that, or will you let it happen?

Let's end on a positive note, because in the end, from an evolutionary point of view, I think this is a very good thing.

Thank you very much

(applause)

I want to talk to you today about collecting stories in a slightly different way.

this is a picture of me when i was a kid

There's something wrong with the tight-fitting balloon-patterned pajama shorts

Around this time, I mostly collected fictional stories.

This is a picture of me holding one of my first watercolor paintings.

Recently, I've been collecting more stories from the real world, which is true stories.

In particular, I collect my own stories, stories from the Internet, and a new area I've been working on lately: stories of people's lives.

Today I will tell you about these stories

Let me start by telling you my story, these two are my sketchbooks.

I have a lot of these sketchbooks, and I've kept them for about eight or nine years.

They accompany me wherever I go, and they record the various events that I have experienced: watercolor paintings, sketches of landscapes, withered flowers, dead insects, ticket stubs, rusty coins, business cards and texts.

And when you look inside, you get a glimpse of events, experiences, snippets of encounters.

Over the years of keeping my sketchbook, I became increasingly interested in not only my personal work, but also the work of others.

Started collecting materials

This photo was picked up in a drain in New York City 10 years ago.

On the front is a tattered black-and-white photograph of a woman's face, and on the back is the message: To Judy, the girl who voiced Bill Bailey.

Enjoy whatever you do."

Without knowing the whole story like this

I love getting a glimpse into other people's fragmented lives and expanding my imagination.

This idea of ​​fragmented glimpses is repeated in many of the works I'll introduce later.

When I was studying computer science at Princeton University, I realized that these personal artifacts were suddenly available not only on the side of the road, but also on the Internet.

All at once, people began to leave stories that told their personal lives in a multitude of digital footprints online.

Blog posts, photos, thoughts, feelings and opinions are expressed online and leave a trail.

So I started writing a program to analyze those huge numbers of online footprints.

One of them is a project I started about a year and a half ago.

We Feel Fine

This project scans the world's newly posted blog entries every few minutes, looking for phrases like "I feel" and "I am feeling." And when it finds those phrases, it extracts the full text containing them and attempts to identify the author's demographic data.

So things like people's gender, age, where they are, and what the weather was like when they wrote.

We collect about 20,000 sentences a day, and in the one and a half years since we started working, we've collected more than 15 million emotions.

they are displayed like this

These dots represent several emotions that have been expressed in the English-speaking world over the last few hours, and each dot is the equivalent of one blogger's sentence.

The color of each dot corresponds to the type of emotion, so bright ones are happy and dark ones are sad.

And the diameter of the dot represents the length of the sentence containing the phrase.

So small dots represent short sentences, and large dots represent long sentences.

"I don't have any problems with my body, why am I still uncomfortable with my boyfriend?" from a 22-year-old living in Japan.

"I got this from a local deal and I don't feel like wasting my time on wiring and crap."

In addition, some sentiments may have photos included in blog posts.

In that case, a photo composition like this is automatically created, combining the sentence with the photo.

Open the photo and you can read the text inside.

"I feel good"

"I was sick and gained about 100,000 pounds, but it was worth it."

"It's wonderful to have nature so protected that you can feel it on your skin. Butterflies, man-made forests, limestone caves, and even giant pythons."

The next one is called Mobs

You can get a little more statistical information

It represents the most prevalent emotion in the world today, "better" being overwhelming, followed by "bad," "good," "sinful," and so on.

Weather expresses emotions in the form of the weather to match.

You can also stop raindrops and see the emotions in them.

Finally, Location shows the emotions at their origin and you can see their distribution on the world map.

Here are some of my favorite Montages from We Feel Fine

These are the automatically composed images

"I feel like I'm parked diagonally in a parallel universe."

(Laughter) "I've kissed a lot of girls in my life and it didn't feel good. It was filthy and I felt guilty. Kissing Lucas was beautiful and sacred."

"I can feel my cancer growing"

"I feel pretty"

"I feel thinner, but I'm not."

"I'm 23 and recovering from meth and heroin addiction. I'm so blessed to be still alive.

"I can't wait to see the race for the first time at Daytona next month. It's super fast."

(Laughs) "I feel smart"

"My new wig makes me feel sexy."

In this way, We Feel Fine collects personal, very small stories.

Sometimes there are short stories of about two or three characters.

It's like pushing the boundaries of what can be called a story.

Lately, I've been wanting to get more deeply involved in a single story.

Instead of working on the Internet, I started working with real world work, and I used the Internet only as a final exhibition medium.

These are projects that have not yet been published

The first project is called The Whale Hunt

Last May, I spent nine days with an Inupiat Eskimo family in Barrow, Alaska, the northernmost state in the United States, to document the annual spring whaling.

This is a whaling camp, and we camped about six miles from the coast on pack ice that was about five and a half feet thick.

The water you see there is an open channel through which bowhead whales migrate north every spring.

The Eskimos basically camped on the edge of the ice, waited for the whale to get close enough, and when it got close enough, they threw a harpoon to haul the whale onto the ice and cut it up.

This will be a long term food source for these people.

I lived there with these people in a whaling camp, and I photographed the whole experience, starting when I took a taxi to Newark Airport in New York City, and seven and a half days later, I finished dismantling my second whale.

The entire experience was filmed every 5 minutes

In other words, the shutter was released every 5 minutes.

Wear the camera around your neck while you're awake

I have a tripod and a timer when I'm sleeping

In those adrenaline-pumping moments, for example, in some kind of heart-pounding moment, I sped up the frequency of taking pictures, up to about 37 in five minutes.

This allowed me to take a photo and express the speeding and slowing of my heartbeat, and I was able to create something that roughly matched my own heartbeat variability.

that's the first concept

The second concept is to use this experience to think about the basic elements of storytelling.

What are the elements in the story?

A story has characters A story has a concept

A story takes place in a specific place and has a background.

It has color How does it look?

There is also a time series When did you wake up and when?

In the case of this whaling story, the level of excitement is also a factor.

When a story is presented in an existing medium, whether it's a novel, radio, photograph, or lecture like this, it's common to see the story through the eyes of some kind of all-knowing, all-knowing outsider, like a narrator or a camera angle.

we are used to it

But everyday life is completely different.

In reality, things are much more complex and different, with multiple overlapping stories intersecting and touching each other.

So I thought it would be interesting to create a framework to display such a story.In the case of The Whale Hunt, it includes the concepts of wildlife, tools, and blood.The location is mainly red in the Arctic Ocean.It happens around 10 o'clock on May 3rd, and the level of excitement is high.How do we extract the story of Simon and Crawford?

How can we extract a plot like this from the whole story?

I have built a web interface that does this function in The Whale Hunt viewing

This is a total of 3214 photos taken over there.

This is my studio in Brooklyn, and this is the second whale butchering scene after seven days in the Arctic Ocean.

The colors you see tell some stories.

This red strip is the color of the wallpaper in my basement apartment.

And as it moves into the Arctic Ocean, the color changes to white.

The red here represents that the whale has been butchered.

chronologically showing the exciting events throughout the story

These are grouped chronologically

The Wheel is a more playful, homogenous feature, and all these photos are organized chronologically.

Click on the picture you like and start the story from there.

This is me sleeping on the plane to Alaska

This is the book "Moby Dick"

this is the meal we ate

This is the Patkotak family's living room in Barrow, and this is a box of wine that's been a treat.

Cigarette break outside I don't smoke

It's a very exciting series of photos of me sleeping.

A whaling camp in the Arctic Ocean

The graph I'm clicking on below is like an electrocardiogram, and it represents those moments when your heart is pumping with adrenaline rushing.

This is the ice that started to freeze, the snow fence they built.

Now let me show you the ability to pull out substories

Here are the characters, including all the people in The Whale Hunt and the two whales that were killed.

You can also do things like this, for example, you could include the concept of "blood, whales, tools," and extract "Ronnie's Story," where the location is "Arctic Camp" in the Arctic Ocean, and the heartbeat level is "fast."

This way, the whole story is reduced to just 29 photos that fit the specification, and from there you can start looking at the story.

Here Ronnie dismantles a whale

These whales are about 40 feet long and weigh more than 40 tons, and they feed the community most of the year.

Jump a little further, and this is Ronnie on top of the whale carcass.

They don't use chainsaws or anything like that, it's all bladed, and they dismantle it in a very efficient way.

This is where people with ropes open the corpse.

This is whale skin, or whale fat, and it's lined up for distribution.

This is a whale's whiskers.

The next thing I'm going to talk to you about is something very new, not even a project yet.

I flew here directly from Singapore yesterday, after spending two weeks in Bhutan, a tiny Himalayan kingdom between Tibet and India.

I interviewed many local people there for a project about happiness.

There's something very strange about Bhutan, where the government makes important policy decisions based on the concept of Gross National Happiness instead of Gross National Product, and has been doing so since the '70s.

This leads to an entirely different sense of value.

It's an amazing non-materialistic culture, where people don't have much, but they're incredibly happy.

So I went around asking people about this.

I asked people a series of questions, took some pictures, and interviewed them with audio recordings.

First, we asked them to rate their happiness on a scale of 1 to 10, which is inherently strange.

Inflate balloons for the number of their answers and give them to hold.

Some people are really happy with 10 balloons and some people are very sad with only one balloon.

But even holding one balloon makes me look happy, doesn't it?

(Laughter) And then I'll ask you some questions, like the happiest day of your life or what makes you happy.

And finally, ask them to make a wish

After making a wish, write their wish on one of the balloons and take a picture with the balloon.

I'd like to give you a brief introduction to some of the interviews.

this is an 11 year old student

I was playing keidro with my friends, and we were all running around town with toy guns.

his wish is to become a policeman

He seems ready, this is his hand

I took pictures of everyone's hands, and you can tell a lot about a person just by looking at their hands.

A 17-year-old student, she wishes to be born a boy.

Women seem to think that boys would have been easier in Bhutan because things can be difficult.

I am a 28-year-old mobile phone store owner.

Given the reality of Paro, the very existence of mobile phone stores is surprising.

his wish is to help the poor

This is a 53-year-old farmer who is sorting out the wheat husks and behind her is a pile of wheat that took a week to make.

She wants to continue farming until she dies.

I think I've come to understand that stories can be conveyed through hands.

He wore a silver ring with the word "love" carved into it, and seemed to have picked it up somewhere along the way.

16 year old quarry worker

He was hammering stone in the hot sun, but he just wanted to live his life as a farmer.

A 21-year-old monk. He was very happy.

He seems to want to live a long life in the monastery.

I was told that the mole on the left side of my face had an amazing amount of hair and was very auspicious.

I was too shy to make a funny face.

I am a 16 year old student

She seems to want to be an independent woman

When I asked her back, she said she meant she didn't want to get married.In her opinion, if you marry as a woman in Bhutan, you won't have the chance to live an independent life, so you're not interested in marriage.

I am a 24 year old truck driver.

I often see these terrifyingly huge Indian trucks whizzing by on two-way, one-lane roads, and right next to the road is a 3,000-foot cliff, and he was the driver of one of those trucks.

His wish was to live a normal and comfortable life.

I'm a 24-year-old street sweeper, and I called her during her lunch break.

To keep warm by the side of the road, she made a small fire.

Her wish is to marry someone who owns a car.

she wanted a change in her life

I lived in a small workers' camp right next to the road and hoped things would change.

81 year old migrant farmer

I saw him on the side of the road, but he doesn't actually have a house.

It's like going from farm to farm every day looking for work and sleeping on the farm where you find a job.

His wish is to follow me so that he can live somewhere

He had this amazing knife, and when I asked him to make a funny face, he took it out and brandished it.

no offense at all

I'm 10 years old

He wants to learn how to read at school, but his parents don't have the money to send him to school.

I kept dipping and licking my fingers in orange sugary candy, and my hands were sticky with saliva and my palms were an orange paste.

(Laughter) I'm a 37-year-old road worker.

One of the thorny policy challenges in Bhutan is to use cheap labor from India to build roads, and then send them back home once the roads are complete.

Then one morning, they were mixing asphalt in groups on the edge of the highway.

His wish is to earn money and open a shop.

A 75-year-old farmer, she used to sell oranges by the side of the road.

When I asked her what she wanted, she said, "I live or die, but I don't have any wishes."

She must have been chewing betel nut for many years, and her teeth were red.

Finally, this girl is the 26-year-old nun I spoke to.

Her wish is a pilgrimage to Tibet

When asked how long she will live in the nunnery, she said, "Of course not forever, but I will stay here until I'm 30, and then I'll start a recluse."

"Do you mean living in a cave?" "Yes, living in a cave."

"Wow, how long are you going to live in a cave?"

"Well, actually, I'd like to live in a cave for the rest of my life."

To my surprise, she spoke fluent English and had a sense of humor and laughter that you could have just stumbled across on the street in New York or her hometown of Vermont.

But she's been living in a nunnery for the last seven years.

I asked her a little more about the cave and what awaits her if she goes there.

If you reach enlightenment in just one year, what will you do for the next 35 years?

and she said

Woman: I think I'll live in a cave until I'm 35, after that I'll probably die.

Jonathan: Maybe die? Woman: yes

Jonathan: Ten more years? Woman: Yeah Jonathan: Ten years, that's a long time.

Woman: Yeah, not a year, but ten years, and within a year, maybe I'll be dead.

Jonathan: Is that what you want?

Woman: Yeah 'cause it's not forever

Jonathan: That's true, but yeah yeah, would you rather live in a cave for 40 years or just one year?

Woman: Maybe I want to live until I'm 40 or 50.

Jonathan: 40-50 years old?

Woman: Yeah then I'm going to heaven

Jonathan: I hope it goes well

Woman: Thank you

Jonathan: I hope it goes as you wish.

thank you so much again

Woman: You're welcome

So she said she hopes to die around 40, and that's enough life.

Last but not least, I took the 117 wish-filled balloons from the 117 interviews and took them to one of Bhutan's most famous sacred sites called Dhoshla, which sits on a mountain pass 10,300 feet above sea level.

There are many prayer flags that people have spread over the years.

We re-inflated the balloon, tied it on a string and hung it with the prayer machine.

In fact, even now, balloons are still blowing in the wind over there.

If you have any plans to travel to Bhutan in the near future, you can go see the balloons.

I chanted the nembutsu so that all these wishes would come true.

There are also some familiar balloons

"Earn money and open a shop" This is the wish of an Indian road worker.

thank you

(applause)

"He who chases two rabbits catches neither."

It's a good adage about multitasking, isn't it? It's said to have been said by the Roman poet Publilius Silus.

What I want to know is is it really true

E-mails over dinner, text messages while driving, live tweets of TED talks, they're clearly what they say.

But when it comes to important activities, I would argue that doing two, three, or four things at the same time is what we should be aiming for.

Just look at Albert Einstein

In 1905 he published four outstanding scientific papers.

One is about Brownian motion, which provides empirical evidence for the existence of atoms, and whose mathematical theory is the basis for much of financial economics.

The other is the special theory of relativity.

And then there's the photoelectric effect, which is a cool thing about how solar power works.

This is why he won the Nobel Prize

And in my fourth paper, I put out the equation that you probably know: E = mc^2.

Does this mean that we shouldn't be doing multiple things at the same time?

Now, of course, working on Brownian motion, special relativity, and the photoelectric effect at the same time, and watching Westworld and snapchatting, are two different things, even though they're multitasking.

Not at all

Einstein is -- well, because he's Einstein, he's unique.

The pattern of behavior that Einstein showed is by no means unusual.

It's a common occurrence among highly creative people, whether they're artists or scientists, and we call it "slow-motion multitasking."

Intuitively, slow motion and multitasking seem like contradictions.

What I'm imagining here is running multiple projects at the same time, and changing what I'm working on depending on my mood and situation.

Intuitively, I think it's because multitasking is so often done in a pinch.

I'm in a rush to try to do everything together.

But if you can multitask slowly, you'll find that it's wonderfully effective.

Sixty years ago, a young psychologist, Vanice Aduson, began a long-term study of 40 eminent scientists, looking at their personalities and work habits.

After Einstein's death, four of his subjects were Nobel laureates, including Linus Pauling and Richard Feynman.

This research continued for decades, even after Professor Aduson's death.

One of the things that this study reveals is why some scientists have a lifetime of significant achievements, and why some scientists have a lifetime of significant achievements.

what are they different?

Is it a character, a skill, or a daily habit? Is it a character, a skill, or a daily habit?

What they had in common was clear, which might surprise some of you.

Leading scientists kept changing the themes they worked on.

If you look at the first 100 published research papers, you'll see that the themes change frequently.

How many times do you think

3 times?

5 times?

No, on average, scientists who maintain such high levels of creativity change topics 43 times in their first 100 research papers.

Creativity seems to be multitasking in slow motion Creativity seems to be multitasking in slow motion

Aduson's research shows that we need to reclaim multitasking and rediscover its hidden power.

She wasn't the only one to notice this.

Different researchers have used different methods to study different types of highly creative people, and they've found that these people tend to have multiple projects going on at the same time, and that they tend to have multiple projects going on at the same time, and they tend to take their hobbies more seriously than the average person.

Slow-motion multitasking is common among creative people.

But why?

There are 3 possible reasons

The first is the simplest

New creations often happen when you move an idea from its original context to another.

It's easier to think outside the box when you're traversing different fields.

As an example, let's consider a scene that gave rise to a creative epiphany.

Archimedes was working on a difficult problem

One day, he had an epiphany and used changes in water levels to solve the puzzle.

I don't know if it's true, but he got the idea when he was in the bath, submerged, watching the water rise and fall.

Solving problems while taking a bath is nothing but multitasking Solving problems while taking a bath is nothing but multitasking

The second reason multitasking is good is that when you become good at one thing, you often become good at other things.

Every athlete says cross-training works.

You can also cross-train your head

A few years ago, a research group sent 18 randomly selected medical students to a course at the Philadelphia Museum of Art to learn how to critique and analyze works of visual art.

At the end of the course, we compared these students to a control group of other medical students.

The students who took the art course were found to be much better at things like diagnosing eye diseases through photo analysis.

a better ophthalmologist

So if you want to get better at what you're doing, maybe you should take the time to do something else, even if those two things seem as far apart as ophthalmology and art history.

As another example, let me introduce you to someone who is closer to you than Einstein.

I'm Michael Crichton, author of Jurassic Park and ER.

Originally trained as a doctor in the 1970s, he wrote several novels and even directed the first Westworld film.

And what's less well known is that he's also a nonfiction writer, writing about art, medicine and programming.

In 1995, all these efforts came to fruition when his book became a worldwide commercial success.

His television drama was a commercial success worldwide.

And his films were also huge commercial successes worldwide.

And in 1996 he did the same feat again.

The third reason slow-motion multitasking leads to problem solving The third reason slow-motion multitasking leads to problem solving

because it helps me when I'm stuck

Problem solving is not instant

Sometimes I'm doing a crossword puzzle and I don't know the answer because the wrong answer is stuck in my head.

Then it's easy, let's do something else.

By changing the subject, changing the situation, you forget the wrong answer, and the right answer pops into your head.

On the slower timescales that concern me, the impasse is much more acute.

Denied a loan

Cell culture failed, rockets he worked on crashed one after another

No one wants to publish a fantasy novel about a wizarding school that I wrote.

Or maybe we can't find a solution to the problem we're working on.

Stumbles like this can lead to blockages, stress, and depression.

But if you have other interesting and challenging projects, one setback is just an opportunity to do something else.

Everyone stumbles, even Albert Einstein.

Ten years after that miraculous year of invention I mentioned earlier, Einstein was putting together his crowning achievement, general relativity.

but I'm exhausted

turn to another easy problem

And he theoretically discovered stimulated emission of electromagnetic waves (ser).

It's the "ser" part of laser

So he laid the theoretical foundation for laser light, but even as he did so, he returned to general relativity with a renewed sense of urgency.

And then you realize what that theory means: the universe is not static.

that it is inflated

This idea was so amazing that even Einstein himself couldn't believe it for a long time.

So when things go wrong, if you start doing laser beam research like Einstein did, you'll do just fine.

(Laughter) This is what slow-motion multitasking looks like.

I'm not saying this will make you an Einstein.

Of course, I'm not saying you can be Michael Crichton.

It's a powerful way to advance your creative endeavors.

but there is also a problem

How to avoid getting overwhelmed with too many projects?

How do you remember all the ideas you come up with?

There's a simple, practical solution: learn from the great American choreographer Twyla Tharp.

In recent decades, she's blurred genre boundaries, weaved disciplines, won numerous awards, and danced to everything from Philip Glass to Billy Joel.

I have written three books

She's definitely slow-motion multitasking.

She said, "You have to be everything

why exclude?

You have to be everything."

The way Tharp does it to avoid being overwhelmed by too many projects The way Tharp does to not get overwhelmed by too many projects is simple.

I get a big cardboard box for each project and write the project name on the side of the box.

And in the box, I put DVDs, books, magazine clippings, theater programs, objects, anything that inspires me creatively.

And she says, "I have that box so I don't have to worry about forgetting it.

I'm really worried that creative people will come up with great ideas and forget them if they don't write them down and put them in a safe place.

i don't worry about that

because i know where it is

It's all in the box."

This way, you can manage a lot of ideas, whether it's a physical box or a digital box.

So I would like to encourage all of you to learn the art of slow-motion multitasking.

Not because I'm in a hurry, but because I don't have to be in a hurry

Let me give you one last example, my favorite example.

it's charles darwin

His slow multitasking is so amazing that it takes a diagram to explain it all.

We know what Darwin was doing in those moments because creativity researchers Howard Gruber and Sarah Davis analyzed his diaries and notebooks.

When he left school at 18, his first two interests were zoology and geology.

And soon he became a shipboard naturalist on the survey ship Beagle.

The ship ended up taking five years to navigate the oceans south of the planet, stopping at the Galapagos Islands and sailing through the Indian Ocean.

During the voyage of the Beagle, he began studying coral reefs.

There was a wonderful synergy between his interests of zoology and geology, and a wonderful synergy between his interests of zoology and geology.

But when he returned from the voyage, his interests expanded further into psychology and botany, and for the rest of his life, he bounced back and forth between these various fields.

I didn't throw a single thing away

In 1837 he started two very interesting projects.

one is an earthworm

The other was a small notebook entitled "Species Transmutation."

And Darwin began to study economics, my specialty.

he read economist thomas malthus

get inspired

I had an epiphany that species were born and slowly evolved through a process of "survival of the fittest."

With that in mind, he writes it all down, and that notebook has all the important elements of the theory of evolution written down.

Then another project will be born

son William was born

We have natural experiment materials right there to see how a human child develops.

Soon Darwin will start taking notes.

Of course, he's still working on evolutionary studies at the same time he's working on human child development.

But during this time he realized that his understanding of taxonomy was inadequate.

Begin taxonomy research

Eight years later he was the world authority on barnacles Eight years later he was the world authority on barnacles.

And then comes "natural selection"

It's a book I wrote all my life and never finished.

"The Origin of Species" was published 20 years after Darwin set out on all the basics.

He later wrote a controversial book, The Origin of Man,

And I'm going to write a book about the development of the human child.

It was inspired by watching my son William crawl on the floor in front of me.

William was 37 when the book was published.

All this time, Darwin continued to study earthworms.

He filled the billiard room with earthworms in glass-covered containers.

He shined a light on the worm and watched its reaction.

I held a burnt poker near a worm to see if it would run away.

And then I chewed a cigarette -- (blows) and breathed on the worms to see if they had a sense of smell.

I even played the bassoon to the worms.

I wonder what this great man was doing, tired and stressed, and worried about the response to "The Origin of Man."

We might look at Facebook or turn on the TV.

Darwin must have relaxed by going to the billiard room and studying earthworms diligently.

So it's no surprise that one of his greatest accomplishments is "Worms and Soil."

(Laughter) He spent 44 years on that book.

we are no longer living in the 19th century

You can't spend 44 years on a creative or scientific project.

But there are things we can learn from the great slow-motion multitaskers.

From Einstein and Darwin to Michael Crichton and Twyla Tharp

The modern world seems to give us one choice.

Do you live your life flipping between browser windows, or do you live like a hermit, drop everything else and focus on one thing?

But this is a false dilemma

We can use multitasking to unleash our innate creativity.

just take it slow

So-

Make a list of projects you want to do

put your phone down

Prepare some cardboard boxes

let's get started

thank you

(applause)

I tend to assume the worst, but sometimes, unexpectedly, this habit strikes me.

For example, you suddenly feel a pain in your body that you've never felt before, for no apparent reason, and suddenly you think your back pain is heart disease, or your calf pain is deep vein thrombosis.

But I've never been declared deadly, incurable, yet.

The body sometimes aches for no reason

But not everyone is as lucky as I am.

More than 50 million people die each year worldwide

Especially in a high-income economy like this, the majority of deaths are caused by slowly progressing chronic diseases: heart disease, chronic lung disease, cancer, Alzheimer's, diabetes, and more.

Humans have made great strides in diagnosing and treating many of these diseases.

But we're now at a point where health care can no longer advance just by inventing new treatments.

This becomes clear when we look at what many of these diseases have in common: the chances of a treatment being successful are highly dependent on when it is initiated.

But usually diseases are only discovered after symptoms appear.

The problem is that many diseases go undiagnosed for a long time because they can be asymptomatic.

That's why we need new diagnostics that detect disease early, long before symptoms appear.We need new diagnostics that detect disease early.

In medicine, this is called "screening."

Screening, as defined by the World Health Organization, is "the presumption of presumptive or uncertain disease in apparently healthy individuals using diagnostic techniques that are quick and easy to perform."

That's a long definition, and I'll say it again: presuming a disease that you may or may not still have, in a seemingly healthy person, using diagnostic techniques that can be done quickly and easily."

Notice the words "quick" and "easily," because many of the existing screening methods are the exact opposite of this.

If you've had an endoscopy as part of your colon cancer screening, you know what I mean.

Of course, you can screen with various medical tools.

From diagnostic imaging technologies such as X-rays and MRIs to diagnostic imaging technologies such as X-rays and MRIs to blood and tissue analysis

Everyone has received it at least once.

But there's actually a medium that's been overlooked until now. It's a substance that's easily available, doesn't deplete with use, and has great potential for medical analysis.

is our breath

Human breath is primarily composed of five elements: nitrogen, oxygen, carbon dioxide, water and argon.

There are hundreds of other elements, little by little.

These are called "volatile organic compounds," and we emit hundreds to thousands of them every time we breathe.

The analysis of volatile organic compounds in exhaled breath is called "breath analysis"

In fact, most of you have probably already experienced breath analysis.

For example, you're driving home late at night, and suddenly a friendly police officer politely but firmly asks you to stop and tells you to blow on a device like this.

It's a breath alcohol detector, and it's used to measure the level of ethanol in your breath to determine if you should drive in that condition.

I think I was driving very safely, but let's check.

(beep) "0.0" means nothing to worry about.

(Laughter) What if a device like this could not only measure alcohol levels in your breath, but also diagnose some of the diseases I mentioned earlier, and many more.

The concept of correlating the odor of human breath with the condition of a disease actually goes back to ancient Greece.

But only recently, with the rise of breath analysis research, what used to be a dream is becoming a reality.

The list above

There's solid scientific evidence that most of the diseases here can be diagnosed with breath analysis.

How does that work?

Most importantly, it's a sensor device that detects volatile organic compounds in the breath.

Simply put, when the sensor detects your breath, it outputs a complex signature representing the volatile organic compounds in exhaled air.

This signature contains information that is unique to each person, and describes the metabolism, the microbiome, the biochemical processes that occur in the body.

If you're sick, your tissues change, and the composition of your breath changes.

Now all that's left is to look for correlations between specific signature substances and disease.

This technology has some definite advantages.

First, the sensors can be miniaturized, so they can be incorporated into small devices, such as breath alcohol detectors.

Now you can do the test in a variety of locations. You can do it at home, so you don't have to go to the hospital for every test. You don't have to go to the hospital for every test.

Second, breath analysis is non-invasive, because it's as simple as blowing into an alcohol breathalyzer.

This simplicity and ease of use reduces the burden on patients and is the reason why this technology is so widely used.

Third, the technology is very flexible, and the same device can be used to detect different diseases.

Breath analysis can also screen for multiple diseases at the same time

Today, each disease diagnosis is screened with its own medical diagnostic tool.

You'll only find what you're looking for

Breath analysis offers something that many traditional screening tests lack.

And importantly, all of these capabilities will eventually create an attractive low-cost platform for diagnostic analytics.

Conversely, existing medical technologies often result in high diagnostic costs.

So in order to keep costs down, the number of tests must be limited, so that tests will be performed only on a very limited number of people, say, high-risk people, and the number of tests per person must be kept to a minimum.

But wouldn't it really be beneficial if the tests were done more frequently in a larger population over a longer period of time?

This becomes very valuable information called "longitudinal data."

Longitudinal data are datasets that follow the same patient for months or years.

Today, decisions in medical practice are based on limited data sets, using only a fraction of the patient's history.

In that case, we compare the patient's health to the average health of the sample population to find anomalies.

Longitudinal data, on the other hand, will give us a new dimension in detecting abnormalities based on the patient's own medical history.

This opens the door to personalized treatment.

Isn't that amazing?

I'm sure you're asking yourself this question: "If the technology is really that great, why isn't it being used now?"

The only answer here is that things are not that simple.

For example, there are also technical challenges

We need highly accurate sensors that detect volatile organic compounds with good reproducibility

Another technical challenge is how to reliably sample human breath in a way that doesn't affect the analytical results.

We also need a lot of data

Breath analysis must be validated in clinical trials, and that requires the collection of a sufficient amount of data to measure an individual's condition against a baseline.

For breath analysis to be usable, a sufficiently large data set needs to be collected and made widely available.

If breath analysis does what it promises, this technology could transform our healthcare system from a reactive treatment that begins in response to the symptoms of disease to a proactive one that detects, diagnoses and treats disease early, before symptoms appear.

Finally, let's get back to the basics

What is disease?

Let's say breath analysis can be commercialized, as I say, and early diagnosis becomes routine.

The remaining challenge is that any diagnostic technology faces, because often for many diseases it's impossible to predict with enough accuracy whether the disease will be symptomatic or life threatening to the patient.

This is called "overdiagnosis," and it creates a dilemma.

Even if you find a disease, you can choose not to treat it, because there's a certain probability that it's harmless.

But how much does it hurt just to know that you have a potentially deadly disease?

Don't you regret that the disease was discovered in the first place?

The second option is to seek early treatment with the hope of a full recovery.

But treatments often have side effects.

More precisely, overdiagnosis is more problematic than overtreatment.

The rising rate of routine screening raises the question: what should we call diseases that are justifiable to treat, and what should we call abnormalities that we don't need to worry about?

My hope is that routine screening using breath analysis will provide enough data and insight to one day solve this dilemma and be able to predict with sufficient accuracy whether and when to initiate early intervention.

Our breath and volatile organic compounds contain an enormous amount of information about our physiological state.

What we know so far is just scratching the surface

Collecting more data and breath profiles from a diverse sample of gender, age, roots, lifestyle, etc. will improve the accuracy of breath analysis.

And ultimately, breath analysis will become a powerful tool not only for proactively detecting specific diseases, but also for predicting and ultimately preventing them.

This should be enough incentive to take full advantage of the opportunities and challenges presented by breath analysis.

thank you

(applause)

In 1992, a container ship full of toys was caught in a storm.

The container it was in fell into the sea, and 28,000 rubber ducks and other toys were swept away by the waves of the North Pacific.

The ducks are not washed away in groups,

Instead, they wash up on shores around the world, and researchers have traced them to help us understand ocean currents.

Ocean currents are caused by a variety of factors, including winds, tides, differences in water density, and the rotation of the Earth.

The topography of the seafloor and coast also has a bearing on the speed and direction of the current.

Ocean currents are broadly divided into surface currents and deep currents.

Surface currents occur at depths up to about 10 percent below the surface, and deep currents occur at the remaining 90 percent.

Surface currents and deep currents have different causes, but they influence each other to create complex currents across the ocean.

Near the coast, surface currents are caused by seawater moving back and forth as the sea level rises and falls due to wind and tidal forces.

Wind is the main cause offshore

Wind pulls water near the surface

This movement of water pulls the water in the layer below it, and the movement of this layer moves the water in the layer below it.

Why, even 400 meters below the surface of the ocean can be affected by winds blowing over the ocean.

Let's zoom out and look at the ocean currents on a global scale.You can see that ocean currents draw large circles and create "gyre currents." Gyre currents draw clockwise circles in the northern hemisphere, and counterclockwise circles in the southern hemisphere.

This happens because the Earth's rotation affects the direction of the wind, which creates ocean currents.

If the Earth didn't rotate, air and water would just move back and forth between the low-pressure equator and the high-pressure north and south poles.

However, due to the Earth's rotation, the air from the equator to the North Pole strays to the east, and the air on the way back sways to the west.

In the southern hemisphere, it's the opposite, so the main wind currents form large loops over the ocean.

This is called the "Coriolis effect"

This wind causes the circulating current to flow in a circle.

Water is more difficult to lose heat than air, and circulating currents work to equalize the temperature of various places.

Deep currents, unlike surface currents, are primarily generated by differences in seawater density.

The water cools on its way to the North Pole

The water is also more salty, because only the water becomes ice, and the salt remains in the seawater.

Cold, salty water is so dense that it sinks down, and warmer water flows up. This up-and-down flow is called the thermohaline circulation.

The thermohaline circulation, together with surface currents caused by the wind, creates the "ocean general circulation" that circulates around the earth.

As seawater rises from the depths of the ocean to the surface, it carries the nutrients needed by the microbes at the bottom of the food chain.

The ocean general circulation is the longest ocean current that circulates around the world's oceans.

It only moves a few centimeters per second.

It can take a thousand years for a single drop of water to make one full circle.

But rising ocean temperatures seem to be slowing the flow even further.

Models suggest that this is affecting the climate system and causing damage on both sides of the Atlantic.

The only way to make correct predictions and take countermeasures is to continue researching ocean currents and the forces that cause ocean currents.

In March 1892, three black shopkeepers were murdered by a white mob in Memphis, Tennessee.

These lynchings happened all over the American South, and the murders were never investigated or punished.

But this time, a young journalist, a friend of the victim, set out to uncover the truth behind the murder.

The findings shook people and set them on a path to becoming an investigative journalist, a civic leader and a civil rights advocate.

Her name is Ida B. Wells.

Ida Bell Wells was born into slavery in Holly Springs, Mississippi, on July 16, 1862, a few months before the Emancipation Proclamation that set Ida and her family free.

When I was 16, I lost my parents and my youngest brother to yellow fever, leaving me with five siblings in Memphis, Tennessee, working as a teacher to support them.

During this time, I also started working as a journalist.

Under the pseudonym "Aiola," by the early 1890s he had earned a reputation for his outspoken views on racism and became partner and editor of the Memphis Free Speech and Headlight newspapers.

There was no shortage of subjects for articles. Decades after the Civil War, white Southerners began to reassert their power through crimes against black people, from election interference and robbing businesses to murder.

Wells began investigating the lynching after his friend was murdered.

Newspaper articles and police reports analyzed specific incidents and interviewed people who had lost friends and family to lynchings.

I was trying to get information at my own risk.

A black man covering a racist-motivated murder enraged his fellow white Southerners involved in the lynching.

her courage was rewarded

Many white people claimed and reported that the lynching was a counterattack against black criminal activity.

But mostly it was unfounded

Through his investigation, Welles proved that these murders were in fact premeditated, a brutal strategy to dominate and torment blacks competing with whites.

A friend of Ida's, for example, was lynched when her grocery store became so popular that it took over the customers of its white competitors.

In 1892 Wells published his findings.

In retaliation, a white mob attacked a newspaper office.

She was out of town at the time, but the white mob threatened to kill her if she returned to Memphis.

So I went to New York, and that year I republished a booklet of my findings, called Southern Horrors: Lynch Law in All Its Phases.

In 1895, he settled in Chicago and published the long booklet, The Red Record, based on Southern Horrors.

His impassioned speech, which chronicles the horrors of the lynching, has captured the world's attention.

I used my newfound fame to spread the word.

They went to Europe, rallying angry Europeans against racism in the American South, and hoped that the American government and people would do the same.

After returning home, I continued to stand up to the big organizations, resisting the YMCA's quarantine policy and leading a delegation to the White House to protest discriminatory practices in the workplace.

Both actions were at a time when she didn't yet have the right to vote.

Women didn't have the right to vote until Welles was in her late 50s.

On top of that, suffrage was basically for white women only.

Wells was a key figure in the suffrage movement and founded a group in Chicago for black women's suffrage.

Despite her commitment to women's rights, she clashed with white leaders who were doing the same.

During the women's suffrage march in Washington, D.C., the administration's policy of putting black women in the back in order not to provoke hostility in the South was ignored by marching at the front of the line with white women.

And other civil rights leaders clashed because they saw themselves as dangerous and extremist.

She insisted that the details of her atrocities in the South should be made public, but other members thought it would be counterproductive to negotiate with white politicians.

Despite being one of the founders of the National Council for the Advancement of Colored People, he was soon kicked out of the organization.

Wells's refusal to compromise on justice at any point highlighted the weaknesses of the various rights movements and ultimately made them stronger, but it also reduced his place.

She was ahead of her time, vigorously fighting for equality and justice decades ago that many never even imagined possible.

Being on the TED stage makes me feel like a high school virgin.

(Laughter) All the cool people are already doing that.

I'm stuck at home in the outfield

And then, like the Raspini Brothers, my balls cool down.

When you step inside, everything you dreamed of is there.

It's an exciting place, the music plays, and suddenly, in less than five minutes, it's all over.

And I want to go back there and repeat

Chris, thank you for the invitation, and thank you to Deborah Patton.

Today I want to talk to you about architecture, and specifically about the creativity and optimism within it.

When you think of creativity and optimism together, there are two options.

One is the creation theory, which probably doesn't resonate with most of you. I don't think many of you support it.

I will talk about the second one today.

The conversation about architecture -- in fact, as we've been talking about a little while ago, this stage production is also a small-scale architecture -- can't talk about architecture right now without mentioning this: What are we going to do with the site of the World Trade Center, and what does that mean for us?

If architecture, as I see it, is the embodiment of our cultural ambitions, what do we do when we are given the chance to correct the situation where the cultural ambitions of others collide with ours?

And what if it's an opportunity for us to create something new?

This is a long-standing and exciting problem

In some ways, I think the World Trade Center brought attention to architecture in an unfortunate way, giving it a presence and a common topic that we haven't thought about for a long time.

In my 20 years of designing and writing as an architect, I don't remember five people asking me to sit at a table and ask me any serious questions about zoning, fire exits, safety issues, and whether carpet is flammable.

This was something that wasn't talked about much.

now the emphasis is on

When buildings can become weapons, suddenly we have to think about architecture in a very different way.

And now I've come to do this, thinking about architecture this way.

Did you read today's "USA Today"?

The site of the World Trade Center is on the cover.

the choice is made

A project by genius Daniel Libeskind has been chosen, the Enfant Terrible of contemporary architecture.

As a child, he was a prodigy piano player, starting with the accordion, moving on to a more serious, bigger instrument, and now, with an even bigger instrument, his own brand of deconstructionist magic, like this.

He was one of six people invited to this competition. After the previous six struck out with stupid, mediocre ideas, even New York City had to say, "Oh, I'm so sorry. I messed up."

Hey, why don't we start over from the beginning, the real estate developers who always get involved in city planning from the last time, instead of six tonchiki, call in people with a piece of talent.

Change your mind, use a real architect

And this one was chosen, but there were other options as well.

Oh please stop clapping (laughs) it's too late it's already been rejected

This is a blueprint from a New York-based team called THINK, and that's a blueprint from Libeskind.

This will be the new World Trade Center, with a huge building collapsing into a huge hole in the ground.

Regardless of what you think, I think it's a pretty stupid decision, because you've created a permanent monument to that act of vandalism, and it seems to tell you that the destruction will last forever.

Anyway this is going to be built

But I want you to think about these things, and these two things in particular speak to the modern strays that are manifesting in American architecture.

That's a big difference in the way we choose our architects. When it comes to deciding what kind of architecture we want to build, on the one hand, there's the technocratic solution, where there's a large-scale technical answer that can solve all our problems, whether it's social, physical or chemical, and on the other, the more romantic solution.

Romantic doesn't mean making it the perfect place for a date

It means that there is something bigger and grander than us.

Technocrats and Romantics in the American tradition, on the other hand, is Thomas Jefferson's grid pattern across the land of the United States. All the Western states look like that.

The other is the Wild West spirit, which I'll talk about later.

Which one do you prefer? Grid or "wild west"?

"Wild West Spirit"

(Laughter) It's a big deal. It has a powerful, important sound. It sounds unmistakably American.

This debate has always happened in architecture.

It's also part of everyday life, isn't it?

We all want an Audi TT, right?

Everyone here seems to have one, or you want one the moment you see it.

You hop in it, you turn the little electronic key -- instead of the real one -- you fly home on the new freeway, and you crash into a garage that looks like a Tudor castle.

(laughs) Why? why would you want to do that?

Why do we have such a desire? I used to live in a Tudor-type house once.

(Laughter) It's our human nature to flip back and forth between this technocratic design and a more romantic image of the world we live in.

That's why I'm telling you this

Can you turn off the lights for a moment?

I'm going to tell you very briefly the story of two architects who represent the split between technocratic or technical solutions and romantic solutions in architecture today.

These are two examples of the best architecture in America today.

one very young and the other more mature

This is the work of a farm called "SHoP", and this is their isometric drawing of what will be a giant camera obscura to be installed in the park.

Do you know what a camera obscura is?

This is a giant camera lens that captures the outside world. This is a giant camera lens that captures the outside world. It's like a movie that you can watch without moving anything, you can project it onto a page and you can walk around it and see the outside world.

This is an outline What does a normal building look like? no

It's non-orthogonal. It's not connected top to bottom, it's not square, rectangular, or any other normal building shape.

The computer revolution and technocratic innovations have allowed us to abandon these ordinary forms of building, the traditional forms of building, and make this kind of non-orthogonal architecture possible.

It's not the shape that makes this interesting

that construction method

It's a whole new way of building. It's called mass customization. No, it's not self-contradictory.

The reason architecture is so expensive in the traditional sense is because of the individual custom pieces that can't be reused.

So everyone ends up living in the same type of house, like a built-up house.

They all want to save money by building the same thing 500 times.

because it's cheaper

The method of mass customization is that an architect puts data into a computer and uses a program to manufacture the parts.

The computer tells the machine, and the computer-controlled CAD-CAM machine makes countless changes in an instant, because the computer is just a machine.

just manufacture parts without thinking

No extra cost, no extra time spent

It's not a worker, it's just an electronic lathe that can cut all the parts at the same time.

On the other hand, instead of sending someone a stack of old blueprints full of blueprints, an architect sends a set of building instructions, like the toy you used to play with as a kid with the instructions, "Screw A to B, C to D."

The builders had custom-manufactured off-site and trucked to the job site.

you'll be able to assemble them with simple instructions

Here's a diagram that tells you how it works, and this is how it ends up.

You're looking down into the lens of the camera obscura.

Don't think this is all fiction or fantasy or romance, these architects were commissioned to create something for the courtyard of the Museum of Modern Art PS1 in Brooklyn as part of their Young Architects Summer Works series.

They thought, "What do you do in the summer?"

"I'll go to the beach in the summer."

"What's there when you go to the beach? The dunes."

"Let's make sand dunes and beach tents with architecture"

So they built a computer model of the dunes.

I took the pictures and put them into a computer program, which shaped the dunes, and then turned the dune shapes into woodworking recipes using standard software, with minor modifications as directed.

These are wood, and that's the assembly diagram.

Here's the parts diagram, if you zoom in a little

It's painted in about six colors, and each color represents the type of wood that's being cut, the part of the wood that's being cut.

All of this is delivered straight to the truck and put together by a team of eight people in 48 hours, and only one of them had seen the blueprints beforehand.

And only one of them had seen the blueprints beforehand.

And here is the finished form of the sand dunes emerging from the courtyard.

Only 16 wood shapes - only 16 different assemblies

The inside is as beautiful as the soundboard of a piano.

It's got a pool built into it, which is really cool.

It was a great place to party, but it was only there for six weeks.

There are also small changing rooms and cabanas.

Now, lest you think this was just for entertainment or just temporary, the same company that built the World Trade Center replaced the bridge that crossed West Street, a very important walkway that connects New York City to the redevelopment of the West Side.

They were asked to design and replace the bridge in six weeks, which meant manufacturing and building all of its parts.

And they've done it, and here's the design, using their computer modeling system, just five or six different parts, a few struts like this, some cladding and a very simple framing system, all manufactured offsite and brought in by truck.

they built it

You have built such a wonderful thing

They're now using the same technology to build a 16-story building on the New York City side of the bridge.

I will walk across the bridge at night

Since it lights up automatically, there is no need for overhead lights and there are no complaints from neighbors that the lights are too bright.

Here's a view from the side and a view from the other side, which has the same kind of grandeur.

So let's go fast, but let's look at the other side.

Now this is the other side of the coin

This is the work of David Rockwell in New York City, and it's still on display today.

The current King of Romanticism, he approaches his work in a very peculiar way.

His work isn't about offering technical solutions, it's about what you can do, what makes you happy, what lifts your spirit and makes you feel like you're in another world.

"It should look like seaweed in the end," said the owner.

His restaurant "Pod" in Philadelphia

The room you see is pure white

Every aspect of this restaurant is white

The reason it's so colorful is because it changes with the lighting.

Expressing sensuality and metamorphosis

look at this i didn't touch anything

Color changes naturally

The magic of lighting is changing colors

The theme is sensuality and tactile sensation.

Rosa Mexicano, a restaurant on the Upper West Side, takes us to the shores of Acapulco, and here are these cliff divers.

let's look again

did you enjoy

And finally, comfort, about making people feel comfortable in places they've never felt comfortable before.

It's about bringing nature indoors.

The Guardian Tower in New York turned into the W Union Square Hotel. Excuse me for being hasty—we called in the best gardeners in the world to pull Union Square's courtyard into the building.

It is "stimulus".

This is the wine-buying experience simplified in color and taste.

Effervescence, freshness, softness, lusciousness, juiciness, smoothness, sweetness all come to life with colors and textures on the walls.

Finally, an example of entertainment is the Cirque du Soleil headquarters in Orlando, Florida. It's like entering a Greek theater to immerse yourself in the magical world of Cirque du Soleil under a tent.

let's end here thank you very much

[This talk has adult content] I have a vagina

(Laughter) You know

It's not surprising

i look like a woman

wearing women's clothes

I actually have testicles too.

So I was nervous to come here and talk about my genitalia.

Just a little bit

But it's not about courage

I literally have testicles.

Right here, in the place of many people's ovaries

I am neither male nor female

I'm intersex

Many humans are biologically supposed to be male or female, but in reality, gender is much more complicated.

There are many reasons for being intersex.

In my case, it's known as the male chromosome - despite having the XY chromosomes.

born with a vagina and internal testicles

And because it doesn't respond to testosterone, during puberty my breasts didn't grow and I didn't get acne, I didn't have thick hair, I didn't get greasy.

Do you envy me?

(Laughter) But I was born without a uterus, so I can't menstruate, and I'm biologically incapable of having children.

we distinguish humans by their genitalia

Even before we are born, we hear about the sex of our baby, as if it's really important, as if it's less fun if the baby's sex isn't what we wanted, as if the genitals tell us something about the person.

Are they kind, tolerant, and pleasant?

Are you smart?

What do you want to be when you grow up?

The genitals don't actually say anything

But we define ourselves by our genitals.

In this society, we want to discriminate and label people.

It creates a sense of belonging and teaches you how to treat people.

But there's a big problem here: biological sex isn't clearly defined.

it is continuous

In addition to external genitalia, we also have chromosomes and gonads such as ovaries and testes.

They have internal genitalia, hormone production and hormone receptors, secondary sexual characteristics such as enlarged breasts and hair growth.

There's a lot of variation in biological sex in these seven areas, yet there are only two choices: male or female.

It's absurd to me, because I can't think of any other human trait that has only two options: skin color, hair, height, eyes.

Your nose is either A or B and you don't have a choice

If our bodies are infinite in terms of how we view them, how we think about them, how we behave, can't you understand why our biological genders are so diverse?

Did you know that your sex chromosomes can be both XX and XY, not just XX or XY?

XXY with another X

XXXY with two?

Besides

What does that mean for these "normal" XX and XY people?

I am an XY chromosome

If my DNA is found at the scene of a crime -- well, it's not going to happen, but you know what I mean.

(Laughter) When my skeleton is unearthed thousands of years from now, it will be classified as male.

is it true?

I have testicles, I guess so

But what about the rest of me?

Women who had their ovaries removed due to ovarian cancer

Are you still a woman?

Intersex people who were born without testicles and ovaries, and people who had only one, and people who have a combination of the two.

What will happen?

Is a uterus essential to being a woman?

Many people are born without a uterus.

And we all have one or the other of our favorite genitals, right?

Do you have a penis that's about 15 centimeters thick and erects vertically from your body? Do you have a vagina that wide inside, a clitoris that's about 1.5 centimeters above its entrance, and labia that look like those you've seen in porn videos before?

you know

If you've had more than one sexual partner in your life, you should be able to put them all one by one and still be able to tell them apart by their genitals.

(Laughter) Think about it.

please

(laughs) I'm watching.

I'm not looking at you with strange eyes

I want you to notice

Everyone's different, right?

Gender binary is so deeply rooted in society that I can't stop thinking about it.

They automatically distinguish each other as if they were important.

Makes me question it, until someone shows up

If you think I'm the exception and the anomaly, intersex people make up about 2% of the population.

This is the same percentage as hereditary redheads

Roughly speaking, 150 million, more than the population of Russia.

yes there are many

neither new nor unusual

it's just hidden

historically in every culture

just don't talk about it

In fact, many people don't even know they're intersex.

Examining Your Chromosomes Has anyone had a karyotype test?

Have you had a blood test to measure all kinds of hormone levels?

My buddy turned out to be in his 50s last year.

The director of interACT, an organization that advocates for intersex human rights in the United States, discovered he was intersex at the age of 41.

Doctors knew when she was 15, but they didn't tell her.

Doctors lied to her that she had cancer, because it seemed like an easy option that only a "perfect" woman would notice.

There's a lot of this going on, and it's surprising to so many people that intersex people are being lied to and covered up about their bodies.

We live in a society where we can't talk about sex and bodies without mocking and humiliating each other.

I found out I was intersex when I was 10, and it was mostly fine.

It didn't surprise me that much. I'm still developing my understanding of the world.

Before I became an adult, I realized that I didn't fit society's expectations.

That's when a sense of shame was born.

Have you ever seen a child playing with a toy or wearing the "wrong" gender?

How many times?

It happens often, doesn't it?

There is no gender norm for children.

I don't care about that

I don't feel embarrassed until an adult applies it.

I was lied to by my doctor too

When I was 10, I was told I would get cancer if I didn't remove my testicles.

I was told every year

I have a doctor who still wants to take me.

But there's no reason

The typical XY male has testes, and undescended testes are known to increase the chances of becoming cancerous.

Testicles need temperature regulation

It descends out of its torso to cool.

i don't need that

It doesn't respond to testosterone, so it doesn't produce sperm.

it's okay to be here in my body

With so little information about intersex, doctors didn't know the difference.

never understood my body

As an adult, I was told by another doctor that I needed surgery on my vagina.

The female doctor said that she would not be able to have "normal sexual intercourse" with her future husband unless she underwent the surgery she performed.

These are the words of a doctor

I didn't have the surgery, and I'm glad I didn't.

I didn't come here to talk about my sex life.

(Laughter) But it's okay.

(Laughter) I'm fine and my body is fine.

If I don't tell you, you probably won't know the difference between me and others unless I tell you I'm intersex.

But due to a lack of understanding about the body, doctors couldn't tell the difference.

My sex life is generally fine

The only problem that really comes up is that when I'm in a sexual situation, I sometimes remember being touched by doctors, many times since I was 10 years old.

I was so lucky to escape.

But no intersex person can escape the psychological scars of living in a society that tries to hide their existence.

Most of my intersex peers have undergone surgery.

Every doctor wants to have a testicle like mine removed over and over again, even though my odds of getting testicular cancer are lower than the odds of an average woman with a healthy constitution and family history getting breast cancer.

But you wouldn't recommend that woman have a mastectomy, would you?

It's rare to meet an intersex person who hasn't had surgery.

Surgeons operate to improve the lives of intersex children, but they usually do the opposite, causing more physical and mental damage and complications.

I don't want the doctor to be the bad guy.

We just live in a society where doctors need to "cure" us when we don't fit right in.

it's not a problem we need to fix

We just need to shed some light on the society we live in.

One of the ways I do this is by creating a gender-neutral adolescent guidebook that tells children exactly what they are growing up.

Not as a girl's body or a boy's body, just as a body.

We often have unrealistic expectations about physical characteristics that we have no control over.

So if one man grows up to have a nice beard, but another man has a tiny mustache, does that prove he's a man?

wrong

It's simply that each hair follicle probably responds differently to testosterone.

How often do you hear about men who are ashamed of it?

Imagine a world where we live in a society where we don't have to be ashamed of the changes that happen to our bodies.

I want to change the way we think about biological sex in this society, and that's what many people want.

Manly, right?

(Laughter) But in the end, they accepted that the earth is round.

We're no longer diagnosing gays as mentally ill, or women as hysterical.

I'm glad it's no longer said that epilepsy is caused by the devil

(Laughter) We're constantly changing, we're evolving, we're understanding better as a society.

Biological sex is a gradation

not black or white

That knowledge will not only protect the bodies and minds of intersex children, but it will help us all.

Have you ever felt embarrassed or embarrassed because you weren't girly, too girly, too macho, or too macho?

We humiliate people who don't fit the mold all the time, but in reality, humiliating others prevents us from being seen as out of the mold.

But nobody really fits the mold.

The male/female duality is man-made, we've made it ourselves.

But I don't mind

it's okay to break

i want to do that

Would you like to join us?

thank you

(applause)

Architecture is a disciplined business, codified, unwritten, relevant, unwritten.

As architects, we are constantly torn between following the rules of the textbook and leaving room for imagination and experimentation.

this balance is difficult

Especially in architecture, we challenge existing ideas, break new ground, and try to innovate, even if it's just using materials that are often overlooked around us.

This is what my team, Ensamble Studio, has been doing since the early days in Santiago de Compostela, Spain, with its highly regulated historical background.

In this town, we built a cultural institution called the General Society of Authors and Editors.

In addition to the normal building code, the ordinance mandated the use of stone. I didn't have a lot of experience with it, but I had some great reference points in the city of Santiago de Compostela itself, in the surrounding landscape, and in faraway lands, which inspired me as an architect.

But for some reason, I felt that the manufactured materials sold in the construction industry lacked soul.

So we decided to go to a nearby quarry and learn the process of cutting down mountains and making square tiles like those sold by our suppliers.

We were fascinated by the huge stones and the process of extracting them.

If you look carefully, you'll see uneven piles of stone here and there.

It was an ugly stone with no buyers, which was produced during the quarrying process.

we decided to buy

I had an epiphany

It was a win-win for both parties, because we were able to buy the surplus, high-quality stone that was going to be pulverized at a low price.

I had to convince the customer that this was a good idea, but first I had to come up with a design that could reuse this uneven stone, which was an area I had no experience with.

Now, I think it's easier than ever. You can take a smart phone with a 3D scanner to the quarry, record each stone and put it into a digital model, and you can do the whole process at a high level.

But more than 10 years ago, you had to swallow your doubts, put on your boots, roll up your sleeves, go to the mines and get some hands-on experience.

And I had to become a builder myself, because there was no one willing to take the risk with me.

Luckily, I managed to convince the quarry team to help me build a prototype to solve the technical details.

We were talking about just a few full-scale models, but in the excitement of building from one stone to the next, we ended up with a wall that was 18 meters wide and 8 meters high.

It was really easy to inspect the erected walls, then move them to a site in the city center and integrate them with the rest of the building. By identifying the parts we were not sure about and managing the risks in the controlled environment of the quarry, we were able to complete the entire building on time and within budget, even though we used unconventional means and methods.

I still get goosebumps when I look at this, this huge chunk of mining landscape, inside a city, inside a building, and being experienced by visitors and neighbors.

This building gave me a lot of headaches, and what was supposed to be an exceptional piece of work has instead become our usual way of doing things, and each and every project has been an opportunity to rethink and test the boundaries of architecture.

The four buildings you see here are the homes we designed, built, and lived in.

Four forms of expression that ask small but big questions.

I'm trying to discover architecture that is the result of unconventional use of common materials and techniques, using different forms of concrete for the upper level and steel and foam for the lower level.

For example, if we take the PC digit as an example,

I'm sure you've seen it used to build bridges, highways, waterways, and so on, and it caught my eye when I visited a PC factory.

It's not particularly homey or beautiful, but we decided to use it to build our first home.

This was a really special time, because in addition to my usual role as an architect, I was also a contractor, and for the first time, I was a customer myself.

Here we take these giant girders, weighing about 20 tons each, and place them around the central courtyard of the house.

I'm thinking about how to stack

Because of the dimensions and the nature of the material, these large structural members carry loads to the ground, but they actually do more than that.

It's the swimming pool, it's the wall that separates the inside from the outside, it's the window that frames the view, it's the decoration, it's the spirit of the house.

We used this house as an experiment to see if we could use common materials in non-standard ways.

The results were interesting

What I've learned along the way is that prefabs can go far beyond the glamor of stacking boxes, and that even heavy materials can create a sense of lightness and transparency.

And besides designing and building this home, we get valuable feedback and can share it with family and friends, because this is where we live and it's a work in progress.

The lessons learned here can be applied to other projects and projects and projects of different scales to inspire new works.

Here again, we're talking about standard materials: GS studs, which are easy to cut and install, insulation, cement slabs, and other things that are usually hidden inside partition walls.

We build it ourselves in our factory by hand. We're architects, not professional builders, but we wanted to see if we could really do it.

It's great that Anton can run it himself, and Javier can load it into a container and ship it like he's doing an international move.

that's what we actually did five years ago

We moved our base of operations and our concrete girder house from Madrid to Brookline, Boston.

So we found the only one-story garage we could afford on our budget, in a beautiful residential area of ​​the city, in a kind of "ugly duckling" property.

And that was enough. I was going to turn it into a beautiful swan.

This is the cheapest and most common house on the market, built using the standard 4-by-8 modules that dominate the construction industry.

By changing the composition of the space and changing the way it was assembled, an economically constructed home turned into a luxurious space.

And our dream is to actively work with developers, builders and communities to bring this technology to life for more homes and more families.

As you can see, the world around us is an endless source of inspiration, as long as we have the curiosity to see what lies beneath the surface.

I'm here to take you to a completely different place, the majestic landscape of Montana, where a few years ago, with Mr. and Mrs. Halstead, we envisioned the Tippett Rise Arts Center on a 40-square-mile ranch.

When I first visited this place, I realized that our existing concept of an arts center made absolutely no sense to the clientele, to the community, to the landscape.

The white box museum didn't fit there.

So we took the center piece apart, and with the idea of ​​a constellation of fragments, we created a space that spans a vast expanse of land, allowing visitors to immerse themselves in this incredible wilderness.

I went back to my office and thought as I built, using the earth as both a support and a material, learning from the geological processes of sedimentation, erosion, fragmentation, crystallization and explosion, trying to find architecture that grew out of the land that was an extension of the landscape itself, like this bridge over Murphy Valley.

this spring

This space on top of the hill

Like this theater that invites you to the space and sound of the mountains

And to make this idea a reality, the building process doesn't go perfectly to plan.

We also have to embrace extreme weather and local technology.

Although important aspects such as the structural, thermal, and acoustic properties that we incorporate into our buildings need to be controlled.

Others require and welcome improvisation.

And the time to build is also the time to design, and the time to celebrate the final dance of the labors, hearts and wisdom of many peoples together.

the result is unpredictable

a surprise awaits

You unwrap architecture like you unwrap a birthday present.

Architecture is not what is revealed, it is what is discovered.

It digs itself out of the earth's gut to make a home, one of the basic human needs.

Architecture, art, landscape, archeology, geology, etc. all come together.

By using resources in unconventional ways and creating experimental spaces, we can find beauty hidden in the pristine, irregular objects around us, and shine a light on architecture that allows us to find, enhance, and express ourselves.

thank you

(applause)

The biggest challenge facing vampire hunters is how to get sunlight into the vampire lair.

Sneak into the darkness of the vampire's cave and install the mirrors in order.

When the sun rises at an angle, the collected light bounces off the mirrors, hits the diffuser, and illuminates the great bedroom where the vampires sleep.

Install the final mirror and sneak in through the hole in the corner of the great bedroom.

The scatter must be attached to the wall, but leave the wall full of coffins alone.

Only the remaining three corners of the room are empty.

Light enters from the southwest corner at a 45-degree angle, bounces off a perfectly smooth metal wall, and hits one of the remaining three corners.

But which corner?

The room is a rectangle 49 meters long and 78 meters wide.

We might be able to use a scale map to trace the path of light to find the answer, but with only minutes to reach the sun, we're running out of time.

Fortunately, there's another simple and elegant way to solve this problem.

Now, which corner would you put the scatterer in to fill the vampire's lair with sunlight?

Let's pause the video here and think

Two seconds ago, one second ago, if we had looked at a smaller room and tackled this problem, we might have found a lot of interesting patterns.

There is one method that will lead you to the answer immediately.

Let's draw the bedroom on the coordinate plane with the southwest corner as the origin

A ray passes through a grid point whose coordinates are either both even or both odd.

This does not change no matter how many times it is reflected on the wall

You can also think of it this way: a ray of light comes in at an angle of 45 degrees, so it always goes through the diagonal of the unit square.

For every meter you move horizontally, the x-coordinate value changes from even to odd or odd to even.

The y-coordinate value changes from even to odd or from odd to even for each vertical meter traveled.

If the ray travels diagonally, like this ray, both will happen at the same time.

This observation is very helpful

In particular, it allows us to identify a point that the ray will never pass through, because if the coordinates are even and odd, it will never pass through that point.

So you can see that the two corners of the north wall are not even or odd, so the light doesn't hit them.

The only light that hits it is the southeast corner

In fact, when the precious rays of sunlight enter the hall, they bounce between the walls and hit the very southeast corner.

If a vampire sees an intruder and jumps out of the coffin, it will be exposed to light and turned to ashes.

It was a high-stakes test, but you passed with honors.

A talkative grandma and a walking outlaw face off on a dirt road

Bible seller luring the one-legged philosopher into the barn

A wandering handyman teaching a deaf woman her first words on an old farm

On her farm in rural Georgia, surrounded by her flock of pet birds, Flannery O'Connor wrote story after story of outcasts, intruders and misfits, set in the world she best understood: the American South.

He published two novels, perhaps best known for his short stories, which explored the life of a small village with acerbic language, eccentric humor and a truly bleak plot.

In his spare time, he drew comics, and his writing was full of satire.

The mother's face is "as big and innocent as a cabbage," men are as lame as "floor mops," one woman is like a "urn," and even the characters' names are mischievous.

Take the novel To Stay Alive, in which the one-armed vagabond Tom Shiftlet entered the lives of an old woman named Lucinel Crater and her deaf and mute daughter.

Mrs. Crater has a fearless personality, but the solitary house looks like it's going to decay at any moment.

At first, the reader doubts Shiftlet's motives when he offers to fix the house, but O'Connor reveals that, like the surprise visitor, the old woman is up to something, confusing the reader's guess as to who has the upper hand.

O'Connor had no sanctuary in the subject matter of his novels.

Although she is a devout Catholic, she is not afraid to tap into the possibility that devout thinking and irreverent behavior can coexist in the same person.

In "He Who Strikes Hard Will Take This," the protagonist not only grapples with the option of becoming a prophet, but also commits arson and murder.

The story begins with the reluctance of a particularly disgraced prophet to say, "Only half a day after his uncle's death, little Francis Marion Tarwater was too drunk to finish digging the grave." O'Connor's fiction reflects southern racism.

"All That Rises Converges" depicts a son furious at his mother's racist behavior.

But the story reveals that he has his own blind spots, and that being able to recognize the malignant nature of others does not exempt him from criticizing his own character.

O'Connor explored the most unacceptable aspects of human nature, but he left the door of atonement just a little bit open.

In "Good Guys Are Hard to Find," O'Connor rescues his arrogant grandmother by trying to forgive a repeat offender, even as a gang of repeat offenders surrounds his own family.

You may cringe at the price your grandmother paid for this salvation, but otherwise you'll soon be confronted with the nuanced implications of simply choosing between violence and the devil.

O'Connor's mastery of grotesque expressions and his exploration of Southern narrow-mindedness and superstition established him as a Southern Gothic writer.

But her work transcended the genre's hallmarks of mere spookiness and terror to reveal the diversity and nuanced side of personality.

She found some of this diversity uncomfortable, and while she knew the story had room for only gradual acceptance, she enjoyed challenging her readers to battle.

O'Connor died at the age of 39 from systemic lupus erythematosus after spending most of his 12 years on a farm in Georgia.

During that time she wrote many of her most creative works.

Her flair for moving between disgust and revelation continues to draw readers into a fictional world of endless surprises.

As character Tom Shiftlett puts it, the body is "like a house, it doesn't go anywhere, but my lady, the soul is like a car, it's always on the move."

The Internet as we know it, and the web -- this web that we're all talking about -- is less than 5,000 days old.

Everything that we've seen -- satellite images of the entire planet that we couldn't have imagined before -- everything pours into our lives, and there's an abundance of it coming to us as we sit in front of our computers.

It's amazing that it's coming in so large that it's never ending, but we're not surprised.

It's really nice to have all these things here

(Laughter) All of this came in 5,000 days.

If I had expected this to happen 10 years ago, I would have been told it wasn't possible.

because there is no viable economic model

If I expected to be able to do it for free, they would say I was just dreaming.

Something like a Californian dreamer or a reckless optimist

but it is realized

There are other examples. Ten years ago, even Wired magazine said so, but it was thought that television was supposed to do that.

Everyone thought that such an economic model would work.

But it didn't

Even if it wasn't possible before, it's not the same

Think, for example, of Wikipedia, and you can see that the impossible has come true.

Even if it seems impossible, it can be done

Given all these seemingly impossible things, what we're learning from this era, this decade, is that we have to learn to believe in the possibilities of the seemingly impossible, because we're not ready for it.

I'm curious what happens in the next 5000 days

The last 5000 days have been like this What will happen in the next 5000 days?

It's simple. What we have to think about is what we're building now, and what we've done in the last 5,000 days. All these computers, all these mobile devices, all these phones, laptops, servers, all these connections -- all these connections, we're trying to create one machine.

If we think of it as a single machine, and the device at hand is a window into that machine, then we're trying to build a global machine.

let's start with that topic

This machine happened to be the most reliable we've ever built.

No crashes, no interruptions

Few of the machines we've built have been in operation that long.

5000 days uninterrupted I can't believe it

Of course, the Internet has been around for over 5,000 days, but the web is only 5,000 days old.

I did some calculation

how big is this machine

First, if we calculate how many clicks there are on every computer on earth,

100 billion clicks per day

There are 55 trillion links between web pages in the world

I thought about other scales, so I made a short list, even though photographer Chris Jordan told me that there was no point in talking about such a large number.

Here's the list, and it's hard to explain, but if you count all the computer chips on the internet, it's a billion.

2 million emails come and go every second

it's a very big number

It's a giant machine that consumes 5% of the electricity on the planet.

Here's the spec sheet. Here's the specs: 17 quintillion transistors, 55 trillion links, 2 megahertz emails, 31 kilohertz text messages, 246 exabytes of storage, big disks.

It has a lot of memory, 9 exabytes of RAM

The total amount of traffic passing through here is 7 terabytes per second. Brewster's story

The National Diet Library is roughly 12 terabytes in capacity.

So every second, half the Library of Congress is running through the machine -- it's a giant machine.

I've done some other math, and 100 billion clicks a day, 55 trillion links, is roughly the number of synapses in the human brain.

1000 trillion transistors is roughly the number of neurons in the brain.

A quick calculation from that shows that the synapses are working at 20 peta (1000 times the tera) hertz.

Of course, the storage capacity is also huge.

Roughly speaking, this machine is comparable in capacity and complexity to the human brain.

In fact, the brain works sort of like the way the web works.

But the brain doesn't double in capacity every two years.

If this machine has a capacity of 1 HB today, which is roughly the same capacity as a human brain, then if we look at the rate of increase, then 30 years from now it will be 6 billion HB.

So by 2040, the total processing capacity of this machine will exceed the total processing capacity of humans in terms of raw data and bits.

What does it mean? It means several things

There are roughly three things that this causes

First, what this machine does is materialize -- we give it a body.

For the next 5,000 days, we will continue to give this machine physicality.

Second, we're going to reconfigure the architecture of this machine

Third, we become completely codependent on this machine.

I will talk more about these three

In the first place, we have these things

You think of it as separate devices, but in reality, all the screens in the world are looking into one machine.

These are basically portals leading to one machine

Also, some people call this the cloud, and you connect to the cloud through this device.

So, in a way, all you need is a computer that connects to the cloud.

The computer has no storage media

Stay connected wirelessly

All the details aside, it's very simple. What you're doing is exactly what you're doing is operating this machine, and you're operating the cloud, and that's how you do the math.

this machine does the math

In a way, the old idea of ​​the centralized computing model

It's kind of a regression, but all the cameras, the microphones, the sensors in the car, all these things are connected to this machine.

Everything flows through the web

For example, telephones are becoming

It's not through the web yet, but it's starting to be, and will be.

As an example, consider what Google Labs is doing with experiments like Google Docs and Google Sheets, all of which are going to be web-based

go through this machine

I believe all information will be owned by the web

Right now, the spreadsheets and word docs I'm working on aren't on the web, but they're going to be, they're going to be part of this machine.

and speak in the language of the web

you'll get to talk to this machine

The web is kind of like a black hole that swallows everything.

everything becomes part of the web

Everything, everything that we create, becomes part of this machine, embedded in simple concepts like webness and connectivity, and the result is the webification of the environment as we see it in the world of ubiquitous computing. Everything is connected.

It could be a radio frequency tag, or anything else, whatever the technology, but the point is that we're going to put all these things into this machine, in some form of connection or whatever, and we'll have an internet of things.

You'll start to see shoes as integrated circuits with heels, and cars as integrated circuits with tires. Most of the cost of building a car comes from the intelligence and electronics inside it, not the materials.

A lot of people think of the new economy as being another virtual entity that doesn't exist, and the old economy is made up of atoms.

But really, the new economy is about the merging of the two, and the integration of information and digitally represented material properties into the physical world.

We expect that. The combination and fusion of atomic and digital is what we're aiming for.

As a result, today's separate media, such as television, film, and video, become a single media platform.

Even if there are many differences, there should be more commonalities

"There is no value in copying, there is value in what cannot be copied." These are the laws of media: timeliness, authenticity, personalization --

Media needs liquidity

Something is free so that it can be handled freely. Not "free" in the sense that beer is "free", but "free" in the sense that it is "free."

There's a law in networks: the more you have, the more you get.

The person who bought the first fax machine is an idiot, because there's no one to fax to.

But the person becomes an evangelist and invites other people to buy a fax machine, because then the value of the purchase increases.

we're going to experience that effect too.

Attention is currency

So those laws are going to spread through all the media.

Another thing about manifestation is McLuhan's reversal, according to McLuhan.

"Machine is an extension of the human sensory system."

But in a way, if you ask me, "Humans are becoming the extended sensory organ of machines."

We have a trillion eyes, ears and senses through digital photography and digital cameras.

You can see them on Flickr and Photosynth - Microsoft's program that can compile a landscape of a tourist spot from thousands of snapshots of tourists.

In a way, this machine sees through individual camera pixels.

Then the second thing I want to talk about is restructuring -- the idea that what the web is doing is restructuring.

Just to let you know, I'm going to explain the term "semantic web"

As a first step, the first thing we saw on the Internet was connecting computers together, called the net.

In other words, it is the Internet in the sense of connecting the net.

Even if you have a computer --

You may remember the green screen with the cursor, but there wasn't much to do. Connections were like being between two computers.

If you wanted to be here, you had to share a packet of information.

Output but do not occupy

Unlike a phone that hogs the line, it had to share the packets.

Now, in the second stage, I'm standing on the idea of ​​linking the pages

In the past, when I wanted to view an airline's website, I would go from my computer to the FTP site, and from there to the airline's computer.

I'm using pages for now, and since the unit is down to the page, it's possible to link between pages.

If you want to book a flight, you go to the airline's website, the flight page, and you can link to that page.

It's a link to share, so you should open it freely

If someone wants to link to you, you can't refuse, you can't stop them, and you have to keep your page open for anyone to link to.

I've been doing that

Now we're entering the third phase, and I'm going to talk about that, and that's the data linking phase.

Let's call it "one machine"

link the data

We've gone from devices to devices to pages to pages and now data to data.

The difference is that instead of linking page to page, one idea on one page links to another idea, not another page.

Every idea, every matter, every noun, is underpinned by the whole web.

If necessary, it goes down to the level of matters, ideas, and words.

By incorporating real things into this idea that goes beyond the virtual, we connect with the real world.

Maybe we'll even break it down to a specific person's information, so everyone will have their own unique ID.

Every person or thing has something unique and is linked to a particular representation of that idea or thing.

Linking to something, in this new idea, is linking to a specific flight or seat.

Let me give you an example. I live in the city of Pacifica. On the web, Pacifica is just another name.

The web doesn't know it's a city, it doesn't know it's the particular city I live in, and that's the point.

It creates a direct link. The web reads it for itself, knows it's a place name, and wherever it encounters the word "Pacifica," it already knows the location, the latitude, the longitude, the population, and so on.

Here's a jargon, all three letters, but there will be more.

All of this has to do with the idea of ​​linking data

Let me give you an example

There are countless exchange sites on the web

Every time I go there I enter who I am and who my friends are

Why should you do that? You should know who your friends are once you do it

Ideally, once you've identified all of your friends, you should be able to reuse the relationships.

Data about you should be communicated automatically Should be a one-time setup and done

We need to create a network that understands all these data relationships.

We're moving into that era -- an era where the web understands to that level.

Semantic Web, Web 3.0, Giant Global Graph, etc. I'm still trying to decide what to call this.

What we do is share data

Allowing people to freely share their data is a much bigger advance than sharing web pages or computers.

Try to share things, not just pages

Everything you write, something you make, a place, becomes a particular representation, a particular entity that you can directly link to.

It creates a database of things.

And then we enter phase four, which is actually not going to happen in the next 10 years or 5,000 days.

Right now, we're creating perfect links to everything that has even the slightest connection.

The last point I would like to make is that we are going to be codependent.

You'll always be codependent, and the closer the relationship, the better.

You can let Google see your search history

As I was watching it, I realized that I search most at 11:00 a.m.

I'm open about it and I have nothing to hide.

I believe that in the new world, total personalization requires total transparency, and that's the price.

full personalization

If you want it, you have to be completely transparent.

If I forget my phone number, I will google it

I'm so reliant on Google to the point where I don't even try to remember anything, just Google it, it's easier.

At first, everyone objected, saying, "That's terrible."

But think about our reliance on another technology, on the alphabet, on writing, and we're totally dependent on it, and it's transforming our culture.

I can't imagine life without the alphabet and letters

In the same way, you will not be able to imagine life without the machines I just described.

And what's happening with that is some kind of AI -- artificial intelligence -- but it's not conscious AI, and expert Larry Page says that's what it's trying to do.

Of the 6 billion people searching Google, who is searching for whom? searching in both directions

That's why we're the web, and this is the point.

we will be incorporated into this machine

In the next 5000 days, the web will not only advance

Just as the advances in television weren't the only

In the next 5,000 days, not only will the web advance, but something else will emerge.

And you should get smarter and smarter

unconscious but intelligent

It's clever and predicts what we're going to do.

It will then be further personalized

get to know us

Good, but again, the price is transparency.

In addition, you will be placed in an environment where all the information about you is collected and you can know it anywhere.

every device becomes a portal to get there

The only idea I'd like to share with you is that instead of just thinking, "The web is getting better," we should be thinking that this development will take us to a new level.

It's also globalized, and this is a very large, highly reliable machine as a whole, more reliable than the parts that make it up.

You can think of it as some kind of big life form.

It's just that we treat the whole as a system, not as a larger organism that interacts.

I can't think of a name other than "the only one"

someday it will be decided

However, some kind of unity is beginning to emerge.

Let's stop talking about consciousness, because that's what this organism is, like little bacteria and green algae.

So what should you do? My opinion is this: There is only one machine, and the web is its OS.

Every screen sees the one and only thing No information exists outside the web

To share is to gain Let the one and only thing read the information

be machine readable

You'll end up making something that this machine can read

"The Only One" is also us, and we are in it.

thank you

(applause)

I'm here today to talk about creativity.

You only have 15 minutes, but you're starting to time it.

I think 15 minutes is enough to give you a little introduction to creative direction, it's called creativity.

Creativity is how you create

Creation is sometimes elusive and confusing, but creativity is always meaningful.

For example look at this photo

Creativity is what is the intention in putting the dog in this picture, but creativity is what is showing the chicken on the hind legs of the dog.

Creativity has a lot to do with cause and effect.

I was a creator when I was a teenager

I was just doing various things.

As I grew older, I started to realize who I was, and I became creative in trying to maintain that identity.

It wasn't until I actually published a book and had a retrospective that I was able to trace the most stupid things I've ever been to, drinking parties, parties, and all of that, and it all led to this place, which is actually what we're talking about here.

This is a fact, the reason I'm telling this story is because I was born in Brazil.

If I was born in Monterey, I would be in Brazil.

I was born in Brazil, grew up in the 1970s under a climate of political misery, learned a particular way of communicating, almost in a semiotic black market.

I can't really say what I want to say, I have to find a way to say it.

I didn't trust the information

Another reason I'm here is because I like all kinds of media.

I'm a media junkie and got into advertising.

My first job in Brazil was to develop a method to improve the readability of electronic signage based on speed, angle of approach, and text cohesion.

That job was a great learning experience, and then I got a job at an advertising agency.

I also got a very ugly acrylic trophy from the advertising company.

Another reason I'm here is that the day I went to pick up my acrylic trophy, I rented a tuxedo for the first time in my life and got a trophy.

And on the way to the exit, we arbitrated a fight.

I was hitting people with a Meriken Sack.

Fighting in a tuxedo is the worst

(Laughter) People in the advertising industry do that all the time. (Laughter) This happened to me on my way to my car, and the person I was hitting had a gun -- I don't know why he had a gun, but he shot the person who was supposed to have attacked me.

That person was me in a black tie and tuxedo.

Luckily, as you can see, there were no life-threatening injuries.

And then, even more fortunately, the guy who shot me apologized to me, and I told him that if he paid the fine, he wouldn't press charges.

That money bought me a ticket to America in 1983, and that's the basic reason why I'm talking here today, because I got shot.

I chose a more iconoclastic way

Because when I decided to go into advertising, I wanted to airbrush naked people in ice for a whiskey commercial, and that's what I really wanted to do.

I was trying to sell ice, not whiskey.

The first work was an object

It was kind of a mixture of found objects, product design and advertising.

I named it "Relic"

Exhibited at the Stax Gallery in 1983

this is a clown skull

It's a relic of the race of evolved entertainers.

They used to live in Brazil. (Laughter) This is an Ashanti joystick.

Unfortunately this was for the Atari game console, so it's outdated.

I'm making one for the PlayStation 2 right now, so I'll bring it with me the next time we talk.

This is a swinging podium. (Laughter) Pre-Columbian coffee makers. (Laughter) The idea actually came from a discussion at Starbucks, where I insisted that I wasn't drinking Colombia -- it was pre-Columbian.

bonsai table

The Traveling Encyclopedia Britannica in one volume

A half gravestone for those who are not yet dead

I wanted to take the realm of images into account, so I decided to create something with a similar identity conflict.

and decided to use clouds

because it can have any meaning

But I wanted to go low-tech, but I wanted it to have some meaning at the same time: the cotton ball, the clouds, and Dürer's "Praying Hands." It's more like Mickey's praying hands.

this is a kitten cloud

In imitation of the work of Alfred Stieglitz, these came to be called "equivalents."

It's a "snail"

But I'm still sculpting, and I'm trying to make it flatter.

It's a "teapot"

I think I had the chance to go to Florence in 1994, and I saw Ghiberti's "The Gates of Heaven."

he did something very clever

We brought together two mediums from different eras.

First, I used an old technique called relief, and then I used three-point perspective, which was a new technique at the time.

it was completely overkill

the viewer loses track of what to look for

And we fall into the trap of this kind of representation.

So I decided to do it in a simple way, first with line drawing, then with wire.

Everyone misses the white, so it looks like a pencil drawing.

Everyone says "Pencil drawing"

There is substance in this, so if you review

You see things that actually exist, and you go deeper into the story than the image, and this is "Monkey and Laika."

"Relaxation"

"Let there be light"

Similarly, the history of representation progressed from line drawing to shading.

Because I wanted to work on other subjects

We've entered the realm of landscapes, where landscapes are almost like nothing is painted.

I created a series of "Yarn Paintings" titled by how many yards of yarn I used to make the paintings.

The final result is a photograph.

It's a lighthouse

"6500 yards" from Corot's painting "9000 yards" from Gerhard Richter's painting

I don't know how many yards, but it's based on a painting by John Constable.

Next, I decided to move away from the lines and work on the points, which are more like a photographic representation.

I met children in the Caribbean island of St. Kitts, and I made art and played with them.

and got a picture of the kids

As soon as I got to New York, I took the children of the sugar plantation workers.

Drawn with sugar on black paper

Thanks for these, this is Valentina

It's the child's name and information you can learn just by meeting them briefly.

"Varicia"

"Jacinta"

We introduce another way of expressing

I was making another one in parallel with these projects, because I realized that I could do other things, so I wanted to create something that would break the theme.

So I decided to create these works, because they're so big, they have to be seen from a distance.

"Chocolate painting"

Floyd could explain Choco better than I could, so he's the first subject.

Jackson Pollock too

Crowd paintings are particularly interesting, because when you take a crowd, something recognizable like a face turns into just a texture, and you can see the boundaries between them.

It's "paparazzi"

The Whitney Museum of American Art used dust to represent part of its collection.

I chose minimalist works because they deal with singularity.

We represent it with the least peculiar material - dust.

Now you can get a piece of skin from every person who visits the museum.

And if you scan your DNA, you'll have a great mailing list.

This is Richard Serra

When I bought my computer, I was told it had millions of colors.

My first question as an artist is, "Who counted?"

And I realized that I hadn't used color in my work until now, because it was difficult to work with even one color.

But when we applied the numerical structure, it became much easier to deal with color.

The first time I used color was a mosaic of Pantone color swatches.

In the end, it turned out to be a very large piece, so I shot it with a very large 8x10 camera.

You can see all the color swatches like this, it's a self-portrait of Chuck Close.

this must be seen from afar

It's also inspired by Gerhard Richter's "Color Chart," but it also leads to another representation that we're all familiar with: bitmaps.

I decided to narrow the theme down to Monet's "Haystacks."

The next thing I did as a joke was that I made a replica of Robert Smithson's "Spiral Jetty," and it looked like it was built on my desk.

I was trying to prove that he didn't make it in the Great Salt Lake.

But in the process of making a model like this, I wanted to explore the relationship between the model and the original.

And I wanted to actually create land art on that site.

I chose a very simple line drawing, just a little silly.

And then I drew it super-giant like this, 150 meters away.

Right now, I want to make very small things and show them at the same time with the same mindset, because then you have to understand what the viewer is actually looking at.

than something very big or small

I was interested in the middle ground, because it leaves a lot of ambiguity.

You can see the size of the person in the photo

this is a pipe

Hanger

Another piece of mine is -- I like watching people paint, but I don't think there's a lot of chances for a lot of people to see a painting being painted at the same time.

That's why I love this piece. I spent two months drawing cartoon clouds in the Manhattan sky.

I've always been interested in theater, and this piece gave me a reason.

In theater, characters and actors co-exist in the same space, trying to come to terms in front of the audience.

In this piece, it looks like a cloud, but it's actually a cloud.

like a perfect actor

My interest in acting, especially bad acting, is hardcore.

I paid 60 bucks to see "King Lear" with a great actor, but when he started to be King Lear, I felt like my money was stolen from me.

Instead, I paid about three bucks to see an amateur theater company's "Othello" in a warehouse in Queens.

The acting was brilliant. There was an actor named Joey Grimaldi who played a Moorish general. He was a general for the first three minutes, and then he went back to being a plumber, general to plumber, plumber to general... for the price of three dollars one, I saw two tragedies.

But it's not a question of impression, nor of believing in a perfect illusion. I usually work with just a few visual illusions.

Because the visual illusion isn't about deceiving anyone, it's about giving people a measure of thinking, a measure of how much they want to be deceived.

That's why we pay to go see magic.

this is today

my story is over

Thank you very much

I got my first computer as a teenager growing up in Accra. It was a really cool machine.

You can play games and program in BASIC language.

Captivated by its charm, I

I started researching how computers work in the library.

I understand that the CPU is constantly moving data in and out of memory (RAM) and arithmetic logic (ALU).

Then I realized that the CPU had to work like crazy just to keep moving data around.

No one cared about this.

When computers first came out, they were said to be a million times faster than neurons.

People were excited and thought that computers would soon exceed the limits of the human brain.

To quote Alan Turing: “In the next 30 years, computers will be able to answer questions as easily as humans.”

It was said in 1946, but now, as of 2007, it has not materialized.

Why can't we find this kind of power that the brain has in computers?

Less recognized, but something I'm starting to notice. That is, we pay a very high price for speed. It's about speed, which is a big advantage of computers.

Let's look at some numbers.

This is Blue Gene, the fastest computer in the world.

Equipped with 120,000 processors, it can process 10 to the 16th power bits of information per second.

The power consumption will be 1.5 megawatts.

How wonderful it would be to add that much power to industrial production in Tanzania.

I'm sure it will be a catalyst for the economy.

Let's get back to America. If you convert the power consumed by this computer into the power consumption of an American home, it will be the power consumption of 1,200 homes.

Now you know how much power this computer uses.

Now, let's compare it with the brain.

Here is a picture of Roy Siaz's girlfriend's brain.

Roy is a graduate student at Stanford.

I use MRI to study the brain. He says it's the most beautiful brain he's ever scanned.

(Laughter) This is what true love is all about.

So how much computation does the brain do?

It is estimated to be about 10 to the 16th power bits per second. It is almost the same number as Blue Jean.

Here's the question. The brain and the blue gene process similar amounts of data. How much power does the brain consume?

It's about the size of a single laptop computer. Only 10 watts.

It takes the energy of 1,200 homes, and what you do with a computer, you can do with your brain with the energy needed to run a laptop computer.

So how does the brain achieve this efficiency?

Summarize. The consequences are as follows. The brain can process information using 1/100,000th of the energy consumption of a state-of-the-art computer.

How can the brain do this?

I would like to see how the brain actually works and compare it with the behavior of a computer.

This is an excerpt from the PBS series "Secrets of the Brain".

You can see groups of cells that process information.

Nerve cells.

Nerve cells send weak electrical signals to each other. An electrical signal on one side can jump to the opposite side.

This process is called a synapse.

There are 100 million cells working together, exchanging 10 16 signals every second to form a huge network.

These are the basics of what the brain does.

How does it compare to computers?

In a computer, all data passes through a central processing unit. All data passes through here, so it's a bottleneck. In contrast, the brain has neurons, so data simply flows over its interconnected network. There is no bottleneck there.

It's literally a network.

Networks work in the brain.

Look at these two pictures. This comes to mind.

This is orderly and inflexible. Like a car on the highway. On the other hand, this is concurrent and fluid.

Information is processed dynamically and responsively.

The same point has been made in the past. In the words of Brian Eno, "The problem with computers is that there aren't enough Africas in computers."

(Laughter) Brian said in 1995.

No one listened back then, but now people are listening. Because we face technical problems that add pressure every day.

Let's look at some slides.

This is a striking parallel between the way computers do computations and the way the brain does computations.

Devices used in computers are so-called transistors.

This electrode is called the gate electrode. Controls the current between the source and drain two electrodes.

Current is carried by electrons.

When voltage is actually applied to the gate electrode, the flowing current increases and a stable current can be obtained.

When we stop applying voltage to the gate electrode, the current stops flowing.

Computers use "1" if current is flowing and "0" if current is not flowing.

So what happens when transistors get smaller, smaller, and smaller? The movement of the transistor changes.

They begin to behave like ion channels, the substances that nerve cells use to make calculations.

Ion channels are small protein molecules.

Nerve cells have thousands of ion channels.

Ion channels exist in the cell membrane and have small holes in them.

These are potassium ions that flow through that tiny hole.

Ion channel holes open and close.

When open, the ions flow in one by one. So you get a sporadic, unsteady current.

Nerve cells can open and close their holes to generate electricity, but even when the holes are closed, the ions are so small that they can slip through - two or three ions can slip through at once.

You can get some current from time to time, just like when you have a hole.

some "0"s are added

When closed, it becomes one "0". However, some "1"s are also added.

This is what is starting to happen with transistors.

And the reason this happens is because the technology we're using, the transistor, has gotten smaller, allowing more than one electron to flow through the channel at the same time.

In fact, about 12 electrons can flow this way.

This means that the transistor corresponds to about 12 ion channels in parallel.

By 2015 transistors will be much smaller than they are today.

This is why Intel keeps adding more cores to their chips,

It's also why the memory sticks you carry around have gone from 256 megabytes in the past to 1 gigabyte today.

The miniaturization of transistors has made this possible, and technology has really benefited from that.

What's happening now is equivalent to passing one electron through the channel at a time in 2015, when transistors are so small. Same as one ion channel.

Traffic jams similar to those occurring with ion channels began to occur,

The current will either flow or not flow. Even when it is supposed to be constantly flowing.

This can lead the computer to confuse "1" and "0" and crash the machine.

We are at the stage where we do not know how to perform computation using such inferior devices.

All we know right now is that it's the brain that does the computation in these devices.

The computer retrieves some data from memory and sends it to the processor or ALU. Then put the result back into memory.

It's the red route.

This is how the brain works. Nerve cells are present.

Fragment the data to represent the information. Pieces of data are presented by different neurons and pulses.

All these pieces of data are distributed over the network.

The way we process the data to get results is to transform this pattern of activity into a new pattern of activity. It is realized simply by flowing through the network.

With these connections in place, the input pattern simply becomes the stream output pattern.

You can see that there are redundant connections.

If this piece of data, or this piece of data, breaks, it doesn't show up here, but these two pieces can activate the other through these redundant connections.

Even on bad devices that get a 0 when you want a 1, the network has redundancy and can recover lost information.

This is what makes the brain inherently robust.

Systems that store data in one place are fragile.

If each step is not perfect, you will lose your data. The brain, on the other hand, stores data in a distributed fashion and is robust.

My dream is to build a computer like this that can work like a brain.

I've been working on this for the last few years.

Now let me show you the system we designed. Designed to model the retina. The retina is the part of the brain that lines the inside of the eyeball.

We didn't implement it by writing code like we would on a computer.

In reality, the processing that takes place in that little part of the brain is very similar to what a computer does when it streams a video over the Internet.

Computers try to compress information. We want to send any new changes that occur to the image. And in this way the eye can extract all the information through the optic nerve. They are sent to other parts of the brain.

Instead of implementing this in software and algorithms, we talked to neurobiologists. They're reverse-engineering how the retina works.

They used all the cells and their networks that they had discovered as blueprints for designing silicon chips.

Neurons are now represented by tiny nodes and circuits on a chip. Also, neuronal connections are modeled by transistors.

The behavior of these transistors is similar to how ion channels behave in the brain.

You'll end up with a robust structure similar to what I've described so far.

This is the artificial eye that we actually created.

Our designed retinal chip is installed behind this lens.

What I'm going to show you in this video is what this silicon retina chip can do. I will look at Kareem Zafrol with artificial eyes. Kareem is the student who designed this chip.

Let me explain. Different kinds of information are printed. It is not projected as it is like a camera.

Retina chips output four different types of information.

The output of the dark part, this will be reflected in red.

And the white or bright part, this is reflected in green.

This is Kareem's pupil. Here is the white part of the eye.

In addition, it also outputs motion.

As Kareem moves his head to the right, you can see blue movement here. There are places in the image where the contrast is amplified. That's the part that gets brighter.

There is also yellow movement. It is the part where the contrast is reduced, representing the darkening part.

These four pieces of information are sent out through 900,000 of the million or so optic nerves.

We are replicating signals similar to those that flow through the optic nerve.

These are snapshots of the output from the retina chip, but the colors are very sparse.

It's not green everywhere in the background, it's limited to the edges etc.

This is similar to how people compress video images for transmission. Don't cram as much information as possible to keep the file small. This is what the retina does through neural circuits, and we have recreated the way in which a network of neurons communicates with each other on a retinal chip.

But what I want to emphasize, I will show you.

This image is similar to these but shows that the image can be reconstructed. Kareem can be roughly recognized at the top.

Let's go.

Right, here's the idea.

When you stay still, you just see the contrast between light and dark.

However, when moving back and forth, the retina picks up about changed parts.

That's why you can sit here and barely move your eyes when something happens behind your back.

There are cells that detect change and pay attention to it.

It is very important to notice when someone is sneaking up on you.

Let me say one last thing. Add Africa to the piano,

It becomes an iron drum. Add Africa to the piano and this happens.

What I want to do is add Africa to my computer. It should become a new kind of computer that thinks, imagines, and creates for itself.

thank you very much.

(Applause) Chris Anderson: Quavena, I have a question.

Your work, Africa's future, this conference, are you united? How can we connect them?

Quavena Boahen: Yes, like I said at the beginning I got my first computer when I was a teenager in Accra.

I really felt that there was something wrong with how the computer worked.

It was very forceful and unsophisticated.

I think you were reacting like this. Even if you grew up reading science fiction, hearing about RD2D2, and swallowing computer hype.

I approached him from a different perspective. I had a different perspective on getting involved with this issue.

I think many people in Africa have this different view. And that should have an impact on technology.

It will have an impact on the process of evolution.

By giving these, You will be able to meet new things. Because they approach you in a different way.

I believe we can contribute and dream like everyone else.

Chris Anderson: Quavena, thank you. It was very interesting.

thank you.

(applause)

Applying for a job online is probably one of the worst experiences of our time.

Applying directly is not a bad idea

Series How to work There are various problems in the way of recruitment so far

It's a terrible experience for job seekers.

75% of people who applied for jobs in the past year through various channels, 75% of people who applied for jobs through various channels in the past year said they never heard from the company.

The same is true for the company side.

Within a year of being hired, 46% of people are fired or leave the company.

I'm surprised

it's not good for the economy

Now, for the first time in history, there are more vacancies than there are unemployed, which seems to indicate that something is wrong.

At its core, I believe, is a piece of paper, a resume.

Resumes certainly have useful information, too: work history, computer skills, language proficiency, but what's missing is something you've never had the chance to do, but that has potential.

In today's rapidly changing economy, jobs appearing online may require skills that no one else has, and looking only at what candidates have done in the past won't match people to future jobs.

That's where technology can help

You've probably noticed that computers are very good at matching people to things. Couldn't we use the same technology to find jobs that are a good fit for us?

I know what you're thinking

It's a little scary to think that a computer should choose your next job, but there's one good indicator of an employee's future job success: the multi-measure test.

This is nothing new, but it used to be very costly, and candidates had to answer a lot of questions and write essays in the presence of a professional.

Multi-measure tests are designed to capture intrinsic qualities of a person, such as memory and attention.

What if we could make multi-measure tests more easily accessible to more people, and show recruiters data about what qualities would make a good candidate for a job?

It's a little hard to understand

let's play a game

A circle will appear, so if the circle is red, clap your hands, if it's green, don't do anything.

[Are you ready? ] [beginning! ] [green circle] [green circle] [red circle] [green circle] [red circle]

People who clap their hands after pausing for a while to make sure they don't make mistakes

Some people clap their hands on the green when they shouldn't.

The good thing about this is that it's not a pass-or-fail test.

It's about finding jobs that suit your personality.

Someone who clapped their hands a little later on red but never clapped on green might be a cautious, self-disciplined person.

They tend to excel in school, do well on exams, and excel in projects like project management and accounting.

People who immediately clap red and occasionally clap green are likely to be more impulsive, more creative, and more likely to be high-performing salespeople.

And the way we're going to use this in recruiting is to get the best people in that role to do these neuroscientific tasks.

We develop an algorithm to identify the characteristics of those people.

Then when people apply for jobs, they'll be able to find the best candidates for the job.

You may think that such an approach is dangerous.

The world of work today isn't necessarily the most diverse of people, so wouldn't creating an algorithm based on current top performers perpetuate existing biases? Doesn't it entrench existing biases?

For example, if you were to use the S&P 500 as a training set and build an algorithm on the best CEO data, you'd be more likely to hire a white man named John than any woman.

That's the reality of the person who currently occupies the CEO position.

But technology offers really interesting opportunities.

We can create algorithms that are fairer and fairer than any human being.

The algorithms that we use in production are pre-tested for gender and ethnic bias.

If we find that certain layers are favored, we tune our algorithms to eliminate them.

By focusing on the intrinsic qualities of a person that make them fit for work, racism, classism, sexism, ageism, even education can be overcome.

It would be a shame to use the best technology and algorithms only to find the next movie to watch or the song you like that's similar to Justin Bieber.

Wouldn't it be nice if we could use the power of technology to give us guidance based on who we are at heart?

From Shakespeare's plays to modern TV dramas, the relentless villainous schemer has become a familiar villain we hate.

It's been so familiar over the centuries that the term "Machiavellian" was coined to describe such a person.

But we shouldn't keep misusing the word forever.

Niccolò Machiavelli, an early 16th-century politician, wrote not only history and philosophy, but also many plays.

But his lasting notoriety is due to a short essay known as "The Prince," directed not only to monarchs of that time, but also to future monarchs.

Machiavelli isn't the first to do something like this. It's actually a tradition that can be traced back to antiquity, and there's a series of works known as The Mirror of the Monarch.

But unlike his predecessors, Machiavelli did not envision an ideal government or advocate for just and moral governance.

It focused on power itself -- how to acquire and maintain it.

And in the decades after its publication, "The Prince" achieved diabolical acclaim.

During the religious wars in Europe, both Catholics and Protestants alike accused Machiavelli of inciting violence and tyranny on the other side.

By the end of the 16th century, Shakespeare was using "Machiavellian" as a synonym for the morally deficient opportunist, the scheming villain.

At first glance, the assessment that The Prince is a guidebook for tyrants makes sense.

Machiavelli seems utterly unconcerned about morality unless it's useful or detrimental to maintaining power.

For example, monarchs are encouraged to consider the brutality required to maintain their power and ensure future stability with a single blow.

He cited attacks on the peripheries and crackdowns on religious minorities as effective methods of occupation.

As for the personal conduct of monarchs, Machiavelli advises them to continue to display virtues such as honesty and generosity, but to quickly abandon them when their interests are threatened.

His most famous words to the rulers were, "It is safer to be feared than to be loved." The Prince inspired Lorenzo de' Medici, the new ruler of Florence, to reunify Italy's fragmented nation and city.

Many legitimized Machiavelli, driven by cold realism and a desire for peace in Italy fragmented by internal and external conflicts.

Based on this view, Machiavelli was the first to understand the unacceptable reality: that any notorious tactic is worthwhile if necessary for the cause of political stability.

Philosopher Isaiah Berlin argues that The Prince is not immoral, but rather listens to ancient Greek morality, putting national glory above the Christian ideal of personal salvation.

But real Machiavelli doesn't fit this scheme.

He served as a Florentine diplomat for 14 years, loyally defending the elected Republican government and rebelling against the aspiring monarchs.

When the Medici came to power, not only was he ousted, but he was even tortured and exiled.

Given this, the essay he wrote in exile can be interpreted not as a defense of monarchical rule, but as a scathing critique of how it works.

Of course, Enlightenment thinkers like Spinoza interpreted it as a warning to free citizens that they could be conquered in many ways by ambitious rulers.

In fact, both interpretations are correct.

It can be a guide for tyrants, but by sharing it, you can also say that you have revealed the means to those who can be ruled.

In doing so, he reformed political philosophy and laid the groundwork for Hobbes and future thinkers to study human problems in terms of concrete realities rather than preconceived ideals.

Machiavelli sought to shatter the delusions of power with brutal and startling frankness.

In his last letter to a friend, he wrote with a wish for people: "You should know the road that leads to hell so that you don't fall into it."

(Beatboxing) How are you doing?

I'm Tom Sam, and I'm happy to be speaking at TEDx again.

When I came out of Brisbane with a twinkle in my eye for my first TEDx appearance in Sydney in 2013, I had no idea that it would become the most viewed video ever.

(Laughter) (Applause) It was totally unexpected, and I got super excited.

But what you're looking at today is me, five years later, a slightly arrogant grown-up, full of confidence.

(Me) Today, I'm proud to present you an unprecedented vomiting warning talk that will make you want to walk away in an instant.

It's going to be hard to pretend you haven't seen what I'm about to show you, but it's all for science.

First of all, for those of you who don't know me, if I were to put it bluntly, I'm a beatboxer.

(Beatboxing) Like for example...

How about this (Beatboxing) (Rhythm change) (Imitation of wind instrument sound) (Applause) Thank you

(Applause) As a beatboxer, I rely 100 percent professionally on the flexibility of the unfiltered human voice.

And over the years, we beatboxers have been answering questions like, "Wow, that's really cool.

When did you know you could do it? ”

That's right, maybe after practicing until my blood bleeds (laughs) "What kind of work do you usually do?"

"I'm afraid this is my job."

But there's a common question that's harder to answer, and it's how they do it, how they make the sound.

My muscles remember how to move my lips, so if I follow them, I can make sounds like this (beatboxing), but I have no idea what's going on inside.

(Laughter) To make this sound (beatboxing). Metaphorically speaking, I can drive, but I don't know what's under the hood.

So today, I'm going to take this opportunity to invite 5,000 of you in captivity, a bunch of cameras staring at you, people you're watching online, people coming from your browser history, to a very private place to meet.

it's my throat

I'd like to invite an expert to help me with this, from the Queensland Voice Centre, the legendary otolaryngologist and laryngeal surgeon Matthew Broadhurst, who knows the inside of my mouth better than I do.

(Applause and cheers) (Matthew) Thank you Tom.

Good evening everyone

I am honored to be at TEDx tonight.

(laughs) You did it.

(Laughter) (Tom) I'm not warming my hands.

I don't do what you think

Matthew: We decided a while back that we wanted to go deeper into the world, and we decided to look deep into the throats of this extraordinary man and see how humans can produce such a wide variety of sounds.

And what I found out - this hand goes in my mouth - it was amazing.

I spent two years at Harvard Medical School studying laryngeal surgery under the world-famous Dr. Steven Zeytels, and I've never seen anything so bizarre and interesting, and I'm going to show you that now.

(Laughter) (Matthew) Maybe for sensitive people, the next 10 minutes of footage might be grotesque and disgusting.

(Laughter) (Matthew) When humans produce sound, they use their vocal cords to take air from their lungs and cause the air columns in their throats to vibrate.

If you compare it to a trumpet, the mouthpiece corresponds to the folds of the vocal cords, and the main body is the throat.

So, for example, if you take off the head and part of the neck, leaving only the torso, and vibrating only the vocal folds, you'll hear something like this.

(Sounds like a fart) (Tom's high pitch) (Matthew) It's hard to communicate with this.

It's the soft tissue of the throat that allows for the amazing variations in sound that you hear tonight.

This is a rigid laryngoscope

(Tom) It's pretty sharp.

(Laughter) (Matthew) Yeah

(Laughter) At 10 millimeters in diameter, that's the highest quality performance for a laryngeal image.

I've got a stroboscope and a trigger mic here.

Let's measure the frequency with this microphone and visualize what happens when you speak.

can you turn off the lights

(Tom's bass) (Matthew) Lights up in the cup

(Tom's highs and lows) (Matthew) Now we've matched the frequency of the sound with the timing of the strobe.

This flickering light is

(Tom's bass) (Matthew) It's probably around 80 hertz.

Now, if we use this to shift the timing of the strobe and sound vibrations,

You can see vibrating tissues in real time and in slow motion.

When you look at the larynx in this way, you can see the vocal folds vibrating in smooth slow motion.

let's do it

Are you ready?

(Tom) Okay

(Laughter) (Matthew) So let's go.

Let's take a look at the larynx

(laughs)

say yes

(Tom) Yee (Matthew) You can see the vocal cords at the bottom. They're tendon-like structures.

(Laughter) Now look at the skin in the throat area.

please turn the lights back on

(Laughter) (Applause) Yes, take it easy and say yes.

(Tom) Yee

(laughs) (Tom) Yee

(audience in amazement) (Matthew) The vocal folds are vibrating, probably around 120 hertz.

So we're hitting each other 120 times a second just to make this sound.

And this is perfectly normal behavior.

So, all the sounds Tom has been making with his beatbox, and the way he's done it, has never caused any damage to his throat.

this is amazing

good work

okay

(Tom's high note) (Tom) Good job

Matthew: Now look at the movement of the vocal cords from high to low.

Long and thin vocal cords become shorter and thicker

Yes "E"

(Tom)ee (high to low)

(Matthew) I like it

(Tom)ee (high to low)

Matthew: As you can see, Tom's vocal range is so wide, wider than any other performer I've worked with, that this device doesn't pick up that high range.

(Tom's treble) (Matthew) The "extreme treble" is around 2,092 hertz.

So your vocal cords are banging against each other more than 2,000 times a second just to make that sound.

That's amazing, isn't it?

The vocal cords are only 15mm long and not even the width of your thumb.

It's unbelievable... (Laughter) It's amazing what this little organ can do.

Now we're going to use a bendable laryngoscope.

It will be a little more vivid than before

(Tom) I heard he bought it at SEXPO.

(Laughter) (Matthew) That wasn't in the script.

(Laughter) (Applause) (Tom) And it's used.

(Laughter) (Matthew) We're going to use a local anesthetic here, so we have to time it.

Numb my nose and put the camera in

It's inconvenient for producing a lot of sound, but it makes for a very interesting picture.

Then please watch with vomiting caution

(audience surprised) Go behind the nose.

this is the soft palate

The sounds we make on a daily basis, even the simplest sounds, are very complex.

For example, when making the "ka" sound

The soft palate makes a tight seal behind the nose.

If you say "ka" five times loudly, you'll feel your soft palate against the back of your throat.

Mo, mo, mo, mo, mo

Let's have Tom do it

(Tom) ka, ka, ka, ka, ka

"Kakadu Park's kookaburra and cockatiel squealing loudly didn't cure my ketamine addiction."

(Laughter) (Applause) (Matthew) Of course, in the world of beatboxing, you can use this for any sound effect.

i want a mic

(Tom) They're both professionals, don't worry.

(laughs) (Beatboxing) (Matthew) Good.

(Applause) (Matthew) So let's go a little deeper.

Dim the lights, can you see the light somewhere in your mouth?

can identify the position of the camera

(laughs) (Tom sings) Surprise

(Laughter) (Matthew) Now

(audience surprised) What you see over there is the base of the tongue.

The side wall that looks like a screen is the pharynx.

The larynx is the dark, flat area in the back with a muscular wall.

(Tom) Can you turn the lights back on?

better do that

It's become a scary image to see in the dark

(Matthew) Please turn on the lights.

Sounds good

I've seen more than 15,000 larynxes in my life, so I can tell you that Tom's larynx is anatomically just like any other normal larynx.

But it's the unique use of muscle and soft tissue that allows us to create these amazing sounds that you'll hear later.

Now we're going to decipher these sounds.

(Tom) Yeah, the secret is in it.

(laughs) I'm coming.

(Tom's high pitch) (high pitch) (sounds like an owl's hoot) (Matthew) Now Tom uses rhythmic contractions of all his muscles to change the shape and length of the vibrating air column to produce these sounds.

(Beatboxing) (Laughter) (Tom's bass) (Matthew) You can see the tuning movement here -- you can see the arytenoid cartilage further down there -- it's rocking back and forth, making different sounds.

(Tom's bass) (Matthew) It's called a "sphincter bass."

(Laughter) Can you see it? It completely hides the tissue underneath -- (Laughter) It's making a very different low bass sound.

I'm under anesthesia right now, so I'm going to leave this black tube in my nose, and have him demonstrate Tom's repertoire for a little bit, and I'll take a look at his throat while he's doing it.

Be careful - I'll move

(Tom) Can you lift me up just a little bit?

(Laughter) (Beatboxing) Oh wait a little bit more- (Laughter) Yeah it feels good

(Beatboxing) Dedicated to everyone who came to dive deep It's a bottomless depth Now how about this

(Beatboxing) (Applause) (Applause) (Beatboxing) Start with the basics and build from scratch

(imitation of scratching sound) Good, that's it

(beatboxing) (trumpet imitation) (beatboxing) (beatboxing) back to basics

(Beatboxing) (Beatboxing) You know the sound

(Beatboxing) Let's get excited

(Applause) (Applause) (Applause) (Tom) Thank you.

My story is "origami cranes and space telescopes"

Both of these things may seem irrelevant, but after these 18 minutes, you might be able to see a little bit of the relationship.

related to origami let's get started

What is origami?

People who know origami will usually think of this: paper cranes, toys, pakupaku, etc.

it used to be like that

But now it's become something else

It became an art form, a sculpture form.

Origami is origami, so the common theme is folding.

Its history is very old.This nishiki-e is from 1797.

A woman is playing with these toys

If you look closely, this shape is an origami crane.

All Japanese children are taught how to fold paper cranes

This art has been going on for hundreds of years, and you might be thinking, "With this long history under the tight limit of just folding, we've already done everything we can."

it is understandable

But in the 20th century, an origami maker named Yoshizawa came along and created tens of thousands of new designs.

More importantly, he created a "language" that could exchange origami information using dots, lines and arrows.

In other words, in Susan Blackmore's talk, we've got a way of communicating through genetics and selection, and where it's going.

In the world of origami, we've arrived here

This is origami, a piece of paper, no cuts, just folded hundreds of times.

This is also origami. This shows the goal of modern origami.

Naturalism and attention to detail

Antlers, antlers, broken nails, etc.

And the question arises: what has changed?

What has changed is something the art world never thought of: mathematics.

I applied the principles of mathematics to art and discovered the laws behind it.

and a more powerful tool was born

In many fields, the secret to productivity — even in the origami world — is letting the dead do the work.

(Laughter) What you can do is turn your problem into a problem that someone else has solved before and use the answer.

I'll tell you how I did it in the origami world

Fold patterns are important in origami

The fold pattern is the blueprint from which the origami shape is based.

you can't draw on your own

there are four simple rules

very simple and easy to understand

The first law is "dichromicity," so any pattern can be painted in two different colors without adjacent colors of the same color.

At any vertex, the direction of folds The difference between the number of mountain folds and the number of valley folds is always 2, which is 2 more or less

nothing else

If we look at the fold corners, if we number the corners around a circle, the sum of all the even numbered corners is a straight line (180 degrees) and the sum of all the odd numbered corners is also a straight line (180 degrees).

And if you look at the overlap of the folds, no matter how many times you fold it, none of the layers will go through the other.

These are the four simple rules of origami.

All origami is based on this

You might be thinking, "How can four simple laws do something so complicated?"

But it's true. The laws of quantum mechanics can be written on a napkin, but they govern all chemistry, all life, all history.

If you follow this rule, you can do interesting things.

So, in origami, following this rule, if we take a simple pattern -- this kind of repeating fold line called "texture" -- it's nothing in itself.

But according to the rules of origami, it can be folded in another way, which is very simple in itself, but when you put it together, it becomes a little different.

This fish has 400 scales, but this is also just a square folded piece of paper without a break.

If you don't want to fold 400 scales, you can go back and with a little work you can put a shell on the turtle's back and put fingers on it.

Or you could do more work and put 50 stars and 13 bands on the flag.

If you want to do something really crazy, you can make a rattlesnake with 1,000 scales.

It's on display downstairs so you might be able to see it.

Origami's most powerful tool has to do with how we make the parts.

It is expressed in this simple formula

When I have an idea, I tie it to a square of paper to make an origami shape.

(Laughter) What matters is what these symbols mean.

"Can you be that detailed?

A stag beetle has two jaws and antennae. "You might think that

yes you can actually

How do you do that? Let's break this down into small steps

expand the formula

I have an idea, I abstract it.

What is the most abstract shape? It is a shape made of sticks (stick shape).

From this bar shape I have to manage to get a folded shape with all the parts, one "flap" for each leg.

Once you have this folded shape, called the "base", you can taper the legs and fold them into the finished shape.

1st step: this is easy

Come up with an idea and make it stick

The last step isn't too difficult either, but the middle part, the base folded from the abstract shape, this is the hard part.

But here comes the mathematics, and we're going over the wall.

So I'm going to show you how to make something out of this state.

But let's start small

This "base" has a lot of flaps

Learn how to make one flap

how to make one flap

Take a square piece of paper, fold it in half, fold it in half, fold it in half again, and repeat until the width is narrower.

A flap can be a leg or an arm or something like that.

Which part of the paper became the flap?

If you unfold the fold and go back to the fold pattern, you'll see that the top left corner was a flap.

That's the flap, the rest of the paper is left

can be used for something else

There are other ways to make flaps

The flap also has other features.

Narrower flaps use less paper

If you make the flaps as thin as possible, you'll use the least amount of paper.

As you can see, we need a quarter of a circle to make the flap

There are other ways to make flaps

1/2 of a circle is needed to make flaps on the sides

And to make the flap inside the paper you will need the whole circle

So no matter how we make the flap, we still need a piece of the circle in the paper.

Now you're ready to scale up

What happens when you need a lot of flaps?

you need a lot of yen

In the 1990s, origami artists discovered this principle and realized that to create arbitrarily complex shapes, simply pack circles together.

This is where the dead come to the rescue, because a lot of people have already worked out how to pack the circles.

I can look to many mathematicians and artists of the past for packing and arranging circles.

Using those patterns to make origami shapes

So we know the rules for packing circles, plus we can draw lines based on other rules to make creases.

The crease becomes the "base" and further deforms the base.

Origami shape - in this case you will have a cockroach

It's so easy, isn't it?

(Laughter) It's so easy that you can do it on a computer.

"How easy?"

Computers need to describe events in a very basic language so that they can calculate crease patterns.

So many years ago I wrote a program called TreeMaker, which you can download from my website.

It's free Works on all major operating systems — even Windows

(Laughter) You just draw a bar, and the program calculates the fold pattern.

We're going to fill in the circles and calculate the fold pattern.

If you fold the dotted lines based on the crease, you will have a "base", and if you transform it further, it will be a deer.

If you don't want a white-tailed deer but want a different deer, change the way you pack the circles and you get a moose.

mousse too

any kind of deer

This technique revolutionized the art of origami

You can have insects, you can have spiders -- this is close, some with legs, some with legs and wings, some with legs and antennae,

If one sheet of paper doesn't make one praying mantis, then one sheet of paper can make two praying mantises.

female eats male

It's "Snack Time"

We can also do things other than insects

This is — you can add detail Fingers and claws, grizzly bears have claws

You can put your finger on a tree frog

Many origami makers have started to attach their fingers

Everyone does it, so our fingers have become an origami meme.

can make multiple

here are two musicians

A guitarist and a bassist from a piece of paper

So I said, "Hmm, guitar and bass - no big deal.

A little more complicated instrument

Then you can build an organ

(Laughter) Now, in the world of creation, this is Origami on Demand.

Now you can say, "I want this and this," and fold it.

Sometimes you can make high-end art, and you can make money doing commercials.

Let's see an example

Everything you see here is origami, except for the car.

(Video) (Applause) These are really folded pieces of paper.

It's computer driven, but it's all real origami shapes that we made.

I've found that this method is useful not only in the visual realm, but also in the real world.

Amazingly, we found that origami and origami structures have applications in fields such as medicine, science, space, the human body, and electronics.

Let's see some examples

One of the early ones is this pattern, this pattern is the work of a Japanese engineer, Koryo Miura.

He studied origami patterns and found that they could be made into very small packages that were very easy to open and close.

he applied this to the design of solar cells

This is an art form, but in 1995 it became a Japanese telescope and flew.

The James Webb Space Telescope uses a little piece of origami, very simple.

When you launch your telescope into space, it deploys in two places.

Folded in thirds, it's a very simple pattern -- maybe not origami.

There is no need to consult an origami artist

But if you want something more advanced and bigger than this, you may need some origami skills.

Engineers at Lawless Livermore National Laboratory thought of a much larger telescope.

Say "Eyeglass"

Designed for a 100m diameter lens 41,600km above geostationary orbit

Imagine a lens the size of a football field

There are two kinds of people who are interested in this: space scientists who look up at the sky from there, and people who want to look down from there.

Whichever way you look at it, how do you launch into space? you have to put it on a rocket

And rockets have to make small lenses smaller.

How to make a large piece of glass smaller?

I have no choice but to bend it somehow

There you can do something like-

this is a small model

For lenses, break it down into panels and curve them

But this pattern doesn't allow 100m to be a few meters.

So the engineers at Livermore said, "Let's see if there's another way," either by using the work of the dead or the living Origamists.

They found the origami community, contacted us, and started working together.

Together, we developed a pattern that can be scaled to any size, made into any plane, ring, disc, and folded into a very compact cylinder.

And then we applied it to the first generation, not 100m, but 5m.

But this one is 5m, but it has a focal length of 400m.

And it works perfectly well in our test range, and it folds into a small bundle.

There are other origami in space

The Japan Aerospace Exploration Agency flew a solar sail. This is the unfolded photo. You can still see the creases.

The problem we're trying to solve here is to keep things on the sheet that are very large in the final unfolding, small in the path to get there.

This technology works in space, and it works in the body.

Here's an example in the body

This is an intravascular stent by Zhong You of the University of Oxford.

Once it reaches the target location in the blood vessel, it expands there to open the blockage, but it must shrink along the way to get there through the blood vessel.

And this stent is folded by an origami base of paper balloons.

Airbag design also suffers from the problem of stowing a flat seat in a small space.

Engineers use computer simulations to

We have to figure out how to fold the airbag flat.

And the algorithms we use to make insects became the solution for airbag simulation.

This kind of simulation

The origami folds are made, the airbag is inflated, and you think: will this work?

That's where some really interesting ideas came from.

Where did these shapes come from?

Well, vascular stents were born out of little paper balloons that you might have remembered in elementary school.

It is the same pattern as "paper balloon base"

The airbag folding algorithm actually came from circle packing and mathematical theory developed to make insects -- legged.

In the world of mathematics and science, this is a common occurrence.

When mathematics gets involved, what you solve for purely aesthetic value or to create something beautiful, it turns into a real-world application.

As strange and astonishing as it may sound, origami may one day save lives.

Thank you very much

(applause)

It's 6:30 a.m., and Christine is taking her prostate patient to the operating room.

She's an intern, aspiring to be a surgical specialist.

now it's my job to learn

She really wants to perform today's very delicate, nerve-sparing surgery to preserve erectile function.

But whether you can do that is up to your preceptor, and that preceptor hasn't come yet.

She and her surgical staff put the patient to sleep under anesthesia, and she conducts the first 20-centimeter lower abdominal incision.

After clamping the incision, she tells the nurse to call the prescribing doctor.

When he arrives and changes into his surgical gown, from that point on, Christine and her mentor's four hands are mostly inside the patient's body, under the guidance of Christine.

After the prostate was removed - and the doctor let me do a little nerve-sparing surgery - he took off his surgical gown.

start writing documents

At 8:15, Christine was suturing to a young resident who was looking over her shoulder.

she takes care of the stitching

christine is happy

The patient will get better, and as a surgeon she's definitely grown since 6:30.

This was an extreme case

I think a lot of the time, I think the way you learn a job is the same as Christine's: watch the expert a little bit, do the easy, low-risk part of the job, and when the expert guides you, you decide it's okay, and then you move on to the riskier, harder task.

I've always been fascinated by this kind of learning.

I felt that it was the fundamental thing that made us human.

Apprenticeship, coaching, mentorship, OJT, etc.

Surgeons say, "see, do, teach." It's all the same process, and that's the primary way to acquire skills around the world for thousands of years.

But now we're using AI in a way that prevents that.

They're sacrificing their learning to be more productive.

We first saw this phenomenon in surgery when we were doing research at MIT, but now we have confirmation that it's happening everywhere, in different industries, with different AIs.

Most people trying to work with AI will hit a wall if nothing is done.

Consider the surgical procedure I mentioned earlier.

6 months later

That same 6:30 a.m., Christine brings in another prostate patient into a robotic operating room.

At the initiative of the preceptor, a four-armed, hundreds-kilogram robot is attached to the patient.

The instructor and Christine both take off their surgical gowns and head to the control table 3 or 4 meters away. Christine is just watching.

With this robot, the prescribing physician can do all the procedures by himself, so basically he does everything.

I know she needs practice

i want her to

It takes her more time and more mistakes, so she's prioritizing the patient.

Christine had no hope of being able to do a near-nerve operation in this assignment.

I'd say I'm lucky if I can get 15 minutes out of a four hour operation.

If she makes a mistake, the tutor touches the screen and then just looks at it again, leaving her feeling like she's standing in the corner of the classroom.

All the research I've done in the last eight years on robots and work stems from this big, unsolved question: How do we learn how to work in the age of intelligent machines?

To find out, I spent two and a half years observing and listening to dozens of interns and surgeons performing conventional and robot-assisted surgery, and talking to interns who were trying to master the techniques.

We looked at the top 18 teaching hospitals across the country, and they all said the same story.

Most residents were in the same situation as Christine.

There were many opportunities to "see", but few opportunities to "do"

I couldn't really struggle, I wasn't learning.

This is a very important fact for surgeons, but I also wanted to know the general extent. Are there other examples where the use of AI interferes with job learning?

To find out, I partnered with a small but growing group of young researchers who were conducting field research on AI-powered jobs in a variety of work environments, from start-ups to security to investment banking to online education.

Like me, they spent hundreds of hours observing and listening for at least a year, and often worked side by side with their research subjects.

We shared each other's data, and I looked for regularities.

Regardless of industry, job type, or type of AI, the story was the same.

Organizations are trying hard to get results with AI, but the result is pulling learners away from the work of experts.

Startup managers outsource customer service

Police officers had to learn how to handle crime predictions without expert assistance.

Young bankers were cut off from complex analysis, and professors had to create online courses without any help.

All these effects were similar to surgery.

It's getting harder to learn by doing.

And that's not the end of the story

McKinsey estimates that by 2030, between 500 million and 1 billion people will need AI in their daily work.

In the meantime, on-the-job learning will continue for some time.

Accenture's latest worker survey found that most workers learn important skills on the job rather than in formal training.

There's been a lot of talk about potential implications for the future, but I think the biggest impact on AI right now is that we're using AI in a way that hinders hands-on learning, where it's most needed.

Very few people figured out how to learn to work anywhere.

they learn by breaking or bending the rules

Because the accepted methods are ineffective, they bend or break the rules to achieve hands-on training with experts.

In my example, a medical school intern doing robot-assisted surgery sacrificed his education to become a general practitioner.

They spend hundreds of extra hours on simulators and recording surgeries, but they're really supposed to learn in the operating room.

And most importantly, they're finding ways to painstakingly perform the actual procedure under the limited supervision of an expert.

We call it "shadow learning" because it bends the rules and stays out of the limelight.

Because the results will go up, the people around you will acquiesce

don't forget they are the best of the best

Clearly, this is not a good thing, and it cannot continue forever.

You shouldn't risk getting fired to learn the skills you need for your job.

On the one hand, we need to learn from such people.

they took serious risks to learn

I realized that I needed to continue to struggle and be challenged in my work, and that I should be able to face difficult problems that were just beyond my capabilities.

They also had experts on their side to give them hints and prevent catastrophes.

Build a combination of struggle and expert assistance in your AI-powered workplace

Here are some easy-to-understand examples

Before the advent of robots, explosive ordnance disposal engineers approached to defuse improvised explosive devices.

The junior staff members just watch from a few dozen meters away, and only after the technicians have confirmed their safety and given permission to enter the danger zone do they begin to assist.

Now the two sit next to each other in the bomb disposal vehicle.

watch a movie together

A remote robot is operated and a technician verbally guides the work.

Learners learn better than before robots

This method extends beyond surgery, startups, security, investment banking, online education, and more.

Fortunately, we have a new tool for that.

The internet and the cloud have made it unnecessary for each learner to have an expert, and they no longer need to be physically next to each other or in the same organization.

We can also create AI that can help, coach learners to struggle, coach experts to coach, and network those two groups together.

Some people used systems like this, but mostly it was just formal training.

But it's the on-the-job learning that's more dangerous.

should be able to improve

The challenge now is that we can better create jobs that take full advantage of the amazing capabilities of AI, and at the same time, improve our own skills.

This is the future I dreamed of when I was a kid.

And now is the time to create it

thank you

(applause)

Do you remember the first time you kissed?

Ever burnt your mouth from a hot pizza?

What do you think of the handkerchief remover I did when I was a kid?

All of these are examples of understanding something through touch.

This is the foundation of haptic design

"Haptic" means of or relating to the sense of touch.

It's what we've been using since we were born.

I was working on my computer, and a friend of mine saw me typing hunched over and walked behind me.

I put my left thumb on the left side of my hip and put my right index finger in front of my right shoulder.

I unconsciously straightened my posture

With just one gentle gesture, she improved my posture.

At the time, the paper I was working on was about developing new ways of teaching movement through technology.

I wanted to make a suit that you could learn kung fu tricks.

(Laughter) I was wondering how I could teach the movement without a teacher present.

But in that moment, I knew I could use my sense of touch.

I figured that if I put a vibrating motor where my friend put his finger, and combine the motion capture data of that posture with the correct posture, I could have a similar experience without a teacher present.

But to make that happen, one important thing was missing.

How would you use vibrations to tell your wrist to be 5 centimeters above your knee?

Do you understand what that means if there is a motor on the top of the wrist, raise it?

Or does it feel like it's pushed up better with the motor on the bottom?

We didn't really have a definitive answer yet, because there was no widely used tactile language for conveying information through touch.

My co-founder and I set out to create that tactile language.

The first device we built wasn't a kung fu suit.

(Laughter) But in some ways, in terms of simplicity and usefulness, we've come up with something much more impressive.

Starting with actually navigating the simplest form of movement, locomotion

The result is the Wayband, a device worn on the wrist that vibrates to signal and guide the user to their destination.

The user spins around and stops when it feels like it should go in that direction.

We had hundreds of people try this informally, and most of them understood the cue within 15 seconds.

it was so intuitive

Our original goal was to get people off their phones and back into the real world.

As we experimented more and more, we realized that our work would be most useful to people who have little or no vision.

When I first approached a group of people with visual impairments, they said to me,

I want you to create something that can be used by anyone and is optimized for blind people.”

When we started WearWorks, we set three guiding principles: to make cool things, to make the biggest impact in life, and to reimagine the world in terms of touch.

Nov. 5, 2017 A blind man successfully ran the first 25km of the New York City Marathon using a Wayband without any visual assistance.

(Applause) It rained so hard that I couldn't reach the finish line, but that doesn't matter.

(Laughter) We've proven that we can use our sense of touch to navigate complex routes.

But why tactile?

The skin's natural sensitivity is similar to the way the eye can distinguish millions of colors, or the ear can distinguish complex pitches and tones.

But as a means of communication, it's only as good as the vibrator on your cell phone, like Morse code.

When you suddenly get a kiss or punch, your body will instinctively move on the spot.

Behind the scenes, the brain is working to catch up, trying to understand the details of what just happened.

Conscious thought is very slow compared to instinct.

But it's lightning fast compared to the language acquisition of a snail's steps.

I've spent countless hours learning Spanish, Japanese, German, and now Swedish, and I've failed to varying degrees.

(Laughter) But in that failure, I found the core of how different languages ​​work.

That's what inspired our team to create an entirely new tactile language that builds on the established linguistic order of language and relies solely on touch.

At the same time, I've learned that sometimes using the mechanics of language isn't the best way to convey information.

Just as a smile is a smile in any culture, what if tactile language has something universal that transcends linguistic and cultural boundaries?

It's a universal language, so to speak.

You could teach it that the "beep-beep-beep-beep" vibration means "stop."

But as a haptic designer, I aim for even greater heights.

How about designing "Stop"?

Every situation is different, but most of us have had the experience of a vehicle suddenly coming to a halt and our bodies reacting to it.

One way is to send out a specific vibration pattern when you say "stop."

We can also design haptic experiences that make it feel natural to stop.

This is a bigger deal than giving arbitrary meaning to tactile cues.

I need deep empathy

It also requires the ability to translate the human experience into meaningful insights and incorporate them into haptic gestures and products.

Haptic design will enhance our ability to sense and respond to our surroundings, both physically and virtually.

Here lies the uncharted territory of touch.

It will also change the way we look at the world around us.

thank you

(applause)

hello everyone

Today I would like to show you an example of a creation that both of us have.

I will fold one of Robert Lang's models.

Here's a piece of paper to start with, and you'll know all about how to fold it.

And Rufus, as he always does, makes improvisations on his five-string electric cello, and I really enjoy listening to his music.

Are you ready?

let's have some fun

Sounds good. Then put that away, Rufus...

(music) Sounds good, see

(Laughter) (Applause)

As thunder roars and lightning illuminates the rolling waves, the ship rides on the waves.

It's not just a storm, it's a violent, vengeful tempest, and it's the setting for one of Shakespeare's most enigmatic works.

As the storms pass and the skies clear, we are invited to a world that seems far removed from everyday life, yet filled with familiar concerns like freedom, power, and control.

The Tempest is set on a remote island ruled by magic and power, ruled by the exiled former Milanese Prince Prospero.

Twelve years ago, Prospero was betrayed by his brother Antonio and left on an island with his daughter Miranda and her beloved book.

In the last 12 years, Prospero has mastered the magic of the island and has used it to subdue the spirits of the island.

He also controls Caliban, the only human on the island who has been abandoned and turned into a demon.

After years of plotting revenge, Prospero finally caught sight of his nemesis.

With the help of Ariel, the light-flying spirit, Prospero destroys his brother's ship and sends the crew ashore on an island.

Prospero's schemes extend to his daughter's love affairs, making her fall in love with the stranded Prince Ferdinand.

While Prospero and Ariel close in on Antonio, Caliban teams up with a group of drunken sailors to hatch a bizarre plan to take over the island.

The film strips society to the bare bones of its most fundamental desires, each relentlessly seeking to take control of the land, others, and their own destiny.

But Shakespeare knows that power is fluid, and as the characters' dark pasts are revealed, we begin to wonder if this chain of malice will ever end.

Prospero was wronged by Antonio, but he too has been plaguing the island for a long time, hoarding magic tools and natural resources all to himself.

Caliban was particularly resentful of this takeover.

Caliban, the son of the island's former ruler, the witch Sicorax, initially helped the exiled parents and children to live on the island.

But then he becomes a slave and yells with bitter remorse, "I fell in love with you, and I told you all about the island Freshwater springs, saltwater pools, barren land and fertile land, what a damn thing!" was

But Sycorax also tormented the island, and Ariel was held captive until Prospero freed her.

Now, while Ariel tries to pay off his debts and set himself free, Caliban will remain a slave, at least as long as Prospero is around.

That's why, among other reasons, "The Tempest" is so often interpreted as an exploration of the moral dilemmas that come from contact with colonialism and the Brave New World.

Questions of power and justice are asked throughout the play Is Caliban the rightful ruler of the island?

Will Ariel be free?

And is the true ruler really Prospero, or is there some unfathomable magic that no one can touch?

Throughout the play, Ariel keeps telling Prospero that he has the right to regain his freedom.

But the question remains whether this invader can let go of Ariel.

The question of whether one will end his reign is especially striking because "The Tempest" is considered to be Shakespeare's last work.

In many ways, Prospero's behavior mirrored Shakespeare's, who also created elaborate plots and manipulated the people around him to cast spells on both characters and audiences.

But as the epic showdown in which he wields so much power and control draws to a close, Prospero's final lines show humility to the audience and the power they wield over his work.

"By your hands and by your applause, let my sails rise, or else my plan to entertain you will be in vain."

What this line evokes is Shakespeare's own role as a great entertainer who ultimately surrenders to the audience's applause.

In 1956, architect Frank Lloyd Wright planned to build a mile-tall skyscraper.

It was supposed to be the tallest building in the world, it's sky high, it's five times taller than the Eiffel Tower.

But many critics ridiculed Wright, saying that he would have to wait for an elevator for hours, or worse, that the building could collapse under its own weight.

Engineers thought so too, so despite the famous plan, the gigantic building was never built.

But today, taller and taller buildings are being built all over the world.

Companies are even planning to build skyscrapers over a kilometer high, and Saudi Arabia's Jeddah Tower is as tall as three Eiffel Towers.

Soon, Wright's dream of a one-mile building may become a reality.

So why on earth weren't these mammoth buildings built 70 years ago, and how do they build buildings that are a mile tall today?

In any building construction, every floor must support the floors above it.

The taller the building, the more weight the lower floors receive from the higher floors.

Building shapes have long been constrained by this principle, so ancient architects favored pyramids, with a broad base supporting a lighter top.

But this approach is ill-suited for urban high-rise design. The base of a pyramid this high would be about 1.5 miles wide, and there's not enough space in the center of the city.

Luckily, we can avoid impractical shapes thanks to strong materials like concrete.

Modern concrete, which is used with rebar, is strengthened, and the water-absorbing polymer prevents it from cracking.

The concrete of Burj Khalifa, the world's tallest building in Dubai, can hold up to 8,000 tons of weight per square meter, equivalent to the weight of 1,200 African elephants.

Of course, even if the building can support its own weight, the ground has to support it.

If you don't do the foundation work, the building will sink or lean under its weight.

Supports made of concrete and steel driven more than 50 meters deep to keep the half-million-ton building from sinking.

It's supported by 192 piles, and it's the friction between the piles and the ground that holds the big building up.

Skyscrapers have to withstand not only the forces of gravity that try to sink them, but also the forces of the wind that try to tip them over.

On a normal day, the wind can exert a force of up to 8 kilograms per square meter on the walls of a building, equivalent to the weight of a bowling ball.

Aerodynamic designs, like the slim Shanghai Tower in China, can reduce this force by up to a factor of four.

Windproof design inside and outside the building absorbs the rest of the wind force, for example Lotte World Tower in Seoul.

Even with all our efforts, during a typhoon, if you are on the top floor, you may experience a 1-meter or more sway back and forth.

To prevent the wind from swaying, many skyscrapers have weights, called TMDs, that weigh hundreds of tons. For example, Taipei 101 has a giant metal sphere suspended above the 87th floor of the building.

When the wind blows, this sphere starts to sway, absorbing the shaking of the building.

As the ball moves with the building's shaking, the hydraulic cylinder between the ball and the building converts the kinetic energy into heat and stabilizes the building.

It's the combination of these technologies that allows huge buildings to stand stably.

But it's hard to move quickly through a building this big.

In Wright's time, even the fastest elevators were only 22 kilometers per hour.

Thankfully, it's faster now, over 70 kilometers per hour, and it's likely to go even faster in the future by using frictionless magnets as guide rails.

And the algorithm that controls the trip groups passengers and empty lifts by destination as needed.

Skyscrapers have come a long way since Wright planned the One Mile Building.

Ideas that once seemed impossible have become viable architectural techniques.

Now it may be only a matter of time before even a two-mile tall building.

It was Thursday June 23, 1994

(sigh) "You can go home now. Don't forget anything."

"Follow the guidance and go straight to the car when you go outside."

"Don't talk to reporters"

My head is confused, my chest is pounding, I can't breathe.

I want to get away from it anyway

As soon as I got to my car, I threw my bag in the back seat and sat down in the driver's seat.

"I can not do it"

"I can't go back to my family"

Even the love and support of my family won't help me this time.

I've just sentenced a man to death.

After that?

go home and wash the dishes?

In Mississippi, the death penalty is part of a deeply ingrained and unspoken culture.

If you commit murder, it's basically decided that you'll get the death penalty.

During the jury selection process, they asked me, "If there is evidence that warrants the death penalty, would you be able to pass on the death penalty without loss of reason and clarity and hesitation?"

Surprisingly, my answer was "yes," and I was selected as juror number two.

the trial has begun

First, the evidence was presented, and then there was the photo of the victim, and my first reaction was, "This man is a monster."

Throughout the trial, from the jury box, I watched his hand, the hand that held the knife, his dull, pale skin, and his eyes.

This murderer spent days and nights in a cell and never saw the sun, so his eyes were as black as his hair and beard.

It was horrifying to see, and it was an undeniable fact that he was guilty.

But regardless of the crime, as the days passed, the monster began to look human.

Something changed in me, but I didn't know what

And I began to ask myself, should this man really be sentenced to death?

Jury deliberation began, and the judge explained the jury's procedure, which he described as the "means" for reaching a verdict.

Using this tool, there is only one conclusion, and that is the death penalty.

I felt cornered

I'm conflicted in my head and in my heart. The thought of the death penalty made me nauseous.

But I gave up as a law-abiding citizen, following the judge's explanation.

I stopped voting against the remaining 11 jurors.

This is what the broken justice system looks like in this country.

I got back in my car and thought, "Will I be able to live the same life as I did before the trial?"

“Will I be able to go back to a normal life, raising children, working, going to church, watching baseball?”

everything in my life seemed trivial

It was like falling into a deep hole

Anger, anxiety, guilt, despair

I have been weighed down

But I still have to get my life back on track, so I decided to seek counseling.

My counselor gave me a diagnosis of PTSD, and I was told that the best way to get over PTSD was to talk about my trauma.

But outside of counseling, when I try to talk to people, when I try to talk about trauma, they block me.

no one wants to hear this

"He's a murderer, don't worry about it anymore"

From that moment on, I decided to close this topic.

Twelve years later, in 2006, I learned that death row inmate Bobby Wilcher had dropped his appeal, and his execution date was approaching.

It was a shock like being punched in the stomach

The feelings that were sealed will be revived

To calm myself down, I called Bobby's lawyer and asked, "Can I see Bobby before he's executed?"

On the day of his execution, driving to prison, I imagined that Bobby would be distraught.

but he was surprisingly calm

For two hours we sat in chairs talking about life and begging forgiveness for voting for the death penalty.

He said, "Don't apologize"

"It's not your fault that you were put to death."

"Because it's my fault"

"But if it makes you feel better, I'll forgive you."

On the way home, I stopped at a restaurant and had a margarita.

(Laughter) One drink wasn't enough, (Laughter) but it was the one I needed to calm myself down.

the other day my phone rang

it was from bobby's lawyer

Two minutes before the execution was announced that the death penalty had been adjourned.

This postponement gave me time to get to know Bobby better.

It may sound crazy, but we became friends.

Three months later, Bobby was executed under Mississippi law.

I thought I'd share this story because, 22 years later, I'm finally open enough to talk about it because a friend said,

"Why don't you talk to the other jurors?

I have the same experience.”

I don't know what you're looking for, but anyway, I knew I needed to talk to the other jurors.

My mission has begun, and I've finally found almost everyone.

The first juror I actually met thought Bobby deserved to be executed.

Another juror said it was disappointing that the execution took so long.

The other juror, for some unknown reason, didn't remember the trial at all.

(Laughter) At this point, I thought, "I wonder if everyone I'm going to meet is going to be like this."

But I was lucky enough to meet Allen.

Allen has a kind heart

When we met and spoke, he was clearly upset about the decision we made.

And he told me about one day when he felt overwhelmed.

He heard that he was listening to the radio that day and heard the name of the person on death row who was about to be executed, a death row inmate at Parchman Prison.

When he heard Bobby's name, he knew exactly what he had done.

and said, "I am responsible for his death."

More than 20 years later, Allen still struggles with this.

He's never told anyone about this, not even his wife.

He went on to say that if Mississippi continues to use the death penalty, jurors should be able to receive counseling.

The next juror I met was Jane.

Jane is now against the death penalty, and I've met Bill.

Bill said he suffered from despair for weeks, and when he returned to work, a colleague said, "Did you burn a death row inmate?"

I guess it was meant as a petty joke

The other juror I met is John.

The decision he made weighed heavily on his heart, and he suffered day after day.

The last juror I met was Ken.

Ken was the head of the jury

As soon as we sat down and started talking, I knew he was heartbroken by the decisions that were being made for us, the jury.

Thinking back on that day, he told me about what happened after he left court, and he said he drove home, walked to the front door, unlocked it, and collapsed on the spot.

He knew Bobby was guilty, but he wasn't sure if he had made the right decision.

And he seems to repeat it over and over again in his head

"Was it the right decision?"

"Was it the right decision?"

"Was it the right decision?"

(sighs) After all these years, it turns out that I wasn't the only juror to worry.

And we talked to potential jurors about our experiences, telling them what would happen if they were on the juror, telling them that it's important to stop being indifferent, to understand your beliefs, to know where you stand, to be prepared, so that you don't come to court in the morning as a juror and walk out of court when the trial is over and think you've killed someone.

After a stormy experience, I realized something that my granddaughters made me realize.

My 14-year-old granddaughter Maddie asked me this question when she was writing an essay about the death penalty for her school assignment.

That's when I realized that this kid had grown up in an eye-for-an-eye culture, and so did I.

I explained my experience to my granddaughter that I had been involved in a trial as a juror and had sentenced someone to death.

And I asked her, "Am I a murderer now?"

I couldn't answer my granddaughter

At that time, I thought that this topic should be talked about more.

Then something happened

I was recently asked to speak at a community of people who support the abolition of the death penalty.

I got a t-shirt there

The T-shirt says, "Abolish the death penalty."

I came home to find my 16-year-old granddaughter, Anna, and she said to me, "Can I have that T-shirt?"

I saw Anna's father, my son, and he still hasn't changed his mind about the death penalty.

I turned to my granddaughter and said, "Are you going to wear this T-shirt?"

The granddaughter said to her father, "I know what you think, but I don't support the death penalty."

My son looked at me, shook his head and said, "Thank you, Mom."

"Thank you" at this time does not mean gratitude

(Laughter) Life has taught me

If I hadn't been on the jury that day, I probably wouldn't have changed my mindset.

Life experiences have also given me the confidence to put myself in their shoes and understand that young people like my granddaughters have the will and the ability to tackle difficult social issues.

Because of my experience, my granddaughters are able to stand on their own feet and think for themselves, rather than relying on cultural myths.

So, having grown up in a conservative Christian family and growing up in a conservative state in the United States, I'm here to make a clear statement that the death penalty has a new enemy.

thank you

(applause)

Is it just me, or are you all a little disappointed in democracy?

(Applause) Let's take a look at the data.

Around the world, the average turnout in presidential elections over the last 30 years is just 67%.

In Europe, if you look at the elections to the European Parliament, the average voter turnout is only 42 percent.

If you look at the number of voters in the last mayoral election in New York,

Only 24% voted

So if you're talking about Friends, it's Joey and, at most, Phoebe, who go to vote.

(Laughter) I can't blame you for that, because we're all fed up with politicians.

I'm sick and tired of the data of my interactions with friends and family being used by others and targeted for political propaganda.

But the truth is, this is nothing new.

Today, people get personalized political advertising based on the information they "like", but in the past it used to do the same with zip codes, gender and age. The idea of ​​targeted political advertising is as old as politics.

And the reason why you think that way is because democracy is inherently vulnerable.

This is an illustration of the representation system

In principle, democracy allows the people to exercise power.

In effect, we transfer that power to our representatives, who then exercise power on our behalf.

Its representatives are the bottlenecks and weaknesses.

If you're going to attack democracy, that's where you're going. To take control of democracy, you either have to control its representatives, or you have to control how they choose their representatives.

The big question that arises here is, is this the end of history?

Is this the best thing to do, or is there actually an alternative to this?

Some people are thinking of alternatives, one of which is direct democracy.

This idea completely bypasses politicians and allows people to vote directly on various issues and bills.

But this is too simplistic, because there are too many decisions to make.

For example, in the 114th Congress, the House has considered over 6,000 bills, the Senate has considered over 3,000 bills, and both houses have passed over 300 bills [equivalent to three every week].

That's too many decisions for each of us to make each week, and it's an area that we know very little about.

So the real challenge for direct democracy replacement is human cognitive processing power.

There is also the idea of ​​"liquid democracy," or liquid democracy, where political decisions are delegated to others, who in turn delegate to others, and so on, until a small number of people make decisions on behalf of their own delegators and their delegators' delegators.

But this idea doesn't solve the problem of cognitive processing, and honestly, it's not much different than the idea of ​​having a representative.

So today I want to be a little provocative and ask the question: instead of trying to stop intervening politicians, why not automate politicians?

The idea of ​​automation itself is not new.

It started more than 300 years ago when French weavers automated their looms.

The industrial war was won by Joseph Marie Jacquard.

He was a French weaver and merchant who combined the loom with the steam engine to create the automatic loom.

The automatic loom made it possible to freely weave

We were able to create more intricate, more sophisticated fabrics than we could have woven by hand.

And by winning that industrial war, we also created a blueprint for automation.

For the last 300 years, the way we automate things has always been the same: we identify a need, we build a tool that meets that need, in our case the loom, and we observe how people use that tool, and then we automate that person's work.

And so, through the mechanical loom, we've made it to the automatic loom, and it took us a thousand years to get there.

Using the same method, we're now able to automate the driving of a car in just 100 years.

The bottom line here is that this automation is thorough.

Here's a video provided by a colleague from Toshiba of a factory that produces solid state disk drives.

The whole factory is one robot

no one in the factory

Robots will soon leave the factory and become part of our world and part of our workforce.

What I do in my day job is create tools to integrate different data across the country, so that I have the infrastructure that I'll need when I'm asked to manage these machines in the future.

But I'm not here to talk about tools that integrate data across countries.

What I want to talk to you about today is another initiative that might help us think about how we can use artificial intelligence in democracy.

That tool I'm building is for making final decisions.

Decisions with a certain degree of objectivity, such as public investment decisions.

But some decisions also have legislative implications, and legislative decisions require communication, participation, debate, consideration among people with different perspectives.

For a long time, we thought we needed more communication to make democracy better.

So the technology that has advanced in the democratic trend, whether it's in newspapers or on social media, has been to increase our communication.

But as I've already experienced, I know that's not going to solve the problem.

Because this isn't a communication problem, it's a cognitive processing problem.

If the problem is cognitive processing, more communication isn't going to solve it.

Instead, what we need is technology to help us process communications that are beyond our control.

It's like a little avatar, or a software agent, or a digital version of Jiminy Cricket -- (Laughter) -- thinking of something that can answer for you.

Such a technology could take some of the communication burden that we have today and allow us to make better decisions, big-picture decisions.

The idea of ​​software agents isn't new either.

I still use it often

We use software agents to choose the driving route to our destination, choose what kind of music to listen to, and narrow down the list of books to read next.

So, in the 21st century, there's a concept that makes a lot of sense, just as plausible as the combination of the steam engine and the loom in the age of the Jacquard.

Combining direct democracy with software agents.

Imagine a world like this, where instead of representing yourself and millions of others, you could have your own representative with your own unique political views.

Today's politicians have to make a lot of compromises in the package, so to speak.

But if we can get rid of the idea that the representative must be human, we might be able to set up our own representative.

If the software agent is the representative, we can have a parliament with as many members as there are citizens.

Those legislators can read all the bills and vote on all of them.

This would be a very plausible idea worth considering.

But in this day and age, this thought may seem frightening.

In fact, it sounds terrifying that robots from the future are coming to help us run our governments.

but i've already experienced this

(Laughter) In fact, he was a very nice person.

So how can this concept be realized?

it's a very simple system

Log in to the system to create your own avatar and start training your avatar

You tell your avatar about your reading habits, you give it information about social media, you give it other data, like taking psychological tests.

The good thing about this is that there is no cheating

The data of your interactions with friends and family will not be used by the political system.

You provide data to a system designed to make political decisions on your behalf.

You take that data, you choose a training algorithm, and this part is an open market, and anyone can create an algorithm that infers a person's voting behavior from the data they provide.

The system itself is open, no one person controls the algorithms, and some algorithms will be popular and others will not.

Finally audit the system

You can see how your avatar moves

If that's okay with you, you can leave it to me

If you want a little more control, you can specify that every decision you make should ask you, or somewhere in between.

Part of the reason democracy isn't being used so often is because the user interface isn't very good.

Improving democracy's user interface might make it more popular.

of course you have a lot of questions

How do you train your avatar?

How secure is my data?

How do we make the system pervasive and verifiable?

What will happen to my 80-year-old grandmother who can't even use the internet?

I've heard all those questions

When you're thinking about ideas like this, you have to watch out for the pessimists, who have a problem with any solution.

(Laughter) I would like to ask you to think higher.

The question I just gave you is a small one, because it's all about why this doesn't work.

By looking high, I mean thinking about what else we could do if this worked.

For example, who writes the laws

The first is an existing avatar that votes on laws written by current legislators and politicians.

But if this works, we can reverse the process by creating an algorithm that writes laws that are likely to gain some buy-in.

This idea may seem silly and inappropriate, but you can't deny that it's only possible in a world where direct democracy and software agents are possible forms of political participation.

So how do we start this revolution?

We're not picketing or protesting or calling for robots to replace today's politicians.

that won't work

Do it more simply, more slowly, more discreetly

We're going to start the revolution by putting a simple system that does this in graduate schools, libraries, and non-profit organizations.

I'm going to work through all the little questions and little problems I mentioned earlier, because they're going to have to be solved in order to make this initiative viable and credible.

By creating a system where 100, 1000, 10,000 people can vote on non-political issues, I believe that faith in this initiative will grow and change the world, and now my little daughter's generation will grow up.

By the time I'm old, this idea, which is crazy now, may not be crazy to my daughters.

Then our history will end, but theirs will begin.

thank you

(applause)

In our culture, we tend to see sex as more important for men than for women.

but that's not

In fact, many women are embarrassed to talk about it.

Over half of women secretly suffer from some form of sexual dysfunction.

We hear more and more about the gender difference in orgasms.

It sounds kind of like a story about the pay gap, but it's a little more sticky.

(Laughter) Less than 60 percent of heterosexual women reach sexual climax.

90% for men

For this reason, women are sold shady drugs and testosterone creams.

It's even been recommended for genital injections, for which safety has yet to be confirmed.

But the truth is, female sexuality isn't something that can be cured with drugs.

Because it's not broken, it's just misunderstood.

For centuries, our culture has had a biased, medically incorrect view of female sexuality.

If more than half of all women have some kind of sexual problem, then maybe our ideas about sex just don't work for them.

We need a much clearer understanding of how the female body actually works.

I'm a journalist and I recently published a book about how our understanding of female sexuality is changing.

The very definition of sexuality goes back to a time when science was only for men.

Male scientists tended to see women's bodies in their own biased way.

I could have just asked the woman what she's been through.

They looked at the woman's body as if they were looking into an unknown land.

Even today, women's ejaculation and the existence of the G-spot are still being debated, as if we were talking about aliens and UFOs.

"Does it really exist?"

(Laughter) It's even worse when it comes to LGBTQI female sexuality, which has been particularly despised and neglected.

Ignorance about the female body goes back centuries.

Beginning with the dawn of modern medicine

Imagine the 16th century, Europe was undergoing a scientific revolution.

Intellectual men were challenging the old dogmas.

I built a telescope and looked at celestial bodies.

was making progress

in some field

And the fathers of anatomy, I say "father" now, because there were really only men, and they were looking between the legs of women, trying to sort out what they saw.

I didn't quite understand the clitoris.

It seemed like it had nothing to do with having children.

An authoritative anatomist of the time concluded that the clitoris was probably due to some kind of growth abnormality (Laughter) and that women with it were probably hermaphrodites.

It was so shocking that parents even had their daughter's clitoris removed because they thought it was too big.

that's right

This is what we now call female genital circumcision, and it was practiced in Western societies well into the 20th century.

I know you're thinking, if I didn't understand the female body that much, I wish I had a woman to teach me.

But you may also think, "That's all in the past.

The world is completely different now

women have everything

I have birth control pills, I can send sexy pictures, I have dating apps, I can decorate my privates.”

(Laughter) Things should be better now.

But medicine is still clueless about the female body.

How many of you know what this shape is?

This is the overall structure of the clitoris

We tend to think of the clitoris as a tiny bump about the size of a pea, but it actually extends inside your body.

mostly inside the skin

It has erectile tissue no different than a penis.

it must be beautiful

It looks a little like a swan

(Laughter) This sculpture is by an artist named Sophia Wallace and is part of the "Criteracy" project.

(Laughter) You're saying that we don't have enough clitoral literacy.

It was after the human genome had all been mapped.

(Laughter) This ignorance is actually causing problems.

In 2005, in a medical journal, Dr. Helen O'Connell, a urologist, alerted the academic community that the anatomy of the clitoris was still missing from any of the basic medical journals and textbooks, not even "Grey's Anatomy."

This can have serious consequences during surgery.

let's think

Men, imagine if you were in danger of losing your penis and it's because the doctors don't really know where it is or what it looks like?

Not surprisingly, many women also don't have a clear understanding of the anatomy of their genitals.

it's not their fault

The clitoris is often not even on the charts used in sex education.

Women feel that their bodies are either misunderstood or, in some cases, completely despised and despised in their culture.

Many women still think their genitals are dirty or inadequate.

More and more people are comparing their vulvas to the neat and tidy ones they see in porn.

That's one of the reasons that the business of female genital surgery is booming in popularity with women and teenage girls.

Some people feel that all these things are trivial.

While I was writing the book, at a dinner party, someone said, "Sexuality is a problem in the developed world, isn't it?

Aren't women working on more important issues in the world? ”

of course it is

But I think part of the problem is that they want to dismiss sex as a trivial matter.

Our culture seems, at first glance, to be totally obsessed with sex.

use sex to sell everything

I tell women that looking sexy is the most important thing they can do.

But the truth is, we're trivializing sex.

It reduces sex to a sad, flimsy shadow of what it really is.

sex is more than just an act

I spoke with Dr. Lori Blott, a psychologist who specializes in women's sexual issues, and who also sees trauma patients.

She says the hundreds of women she sees all tend to complain of the same thing.

"I can't feel myself completely," he says.

They feel disconnected from their partners and themselves.

what is sex?

Traditionally, the act of sex has been defined as a linear, goal-oriented process.

Beginning with a strong desire followed by intense petting, the last is a happy ending

But a lot of women don't experience sex that way.

It's more like drawing a circle than a straight line.

This is a new model of female sexual arousal and desire, devised by Dr. Rosemary Basson.

You know, there are many reasons why women enter into sexual relationships.

It can have one climax, it can have multiple climaxes, or it can be satisfied without reaching the climax at all.

all are normal

Some people are beginning to argue that we should define sexuality in a richer way.

Whether your sexual identity is male, female, or neither, sex is a relationship with your five senses.

slow down and listen to your body and focus on the present moment

It's about mental and physical health and well-being

In other words, the essence of sex is sacred, not filthy.

This is one of the reasons why many women are currently redefining their gender.

They ask, "What does sex mean to me?"

They're doing and exploring. They're not obsessed with happy endings, they're trying to feel them completely.

They've tried spiritual sex classes, masturbation workshops, and even filmed pornography themselves, celebrating the diversity of our physical bodies.

For those of you who still feel that sex is a trivial matter, think about it. Understanding your own body is very important in thinking about the larger issues of sex education and consent.

If you know how to touch comfortably, how strong and fast to use it, and how to develop it, you will be able to know more clearly what kind of touch is not good, and you will be able to communicate with confidence.

Even if this boils down to women having better sex.

It's not about being able to orgasm as well as men.

It's about accepting yourself, accepting your unique experience.

It means becoming an expert on your own body.

It means defining joy and satisfaction in your own words.

If you're happiest not having sex at all, then that's perfectly fine.

If we define sex as part of our well-being and well-being, enabling women to fully own it is an important next step towards gender equality.

A world like that would be a better world, not just for women, but for everyone.

thank you

(applause)

Jumbo, bonjour, zudrastovice, dayo, all of them say hello. I've been using these words for the last six weeks. I've been to around 17 countries.

I'll talk about that a little bit later.

This trip also took us to some very interesting places: Mongolia, Cambodia, New Guinea, South Africa, and Tanzania, which is the second time I've been here, because I've been here a month ago.

In many ways, it's been an amazing experience to be able to travel the world in such a short time.

Eye-popping encounters

I've also been able to spot differences between people around the world.

What this tells us, at first glance, is that the world isn't one -- and I'm going to tell you this story -- how different people are.

The world is full of diversity

There are 6,000 languages ​​spoken by 65 billion people, different skin tones, body features and sizes.

As I walk through cities and travel the world, I am amazed at the diversity of humankind.

How can this diversity be explained?

That's what I'm here for today, and I'm going to show you how, and how long it took to create this diversity, and how I'm looking at it, using genetics, specifically population genetics.

Let's turn the question of human diversity -- like other vague questions like how it's explained -- into a concrete question.

I break it down into smaller problems and solve them.

The first is the question of origin.

do we all have the same origin

And if that's the case, you're probably asking, "When did it originate?"

When did humanity begin

When did you look so different

The second question is related, but slightly different.

If we all have one and the same origin, how did we get spread across the planet? How did we spread all over the world, giving rise to such diversity, different lifestyles, different looks, different languages?

The question of origin, like many other biological questions, was answered by Darwin a century ago.

In "The Origin of Man," he states, "The mammals living in many parts of the world are closely related to extinct species in the same regions.

"Therefore, it is possible that Africa was once home to extinct apes related to gorillas and chimpanzees, and since these two species are the closest relatives to humans, it is more likely than elsewhere that early humans lived on the continent."

That's all, let's go home, the origin question is solved

No, not really. Darwin's story is about distant ancestry, common ancestry with apes.

Of course, apes originated on the African continent.

23 million year old fossils have been found

At that time, the African continent was cut off from the rest of the world, plate tectonics, drifting in the Indian Ocean.

16 million years ago it collided with Eurasia and the so-called first outing of Africa took place.

The apes that migrated then became gibbons and orangutans in Southeast Asia.

What remained of Africa evolved into gorillas, chimpanzees and humans.

Yes, common ancestry with apes is evident in fossils, and that's where it all started.

But my question is not

What I want to know is the ancestors of humans

Our ancestors who wouldn't have to fall back like this if they were looking over your shoulder

If we go back in time, far, far away, we have a common ancestor with all life on Earth.

We're all connected by DNA, and a billion years ago, we shared a common ancestor with fish, bacteria, and mushrooms.

But what I want to know is the ancestry of mankind.

how to check

It's been generally studied for a long time using paleoanthropology.

When you do an excavation, you look at the shape of the object, mostly based on morphology - usually the shape of a skull, and say, 'This one looks a little more like us, okay, this must be our ancestor.

I am a descendant of this man

The field of paleoanthropology offers a lot of dreamlike possibilities for our ancestry, but it doesn't offer the kind of certainty that scientists would like.

that is -

here is a good example

Three extinct species of hominids that may be the ancestors of humans.

It was discovered by Mr. and Mrs. Leakey in Tanzania's Olduvai Gorge.

They were all around the same age.

From left to right: Homo erectus, Homo habilis, Australopithecus - now called Paranthropus boisei, "Rugged Australopithecus" Three extinct species, same place, same age

So all three of these people are not my direct ancestors.

So who the heck is this?

Possibilities about human ancestry, but that's not really the answer I'm looking for

Until very recently, the human approach to morphology was to only use what we had in our hands -- mainly skulls.

The systematic morphology was created by Carl Linnaeus, a Swedish botanist, and in the 18th century, Linnaeus classified all life on Earth.

Your work must be difficult, but-

he accomplished a great feat

In his book, The System of Nature, he classified 12,000 species.

He coined the word Homo sapiens, which means "wise man" in Latin.

I looked around the world and saw the diversity of the human race and said, "It seems that we humans can be divided into even smaller subspecies."

African-Americans, Asians, Europeans, and on top of that, he mentioned the blatantly racist category of "freaks," which basically included people he disliked, imaginary monsters and fairies.

It may have been "good intentions," but the truth is that there was something that 18th-century scientists, before Darwin, didn't know.

But a few decades ago, physical anthropology was still teaching basically this same taxonomy in every context.

Until 30,40 years ago, in physical anthropology, people like Carlton Kuhn said that human race began to divide - even after Darwin appeared - a million years ago, at the time of Homo erectus.

Based on what data?

Very little data, morphology and mostly speculation.

What I'm going to talk to you about today is a new way of tackling this problem.

So if you go out there and speculate about human ancestry -- find someone who might be your ancestor -- morphologically speaking, you know, morphology itself is not very well understood, but we don't know the genetic cause of the variation in shape.

Because what we want to uncover is a phylogenetic problem, a phylogenetic question.

Our challenge is to create a family tree for everyone alive today.

I'm sure there have been people in the past who tried to build a family tree in this, or someone in the family who did.

Starting from the present that I know for sure

You and your siblings have common parents

Cousins ​​have common grandparents

And so we go further and further back in time, and add distant relatives.

But no matter how much you search through church records and all that stuff, there comes a time when you hit a wall.

When you reach the point where you can't trace your ancestry, you have to grope your way through this dark and mysterious realm called history by whispering voices.

where did these people come from

There is no record.

There's a record in our genetic DNA that can be traced back to early humans, so we're going to look at it.

Let's talk a little bit about DNA

Not all of you are geneticists, are you?

DNA is a very long linear molecule, the code, the blueprint, that allows you to replicate itself.

four small elements called A, C, G, and T

The blueprint is drawn in that array

The length will be billions of its elements

Human chromosomes are a pair of two identical chromosomes, but they are haploids, the smallest molecule made from small elements, the length of about 3.2 billion nucleotides.

One pair of chromosomes is over 6 billion nucleotides long

If you take all the DNA from one cell in your body and stretch it out, it's about two meters from end to end.

If you take the DNA from every cell in your body and connect it all together, it would take thousands of round trips from here to the moon, a huge amount of information.

That's why copying DNA is such a difficult task.

Imagine the longest book you can think of, like "War and Peace."

multiply it by 100

write it down by hand

I work late into the night, and I'm very careful, I drink coffee, and I'm careful, but when I'm copying by hand, sometimes I make mistakes.

The same thing happens with DNA over the course of many generations.

Not often because we have the corrective function

But when a typo happens and it's passed on to the next generation, it becomes a marker, a landmark.

Because if you have the same markers as someone else, it means you have a common ancestor who miswrote that DNA in the past.

By looking at the patterns of genetic variation that people have around the world, and by looking at the patterns of these genetic markers and determining when they happened throughout history, we have created a family tree for all of us alive today.

There are two types of DNA we use in our research

Mitochondrial DNA traces maternal lineage

It's passed down from mother to grandmother, from woman to woman, so it can be traced back to the very first woman.

The Y chromosome is a male-specific gene that allows you to trace your paternal lineage.

Everyone here, everyone in the world, fits somewhere in this lineage.

Even though it's a simplified genealogy, it's still complicated, so let's simplify it more.

If you turn each one on its side, ancestors on the bottom and descendants on top, it looks like a tree.

what is important here

The first thing that catches your eye is that the deepest lineage in this genealogy is in Africa, and Africans have it.

So this first mutation has been preserved in Africa for a long time.

Evidence that humans originated in Africa is written in our DNA.

If you compare DNA in Africa, there's more diversity than anywhere else in the world.

At some point in the past, some groups left the African continent and migrated around the world.

How many years ago did our common ancestor live?

How many millions of years ago do you think it was? There is amazing diversity in the world.

It's clear from looking at the DNA

In just 200,000 years, we can trace back to just one common ancestor. Mitochondrial Eve, you've probably heard of it, an African woman, the mitochondrial mutation of all modern humans.

But what's even more amazing is that when you look at the Y chromosome, you're talking about the male side, and Y-chromosome Adam lived just 60,000 years ago.

Only 2,000 generations ago, in evolutionary terms, between blinks.

So at that point, all of humanity was still in Africa.

One African man had a Y-chromosome mutation that all modern men have.

In just 60,000 years, we've created this incredible diversity around the world.

really surprised

We are effectively part of one big African family.

Now, why didn't we start emigrating sooner?

Why didn't Homo erectus evolve into a human subspecies?

Why didn't they leave Africa until recently?

"Why" is a big question, and it's always been a big question, especially in the fields of genetics and history, and it's very difficult to answer.

If you're at a loss for words, let's move on to the topic of the weather.

What was the weather like on Earth 60,000 years ago?

It was actually the most severe stage of the last ice age.

The last ice age began about 120,000 years ago

It was slow at first, but about 70,000 years ago, it began to cool off rapidly.

It is known from sediment cores, pollen species, oxygen isotopes, etc.

It peaked 16,000 years ago, but 70,000 years ago, conditions were already dire.

New York, Chicago, and Seattle were buried under the ice sheets.

Most of Britain and all of Scandinavia were covered in ice several kilometers thick.

Africa is now the hottest continent on earth, 85% of it lies between the Tropic of Cancer and the Tropic of Capricorn, and has no glaciers except on the high mountains of East Africa.

Africa wasn't covered with ice at the time.

Instead it was very dry.

This is an ancient climate map, and if you put together the evidence I just mentioned, you can see what Africa was like 60, 70,000 years ago.

It was dry because the ice sucked the moisture out of the atmosphere.

Imagine Antarctica, it doesn't get much rain and it's actually a desert.

the world was dry

The sea level has fallen and Africa has become a desert

The Sahara Desert was much larger than it is today.

Compared to today, there are only a few places where humans can live.

Genetic data show that at that time, about 70,000 years ago, the population had dwindled to less than 2,000 people.

Humans were on the brink of extinction, but they survived with a single neck skin.

And here something happened

look at this stone

The one on the left was found in Africa a million years ago.

The stone tools on the right belong to Neanderthals, who were distant relatives of humans, not direct ancestors, and lived in Europe some 50,000 to 60,000 years ago.

A paleoanthropologist or a physical anthropologist here might object, but basically there's not much difference between these two types of stone tools.

both are very similar to each other

Human culture was in a long period of stagnation from one million years ago to 60,000 to 70,000 years ago.

There is no big change in the shape of the tool -

So, during that time, there wasn't much change in the way humans lived.

But 50,000 to 70,000 years ago, somewhere in that region, a cataclysm occurred, and art was born.

Stone tools became more elaborately crafted.

It means that they started hunting specific prey at specific times.

the population began to grow

Many linguists say that it was probably during this period that systematic languages ​​emerged that convey complex concepts with subjects, verbs, objects, and so on, much like modern languages ​​do.

Humanity has become social, social networks have proliferated.

Lifestyle changes have allowed us to survive in a deteriorating African environment and to migrate around the world.

It's a success story in Africa

Do you know what the outcome is?

It's you. That you are here today. These changes in the human brain, which may have happened in Africa or in other migration destinations, happened about 60, 70,000 years ago, which allowed us not only to survive in Africa, but to move out.

Early migrations following coastal routes in southern Asia left Africa 60,000 years ago and quickly reached Australia, 50,000 years ago.

Shortly after that, the immigrants who left for the Middle East

Become a savannah hunter

Those who participate in the site inspection tour later will be able to see what the real Savannah looks like.

Basically a treasure trove of meat

Those who became experts in killing animals, hunting in the savannah, along the grasslands, entered the Middle East 45,000 years ago, when the Sahara Desert was green.

We went east where the prairie was, because it was better to live in.

When we arrived in Central Asia, the prairie awaited us, the prairie super highway.

During the Ice Age, this prairie stretched from what is now Germany to Korea, and the whole continent was theirs.

They arrived in Europe 35,000 years ago, and finally a small group reached Siberia, which was probably the worst possible environment. During the last Ice Age, the Arctic Circle would have been extremely cold, below -50 degrees Celsius, even minus 70 degrees Celsius, and from there they crossed over to the United States, the last settlement.

This epic story all started in Africa.

It's because of the change -- the evolution of an adaptive brain -- that we've created new cultures and developed the kind of human diversity that you see on a whirlwind tour of the world.

What I've just told you is also a whirlwind trip, following in the footsteps of humans as they spread across the world during the Paleolithic period.

I wrote about it in my book, "Adam's Journey," which I published a few years ago, and I made a movie with the same title.

Around the end of filming that movie -- which was co-produced with National Geographic -- I was talking to the crew.

They were very excited.

I want to take this to the next level by studying DNA to understand the origins of mankind.

What do you want to do next? ”

big question was asked

I said, "So far we've only gotten this far.

It's just a diagram of how humans spread across the globe.

We sampled a few thousand people, a tiny fraction of the world's population.

After looking at a few genetic markers, we found a lot of mutations.

We're just connecting the dots, and we need to get more samples -- more than an order of magnitude -- hundreds of thousands of DNA samples from all over the world."

And thus the Genographic Project was born.

Started in April 2005

The project has three pillars, with science being the biggest, of course.

Fieldwork with indigenous peoples around the world

People who have lived in the same place for long periods of time have a relationship with the land, many of which have already been lost.

My ancestry is from Northern Europe

When I'm not traveling, I live on the east coast of North America.

Where are you from? Where is it?

But people who maintain ancestral ties are essential to interpreting DNA findings.

That's the primary purpose of our field research, which we have in 10 research centers around the world, with some of the best population geneticists in the world.

And I also want people all over the world to participate in this research.

Even if you want to participate in large-scale scientific projects, the Human Genome Project,

Can I participate in the Mars Exploration Program?

You can participate in this study

Go to the Genographic Project website

Just buy a DNS check kit

You submit your DNA test results, along with a questionnaire about your genetic background, to the database, and your DNA data is analyzed as part of the study.

We're a non-profit business, so the money we raise goes towards the project, minus the cost of making the kits and the tests.

Mostly to Legacy Funds -

It's basically a grant-giving charity that supports educational and cultural projects that reach out to indigenous groups around the world.

There are many different projects, let me give you an example.

The story is that so far, 25,000 samples have been collected from indigenous peoples around the world.

What's surprising is the public interest: 210,000 DNA testing kits have been sold in the last two years, and most of that $5 million sale, at least half, went to the Legacy Fund.

We just recently approved our first grant of $500,000.

Whether it's documenting Sierra Leone oral poetry, preserving Gaza's traditional textile patterns, or reviving the Tajik language, we're helping around the world.

very really very good please go to the site and see the project

thank you

(applause)

After decades of research and billions of dollars in clinical trials, cancer drug delivery remains a problem.

We still give patients chemotherapy, but it's non-specific, and while it kills cancer cells, it also kills the rest of the body's normal cells.

Indeed, we have developed more selective drugs, but getting them to the tumor remains a challenge, and they accumulate in other organs and are excreted in the urine to no avail.

My area of ​​work began with chemically encapsulating drugs to try to protect them while they traveled through the body to reach the affected area.

With these chemical modifications, we need to solve additional problems.

What we really need is a better drug delivery system.

What I'd like to propose here is instead of using only human design, why not use nature's design? about it

Immune cells are multipotent vehicles that circle our bodies, patrol for signs of disease, and if we get hurt, they can reach the wound within minutes.

Let me ask you, if immune cells are already circulating in our bodies to wounds and lesions, why not add an extra passenger?

What if we used immune cells to deliver drugs to ameliorate some of the biggest problems of disease?

I'm a biomedical engineer, and I'm going to tell you how I used immune cells to target cancer's biggest challenge.

Did you know? 90% of cancer deaths are due to cancer metastasis

So if we can stop the cancer from spreading to distant sites, we can prevent the cancer from progressing and restore the patient's life.

To accomplish this particular mission, we wanted to deliver nanoparticles made of lipids, the same substances that make up cell membranes.

And then we added two special molecules.

One is "E-selectin," which is the glue that binds these nanoparticles to immune cells.

And the second is "TRAIL"

This is a protein drug that kills cancer cells, but not normal cells.

Now, when you combine the two, you've got a clever killing machine on board a vehicle.

To test this, we did an experiment on mice.

As soon as the nanoparticles were injected, the particles bound to immune cells in the bloodstream.

Then we injected cancer cells to mimic the process by which cancer cells spread through the body.

And I found something really cool

More than 75% of the cancer cells that were first injected in the treated group died or were dying, compared to about 25% in the untreated group.

Imagine, you actually have fewer cells that have the potential to spread to other parts of your body.

And this is the result just two hours after nanoparticle administration.

I got some amazing results, and I got an article that I picked up with quite a bit of interest.

My favorite headline is "'Sticky balls' may prevent cancer metastasis."

(Laughter) I can't tell you how proud my male colleagues were when they realized that the sticky particles they created could one day cure cancer.

(Laughter) But let me tell you, they made a pretty cute, exciting, pretty nanoparticle T-shirt.

When will this treatment be available? It's also the first time I've spoken to patients who asked

And as I continue to tell this story, I keep in mind that science, scientists and patients all matter.

Now, the fast-acting results we're getting are very interesting, but we still have one open question. Can our "sticky particles" really bind to immune cells, and stop the spread of cancer?

So we used a mouse model to make three key points.

The treated mice had smaller primary tumors, fewer cancer cells in their blood, and very few or no tumor cells in distant organs.

This is not just a victory for us and our "sticky particles"

For me, it was also a triumph in drug delivery, and this is a paradigm shift, a revolution, from simply taking a drug, injecting it, and expecting it to reach the right place in the body, to giving the immune cells the role of delivering the drug in the body.

For example, we've used two molecules, E-selectin and TRAIL, but the real world of drugs that we can use is endless.

I talked about cancer, and where disease occurs, immune cells rush to the scene.

So this method can be used for any disease.

Imagine using immune cells to deliver important wound care drugs after a spinal cord injury, or using immune cells to deliver drugs across the blood-brain barrier to treat Parkinson's disease or Alzheimer's disease.

Ideas like these are the things that excite me the most about science.

From where I am now, there are many bright futures ahead.

thank you

(applause)

I can't imagine someone who has only one interest in life and wants to do just that for the rest of their lives.

SERIES HOW TO WORK About 15% of America's workforce does not have a traditional regular job

Half-day workers Part-time contract workers Temporary workers

"Side hustle" is also part of this trend, and it refers to doing a few different things for a living.

The term "side hustle" originated in the African American tabloids.

In the 1920s, those newspapers used the term "hustle" to denote fraud.

In the 1950s, the term "side hustle" came to include proper work.

A side hustle is a little different than a side job.

A side job is something you do out of necessity

Side hustle can still make money, but it's a little more aspirational.

Side Hustle Captures Gutsy Entrepreneurship

I've interviewed over 100 women of color who have successfully done side hustle on my Side Hustle Pro podcast.

Naira Ellis-Brown started Ellis Island Tea in the trunk of her car

Asha Jones started her famous "Capital City Mambo Sauce" with one product and a PyaPal link.

These women are all doing side hustle.

What can we learn from this?

First, people see opportunities in the communities they engage with.

We're not necessarily aiming to be the next Coca-Cola or Google.

It's great to be big, but it's also great to have a business that's successful with a specific audience.

Second, more and more people are interested in running their own business.

you need to discipline yourself

Self-made millionaires have one big thing in common: they make their own decisions, take responsibility for themselves, and persevere even when it's hard.

Side hustle is a good way to try out entrepreneurship and see if you have the skills to do it before you go completely independent.

Third, people are passionate about many things.

I want to stress that people don't necessarily hate their jobs and start side hustling.

There are many cases where I start because I am interested in various things.

Lisa Price started her beauty company, Carol's Daughter, while working in television production.

she says she likes working on tv

I came home from work feeling good every day, so I started experimenting with making perfumes and hair oils in my kitchen.

We were taught that we had to know what we wanted to be in the future.

But if you're interested in a lot of things, you might want to try your hand at some of those things.

It's not that I'm not committed to my work, it's that I have other outlets that bring me joy.

The final takeaway from the side hustle revolution is that people want to bet on themselves.

Side hustle is attractive because having some kind of income makes adventure easier.

Even if the side hustle doesn't work out, it's an investment in yourself.

41% of millennials who side hustle tell their employers about it

I'm not worried that my boss will react negatively.

Because we recognize the learning and growth that can be gained through side hustling.

We all want to live a fulfilling life

38% of baby boomers regret something about their working life

no one wants that

There are many ways to find happiness

A side hustle is about seizing the hope that you want to decide your own work life.

Let's take a look at some great photos

This is National Geographic's iconic photo of an Afghan refugee woman taken by Steve McCurry.

Harvard Lampoon magazine is about to publish a National Geographic parody, and I shudder to think what they'll do with this photo.

Oh woe to Photoshop

San Francisco Landing Scene by Bruce Dale

he has a camera on his tail

A Poetic Representation of Tolstoy's Novel by Sam Abel

Randy Olson Pygmies of the Congo

I like this picture because it reminds me of Degas' bronze statue of The Little Dancer.

A polar bear swimming in the Arctic Ocean by Paul Nikulin

Polar bears need ice to move around, and they're not very good swimmers.

A camel traversing the Rift Valley of Africa, photographed by Chris Johns.

Shooting from directly above, what you see is the shadow of the camel

The Texas Shepherd by William Albert Allard is a wonderful portrait.

And Jane Goodall's special bond, a photo of Nick Nichols.

Spanish soap disco photo by David Allan Harvey

"Weird things were happening here and there on the floor

Either way, it's hygienic."

(Laughter) This is an Australian sea lion dance, by David Doubilet.

This is a comet taken by Dr. Ewan Mason.

And here's a picture of Emory Christophe's bow of the Titanic without the movie star.

In the unrelenting whirlpool of today's oversaturated media world, photography remains resolutely powerful because it mimics how our minds fixate on precious moments.

Let me give you an example

Four years ago I was at the beach with my son He was practicing swimming The waves on Delaware Beach were fairly calm

But as soon as I took my eyes off him, the ebb tide caught him and started to sweep him towards the breakwater.

I can see it standing here right now, and I'm chasing my son through the waves, and the scene slows down and freezes in place.

here is the rock,

the waves are about to crash on my son

The son stretches out his hand, fear on his face, looks at me and says: "Dad, help me."

I caught him and the waves crashed on us

I pulled him to the beach and he was safe.

I was a little rattled

But in this flash photography memory, all the elements that were there are imprinted not only on the event, but also on my emotional connection to it.

This is the power of photography to create a strong connection with the viewer.

As a side note, I was talking to my son about this last week and he said we were going to talk about that.

And he said, "Oh, you know, I remember that!

At that time, my father was shouting at me from the beach."

(Laughter) I thought I was a hero

(Laughter) So, here's an amazing sample of photos from some of the world's leading photojournalists, some of the best in the industry, except for one.

This photo was taken by Dr. Ewan Mason in New Zealand last year and was posted and published in National Geographic.

Last year we added a section to our website called "Your Photo" to give people the chance to have their photos published in a magazine.

It turned out to be a huge success, and it mobilized a passionate photography community.

The quality of amateur photography like this is sometimes surprising.

When I see photos like this, I strongly believe that everyone has taken one or two great photos.

But it takes more than one or two great photos to become a great photojournalist.

you have to keep producing

But even more importantly, you have to know how to tell visually.

must be able to tell a story

So I'd like to take a look at some of the works that show how photography can tell stories.

Photographer Nick Nichols went to Zakoma, a relatively small and little-known wildlife sanctuary in Chad.

The original plan was a familiar tale of biodiversity in a foreign land.

So far Nick has been doing

this is a serval cat

This cat took a picture of himself, by means of a camera trap.

It's got an infrared beam, and if you block it, the shutter will go off.

It's a baboon in the water

Again, Nick took thousands of pictures of baboons with an automated camera.

What ended up happening was that I got a lot of baboon butts.

(Laughter) A lion eating at night, with a broken fang.

A crocodile is about to climb out of the river and head for its nest

I like this picture where the water is dripping from the tail.

But Zakoma's central animal is the elephant

One of the largest wild herds in this part of Africa

This is a photograph taken in moonlight, an area greatly changed by digital photography.

Elephants changed the story

Nick accompanies researcher Dr. Michael Faye to attach a transmitter to the herd leader.

We named her Annie and started tracking her down.

The herd is safe while inside the reserve with a group of lifeguards.

But every year during the rainy season, the herds move to feeding areas outside the reserve.

there was a problem

Outside of the safe reserves, there are poachers who raid herds in search of valuable ivory.

The leader elephant we were tracking by radio had been going back and forth in and out of the reserve for weeks before it got stuck outside the reserve.

Annie was killed along with 20 other companions

They were raided just for ivory.

this is one of the guards

They chased off one of the poachers and recovered the ivory.

Nick takes home far more than the old fashioned "Hey, isn't this fun?"

We have created stories that resonate deeply with our readers.

It's not just knowledge about reserves, it's created understanding and empathy for elephants, lifeguards and other human-wildlife conflicts.

Now let's go to India

By pursuing one thing in depth, we can sometimes tell a more universal story.

We're seeing the same thing that Richard Wurman touched on in the "New World Population Project."

For the first time in human history, more people live in cities than in rural areas.

And population growth isn't happening in cities, it's in the slums around them.

Jonas Bendiksen, a very energetic photographer, came up to me and said, "I have to shoot this. How about this?

"Capturing the slums of the world in photographs"

I said: "Aren't we a little too ambitious for our budget?"

So what we did was, instead of ending up with what you would call a high-level narrative of going out and seeing things bit by bit, we sent Jonas to Dharavi in ​​Mumbai, India, to stay there and go to the very back of the city.

It's not like I'm just going out and looking at the terrible conditions in those places.

We've seen the core of how life and life and how the whole urban area works.

By looking at one place, I was able to touch the soul and the indomitable human spirit behind that living sphere.

he articulated it beautifully

Sometimes the only way to tell a story is with a wide range of photographs

We spoke to underwater photographer Brian Skerry and photojournalist Randy Olson about the depletion of the world's fisheries.

We weren't the only ones tackling this subject, but Brian and Randy's photographs, among other things, captured the devastation of nature and humans due to overfishing better than anyone else.

Here's a picture of Bryan with a shark crucified in a gill net in Baja.

I've seen pictures dealing with "bycatch" where one fish catches another.

Here, Brian sits himself under the boat and has a unique take on the unwanted fish being dumped.

Bryan took the risk even further and captured a trawler that had never been photographed before, scraping the ocean floor.

On land, Randy Olson filmed a makeshift fish market in Africa, documenting the sale of leftovers after the flesh had been shipped to Europe.

Here in China, Randy is photographing a jellyfish market

Major food resources are being depleted, and harvesting is taking place in deeper waters to bring in these sources of protein.

We're scavenging all the way to the bottom of the food chain.

But there are glimmers of hope, because when we're dealing with such a big problem, we don't want to just focus on the problem.

I would like to see a solution

Brian has photographed New Zealand's marine protected areas, where commercial fishing bans have resulted in the recovery of overfished species and the potential for sustainable fishing.

Photography also forces us to face depressing and controversial issues.

James Nachtwey, who was honored at TED last year, documented the entire medical system that treats wounded American soldiers in Iraq.

It was like a magic tube, with wounded soldiers coming in on one side and coming out the other side when they returned.

Jim started on the battlefield

Here, medical staff tend to wounded soldiers in helicopters transporting them to field hospitals.

This is a field hospital

The soldier on the right has his daughter's name tattooed on his chest as a sign of his hometown.

From here, the more seriously injured are transported back to Germany, where they meet their families for the first time.

And then I'll go home and spend some time convalescing in a veterans hospital, like here at Walter Reed Hospital.

And finally, many put on high-tech prostheses, get out of the medical system, and resume their pre-war lives.

Jim took a photograph that would normally only be a medtech story, but added a human dimension to it, leaving a deep impression on readers.

Now, these were good examples of how photography can be used to address topics that matter to us.

But photographers sometimes find something in their shoots that they enjoy as a result.

Photographer Paul Nikulin traveled to Antarctica to photograph leopard seals.

This is rarely photographed, partly because they are considered the most dangerous marine predator.

In fact, a year ago, a researcher died after being dragged into the sea.

So you might think that Paul was a little hesitant about getting in the water, too.

Leopard seals mostly eat penguins

You know the "Penguin March";

This is "Penguin Ranch"

(Laughter) Penguins are at the water's edge, checking to see if the beach is safe.

And everyone pushes out and jumps in

Paul went into the water

You said you weren't afraid

And this one female approached

It's a pity that you can't see it in the picture, but it seems that it was about 3 and a half meters.

very big

Paul says he wasn't scared because she was more curious than threatening.

The one on the right with her mouth wide open says: "Hey, I'm big!"

Or: "Hey, my teeth are big."

(Laughter) And then Paul thought she was just pitying him.

From her point of view, there's something strange in the water, and for some unknown reason, she doesn't seem to want to chase penguins at all.

So she began to bring him penguins alive in front of him

Penguin tries to escape when she lets go

Seeing that, she said, "What are you doing?"

Chase it, catch it again, come back and drop it in front of him

She did this for a couple of days, and then she got crazy and finally put the penguin directly on his head.

(Laughter) And that's how I got this great picture.

(Laughter) In the end, she thought Paul wouldn't survive.

I'm exhausted and take a deep breath

(Laughter) And then I lost interest in him and walked away.

Paul went out to photograph these magical creatures, and not only did he get a collection of photographs, but he brought back an amazing experience and an amazing story.

It's stories like this that demonstrate the power of photojournalism beyond just the direct and superficial.

I believe that photography can connect with people in a real way and help us understand the challenges and possibilities facing our world today.

thank you

(applause)

I dedicate this song to Carmelo Carmelo is very old now and was euthanized a few days ago.

Carmelo was such a good boy, he always gave his bed to the cat.

♫ (Sound of a dog exhaling) Hahahahahahaha ♫ Let's go for a walk together Singing that song and strolling ♫ ♫ Alone in the sunshine All must go well together ♫ ♫ My life was lonely and depressing ♫ ♫ Yes, I was lonely like a sailor crossing the ocean ♫ ♫ I was drowning in vermouth and beer And then you came ♫ ♫ When I looked into your eyes ♫ ♫ I knew I wasn't bad ♫ ♫ You had so much personality And you seemed so smart ♫ ♫ I said, "How happy are you!" ♫ ♫ And if you're lonely, go to a lost animal shelter ♫ ♫ Bring a dog home and you'll be a good owner ♫ It's easy ♫ (The sound of a dog exhaling) Hahahahahahahaha ♫ My life was miserable and sad ♫ I was a typical loser ♫ I was a typical loser ♫ I fell out of the contest. ♫ And then you show up, wagging your tail ♫ You were doing the cutest pantomime in the camp ♫ I said, "Wow, you're mine!" Just me and you Soak up the sun and we'll be all right ♫ Hate and doubt, you don't care ♫ And I don't care about the bullshit of the pickpocketers ♫ If you're lonely, go to a lost animal shelter and bring back a dog ♫ And be a good owner for him ♫ ♫ good boy! ♫

thank you

When I was about eight years old, I first heard about climate change and global warming.

It seems to be a result of the human way of life.

We were taught to turn off the lights to save energy and to recycle paper to conserve resources.

I remember thinking it was very strange that humans are just another species of animal like everyone else, and that they have the power to change the climate of the planet.

Because if humans have that power, and if climate change is really happening, then they shouldn't be talking about anything else.

When I turn on the TV, that's all it should be

In the news, on the radio, in the newspapers, it's as if there's a world war going on, and you don't hear anything else.

but no one is talking about it

If burning fossil fuels is so bad that it threatens our survival, why are we still living the way we used to be?

Why are there no limits?

Why isn't it illegal?

i was not convinced

was too unreal

So when I was 11, I got sick.

I got depressed, stopped talking, stopped eating.

I lost 10kg in 2 months

Later, I was diagnosed with Asperger's syndrome, obsessive-compulsive disorder, and selective mutism.

The symptoms are basically talking only when you think you need to, and now is the time to do it.

(Applause) For someone like me on the autism spectrum, almost everything is black and white.

We're not very good at lying. Playing social games is usually not fun.

(Laughter) In many ways, autistic people seem more normal to me, and others look very strange. (Laughter) Especially when it comes to the sustainability crisis, where everyone keeps saying climate change is a threat to survival and the biggest problem of all, and we're still going about our lives.

I don't understand this, because if we have to stop emissions, we should.

For me it's a matter of black and white

When it comes to survival, there are no gray areas.

To continue civilization or not

we need to change

Wealthy countries like Sweden should start cutting emissions by at least 15% a year.

This is necessary for the goal of keeping temperature rise to "below 2 degrees".

Although, as the IPCC recently announced, setting a target of "below 1.5 degrees" would significantly reduce climate impacts.

We can only imagine what that means for emissions reductions.

You might think that the media and all leaders are talking about this all the time, but they don't even say it.

And nobody says that greenhouse gases are already in the natural world.

Air pollution is masking the rise in temperature, and even if we stop using fossil fuels, we're not saying there's an additional 0.5 to 1.1 degrees of warming.

And almost no one is even talking about the fact that we're in the middle of the Sixth Extinction, where 200 species are dying out every day, and extinctions are occurring at a rate that's 1,000 to 10,000 times faster than what we think is normal.

Despite being explicitly proclaimed everywhere in the Paris Agreement, very little is said about equity or climate justice, which is absolutely essential to be effective on a global scale.

That means rich countries will need to get to zero emissions in six to 12 years at the current rate of emissions.

So that people in poor countries will have the opportunity to improve their living standards by building the infrastructure that we have already built: roads, schools, hospitals, water and electricity.

How can we expect countries like India and Nigeria to care about the climate crisis? We in a wealthy country where everything is in order, we care nothing about the climate or keeping the Paris Agreement.

So why don't we reduce our emissions?

Why, in fact, are emissions still rising?

Are we unknowingly trying to cause a mass extinction?

are we evil?

of course not

The reason we're still doing what we're doing is because the vast majority of us have no idea what the consequences of our daily lives are, and we don't know the need for immediate change.

we all think we all know, but we don't

How can you know?

If we're really in a crisis and it's because of what we emit, there should at least be some indication.

Not just cities that are submerged, tens of thousands of dead, and countries that are buried in crumbling buildings.

there must be some inconvenience

but it's not

and no one says that

No emergency meetings, no headlines, no emergency bulletins

no one acts like they're in a crisis

Even climate scientists and eco-politicians continue to fly around and eat meat and dairy.

If I live to be 100 years old, I will still be alive in 2103.

When we think about the future, we don't think beyond 2050.

If all goes well, I'm not even halfway through my life at that point.

What happens after that?

In 2078, I will celebrate my 75th birthday.

If you have children or grandchildren, maybe they'll spend the day with you.

You may hear about people who were alive around 2018.

You may ask why you didn't do something when you still had time to act.

Whether I act now or not will affect my entire life and the lives of my children and grandchildren.

Whether we act now or not, the consequences will be beyond the reach of future generations of me and my generation.

So when school started in August of this year, I couldn't take it anymore and made up my mind.

We had a sit-in in front of the Swedish parliament.

We went on school strike because of the weather.

Some people say you should go to school

Some people say that I should study to be a climate scientist and "solve the climate crisis."

But the climate crisis is already solved.

All the facts and solutions are already in place

All you have to do is wake up and change your behavior.

If no one is doing anything to protect the future, why should we study for the future that is no longer there?

And if the most important facts produced by the best scientists in the educational system obviously mean nothing to politicians and society, then what's the point of learning facts in the same educational system?

Some people say that Sweden is just a small country and it doesn't matter what we do, but if a few kids could be out of school for a few weeks and they could make headlines around the world, imagine what it would be like if we all took action.

(Applause) It's time for this talk to end. Normally, people would start talking about hope here: solar panels, wind power, circular economy, I wouldn't do that.

If it's encouragement or a bright idea, I've been hearing it for 30 years.

I'm sorry but it doesn't work

If it worked, we should have solved the emissions problem by now.

but not solved

I certainly need hope, of course I need it

What we need more than hope is action

If you start to act, you will be filled with hope

So don't look for hope, look for action.

That's the first time I have hope

Today, 100 million barrels of oil are used every day.

There is no policy to change this

There are no rules for leaving oil in the ground.

We can't save the world by following the existing rules, because we have to change the rules.

We need to change everything, and we need to start today.

thank you

(applause)

People often ask me why I do art? What do I mean by art photography? What is it good for? and

Sometimes I start to worry, how can we actually measure the impact of art? And can you see the results and measure them like medicine and technology? and

So that I could explain my art to my mother using real numbers.

But my art is far from numbers, and my photography exposes the subject of escapism.

My theory is that we all struggle to escape from something, to analyze reality, to appreciate reality, to change reality.

I don't deal with everyday life as it is, and I don't shoot documentary photography in the usual sense.

But in another sense, I'm a documentary photographer.

i document my dreams

I paint everyday life as a possibility

I'm a dreamer, but at the same time, I love the real thing, and it deals with the deepest aspects of our innermost being, and we never want to run away from it.

I like complex personalities, and I draw inspiration from real life to create images.

Real life invites us to escape, and sometimes escape is so necessary.

I think heroes aren't easy to create. I choose to work with individuals, people who have endured adversity, people who face everyday life as bleak as it can be, people who face the realities around them and find a way to live a better life.

Why do I choose such people as models?

Because there was a time when I had to put myself in that position and learn how to survive in the real world.

I was once an exchange student living in London.

I was working in two places at the same time as a waitress.

Obviously, it wasn't my dream job, but I decided to play pretend. In my imagination, I'm playing a movie role, and the movie waitress I'm playing has to be the best.

So I dyed my hair and eyebrows red, got a perm, changed my hair, lost weight, and thought I was just playing a character in a movie.

This won't last forever, it's all temporary

That thought saved me

That thought became the motivation to change my life, and I was able to see the hard times as a game.

Now, as an artist, I create different lives for my models, and in doing so, I give them the experience of actually being someone else.

Through the process of photography, my models become like actors in silent films.

I capture the moments when they become completely different people.

To create a whole new reality, I literally make every item in my productions, sometimes from costumes to the stage.

Because I work in an analog world, I don't do any digital enhancements to my photos, because everything has to happen in real life.

i don't like it

Even if digital technology can create perfection, I find beauty in the truth of creation, and with that comes flaws.

Digitally enhanced photos aren't real to me.

there's nothing real about it

No real experience, no motivation

It's like looking at someone else's travel photos without actually going on a trip.

What excites me most is the ability to realize the dream of being replaced by someone else.

It's like a stimulant drug that keeps us working without any metrics.

One of my models always dreamed of being seen as a warrior, but she had health problems and couldn't play sports.

Six months ago she died of heart disease at the age of 22.

But just two days before she passed away, a photo we spent months working together of the warrior she dreamed she wanted to be was unveiled at a major photo exhibition in Milan, hosted by Vogue magazine.

her life was always about getting over something

Before she died, she knew that thousands of people would look at pictures of her in escapist land and believe that she was a fearless warrior.

I invite people to play games for my creations, and when you become someone else, just like we all did when we were kids, the process makes us really happy.

I think that's important for adults

We need this transformation to make this happen in the name of art.

It makes us feel important and empowered, and we can make an impact in the real world.

i know this from my own personal experience

I've photographed myself in many different ways, and through my portraits, I've become different characters.

While impersonating others in escapist lands doesn't give you measurable numbers, it's a truly lost form of magic that can't be measured in existence.

Art has the unique power to transform us and remove our limitations.

Art creates a kind of magical life that saves us, pushes us, drives us, encourages us to think, and allows us to express ourselves without any standards or figures.

thank you

(applause)

As a particle physicist, I study the fundamental motion of elementary particles.

In my research so far, I have used electron accelerators and other devices at Stanford University for microscopic observations.

But lately, my interest has shifted from this microscopic perspective to the larger scale of the universe.

I think you'll understand as I explain it, but the micro world and the macro world are very closely related.

So, what kind of world is the universe from the perspective of the 21st century? What is it made of?

In recent years, we've learned that the ordinary matter that makes up the universe, and the ordinary matter here is, for example, you, me, the plants, the stars, and the galaxies.

Matter, which occupies about 1/4 of the entire universe, is invisible to our eyes.

it must also absorb the electromagnetic spectrum

It's not even emitting, meaning it's not reflected in the electromagnetic spectrum.

We can't detect it because it's a substance that's insensitive to the electromagnetic spectrum.

How did we know about the existence of substances that do not react at all?

because there is gravity

In fact, this non-reactive matter (dark matter) accounts for most of the gravitational force in the entire universe, and I'll explain why.

So what does the rest of this graph represent?

This is a mysterious substance called dark energy.

More on dark energy later...

Now let's turn our attention to the existence of dark matter.

As with galaxies in general, spiral galaxies like this one in particular have a majority of their stars concentrated in the center of the galaxy.

It's the spirals of this gigantic cluster of stars that keep the galaxy in a circular orbit.

Anyone who has studied physics will immediately recognize

If you have a star orbiting like this, the stars closer to the center are spinning faster than the stars on the outside.

So you would expect stars to orbit slower outside than inside.

If you plot the distance from the center of the star to the speed at which the star is moving, you would expect that distance and speed are inversely related.

But that's actually not the case, the star's velocity remained constant everywhere.

If it's constant, then there must be a gravitational pull on the stars out there that we can't see.

It has now been discovered that virtually any galaxy in the universe is covered in clouds of dark matter that cannot be seen with the naked eye.

Also, dark matter is different from galaxies in that it has a spherical shape, and the spheres are wider than galaxies.

Usually we tend to think only about galaxies, but in reality there is dark matter that governs the structure and dynamics of galaxies.

Galaxies weren't created scattered about in space, they have the property of forming clusters.

This is an example of a famous cluster called the Coma Cluster.

There are thousands of galaxies in this galaxy cluster

All of them are white and blurred and shaped like ellipses.

If you take a snapshot of the galaxy right now and compare it to a snapshot taken 10 years from now, nothing will change.

But in reality, these galaxies are moving at amazingly fast speeds.

It's moving along this vortex of gravity.

All galaxies move like this

We can measure the galaxy's moving speed and orbital velocity to find out the gravitational mass of this cluster.

Again, more gravitational mass is detected there than the eye can actually see.

Even if we were to analyze the electromagnetic spectrum from another angle and measure the vast amount of gas contained in this cluster of galaxies,

The Mystery of Huge Gravitational Masses Can't Be Solved

In fact, about 10 times more mass than normal matter exists here in a form that cannot be measured by the naked eye, dark matter.

It would be nice if we could see this dark matter too.

The big blue circles are the replacements for dark matter.

Is there a way to see it more clearly? there is that

Now let me explain

This is the observer's point of view, whether it's the observer's eye or an astronomical telescope.

Let's say we have a galaxy here

What does it look like to the observer's eye?

Light emitted from galaxies travels through space for billions of years before reaching the eyes of observers.

How can we infer the position of galaxies?

We speculate that there is a galaxy at a position connected by a straight line from the direction the light came from.

If light enters the eye from this angle, the galaxy should be an extension of this straight line.

Now let's put another cluster of galaxies between these two, and of course there's dark matter in this cluster.

So what happens when another light hits us like this, and this is where Einstein's theory of relativity comes into play.

The gravitational force generated by dark matter's enormous mass bends not only the trajectories of particles, but even the light present in them.

So this light is also refracted by gravity and enters our eyes as observers.

From an observer's point of view, the galaxy

It should appear to exist higher than it actually is

It assumes that the galaxy is in a straight line of light, which puts it higher than it actually is.

How else is the light reaching the observer's eye?

Yes, that's right.

Downward-bending light is refracted by gravity and rises into the observer's eye, appearing lower than it actually is.

Now let's move on to the application version.The three-dimensional world we live in is a space of length, width, and depth.

Given that, how else do you think light travels?

That's right! light transforms into a cone

Light is refracted by the gravitational pull of the galaxy cluster and travels in a cone to enter the observer's eye.

So how does a cone of light appear on a real eyeball?

It's a round ring. Einstein predicted this phenomenon, so it's called the Einstein ring.

This Einstein ring appears as a perfect ring shape only when all three are in line.

If it's even slightly tilted, it will give a different image.

I'm going to give you an experiment that you can do at the party tonight, so you can see what images come to mind.

We can create a lens with the perfect shape to reproduce this effect.

We call this tool a gravitational lens.

this is the material you need

(smile)

omit the top part

The bottom part is important

In my house, I save the bottom of a broken wine glass and take it to the machine shop.

After polishing, a gravitational lens is created.

After preparing the lens in this way

The next thing you need is a paper napkin. I'm a physicist, so I use graph paper.

And if you put a gravitational lens on top of that, you'll see an Einstein ring.

Now let's move the lens a little bit off center, and the ring will split and form a bow.

Use the lens in this way

As you can see on the graph paper, straight lines are distorted and look like curved lines.

This straight-line bending force is accurately represented by gravitational lensing.

Do real astronomical telescopes capture these phenomena?

Does such a distorted bow-shaped light exist in a cluster of galaxies?

the answer is yes

This is an image from the Hubble Space Telescope

Many of the images are not recent for this space telescope.

When you look at these golden galaxies, you can tell they're a cluster of galaxies.

Clusters of galaxies are groups of galaxies that are attracted by dark matter and cause light to refract, which causes the light in galaxies to appear distorted.

So these vertical and horizontal bands of light are actually distorted images of galaxies that are far away.

We then measure how much light is distorted in this image, and then calculate how much mass there is.

As a result, there was an extremely large mass there.

These arcs are not concentrated in individual galaxies, as you can actually see.

You can see that it exists in an infinitely spread state, and this dark matter contains clusters of galaxies.

Here's an image that barely captures the effects of dark matter with the naked eye.

Here's a quick review

Evidence that a quarter of the universe is occupied by dark matter, a mass that has a gravitational pull, is that the speed of stars orbiting around the galaxy is extremely fast, so dark matter must be influencing it.

The rotation speed of galaxies in galaxy clusters also suggests the influence of dark matter.

And from the gravitational lensing effect that refracts light, we can say that dark matter must be influencing it.

Now let's talk about dark energy.

To understand the existence of dark energy, we have to go back to Stephen Hawking.

the fact that the universe itself is expanding and expanding

Let's say we line up four galaxies in a piece of this endless universe, and let's say we put a tape measure in between them.

If we can actually do that, the result will be that these four galaxies are gradually moving further and further apart over the course of each day, year after year, and eventually billions of years.

It's not because these four galaxies are moving away from each other.

These galaxies aren't circling the universe

The galaxies are getting farther apart because the universe itself is expanding.

That's what the universe is all about.

The universe continues to expand

Hawking also made the point that after the Big Bang, the universe expanded at an extremely rapid rate.

But the presence of gravitational matter in space has the property of slowing down the expansion of the universe.

So the rate of expansion slows down over time.

Scientists in the 20th century debated whether this expansion of the universe would go on forever, or go on forever with a deceleration, or eventually come to an end.

And about a decade ago, two groups of physicists and astronomers measured the rate at which the universe's expansion rate was decreasing.

How much less is the expansion rate today than it was billions of years ago?

The results were surprising and unexpected, and showed that the expansion rate of the universe is increasing compared to billions of years ago.

This shows that the universe is expanding at a faster rate than before.

The result exceeded most expectations

We don't know exactly why the universe is expanding at an increasing rate of expansion.

A result that no one expected

It was an unexpected discovery.

So we had to find out why the universe continues to expand.

If we were to describe this mathematically, we would use the presence of energy to describe this chain of events, and this energy is a completely different kind of energy than we've seen before.

It's called dark energy Dark energy is what causes the universe to expand

I can't make it official at this time.

The validity of making it official is still unexplained.

So what I can say at this stage is that dark matter and dark energy are two very different things.

The fact that these two mysterious objects make up most of the entire universe, and that they serve very different roles.

Dark matter attracts galaxies around it because of its gravity.

It's the basis for building the framework of a galaxy cluster, which wouldn't be possible without the gravity of dark matter.

Dark energy, on the other hand, expands the universe, thus increasing the distance between galaxies and reducing the effects of gravity, which in turn prevents the formation of clusters of galaxies.

So by looking at clusters of galaxies and looking at their number density and their relationship to time, we can explore how dark matter and dark energy influence the formation of galaxy clusters.

As for dark energy, as I said earlier, no theory has been published to prove its existence.

There are strong theories about dark matter.

What are the influential theories that lead to the proof of dark matter?

It can be proved mathematically

It's a theory whose existence is well established, and it happened to be a theory that was derived to explain a completely different phenomenon. I haven't touched on it here yet, but they are all theories that predict elementary particles that act very slowly.

In physics, it's an ideal pattern, where you can create a theory that can be explained mathematically, and then use it to explain other phenomena.

But we still don't know if these theories are candidates for solving dark matter.

Maybe the answer lies in a completely different place

Particles of dark matter are even here, not coming in through the door.

pass through all objects

It passes through buildings, even the earth, and does not interact with any object.

So it's possible to build very sophisticated detectors that detect the presence of dark matter.

Are there any ores that react to dark matter?

One of my colleagues worked with collaborators to build such a detector.

Two days ago, the results of the continuing study of the detectors, which were placed deep underground in the iron fields of Minnesota, were announced with sharp results.

It didn't actually confirm the existence of anything, but it did suggest a limit to how strong dark matter can interact with other matter.

Later this year, a satellite telescope will be launched, and it will look at the center of the galaxy as its focal point, and it may be able to capture the gamma rays emitted when dark matter particles die out.

Also pay attention to the observation results of the Large Hadron Collider, which will start operating at the end of this year.

A Large Hadron Collider May Create Dark Matter Particles

Dark matter won't be detected by accelerators because it doesn't interact with other matter, so it's expected to lose energy mass.

However, there are many theories that rely on loss of energy mass as the key, and it is necessary to distinguish between them.

And finally, astronomical telescopes are being built that are designed to answer questions about the existence of dark matter and dark energy. Three more space telescopes are also about to launch today, embarking on the search for dark matter and dark energy.

Today we're going to talk about what dark matter and dark energy are.

I told you a big mystery in physics.

I'm sure many of you have questions about this, so if you do, please take the next 72 hours to come to me and I'll be happy to answer them.

Thank you. (Applause)

Whether she portrays infighting, gentle love confessions or funny gossip, Jane Austen's books feel like they were written for you.

Her unpretentious wit and gaiety allow the heroine of the story to speak in a conversational tone that draws the reader in and makes them feel like they've been told their secrets.

Readers are said to feel like they've become Austen's confidant and are exchanging letters with Jane, her hilarious and mischievous friend.

But her distinctive style of wry humor is just one of many traits in her playful satire, which deals with society, decency and a wide range of romances.

Written in the early 19th century, Austen's novels shed light on the secret lives of the upper class in the English countryside.

From grudge-bearing courtesies to quarrels that overshadow charm, her work explores the bewildering clashes of emotion and manners.

But while romance was a common theme in her work, Austen rejected the sentimental style that was popular at the time.

Instead of a lofty love story, her characters behave spontaneously and often clumsily.

They exchanged practical advice, friendly banter, and slightly mean things about arrogant aristocrats.

Confronted with a myriad of social rules, Austen's characters always find a laugh in every hypocrisy, mannerism, and small talk.

For example, Mr. Bennett joked to his favorite daughter, "Do we have any purpose in life other than to make fun of our neighbors and laugh at them?" The heroines may be mocking meaningless social conventions, but Austin was fully aware that keeping up appearances is actually important.

Marrying a rich man was a financial necessity for many young women in her time as a writer, and Austen often explores the tension that runs between romantic love and the pursuit of financial gain when it comes to finding a mate.

It's summed up in a quote from socialite Mary Crawford in "Mansfield Park": "If you can get married right, I think everyone should get married, but not sloppily." Naturally, these themes also ran through Austen's personal life.

She was born in 1775 and lived in the social circles of her novel.

Jane's parents supported her education and gave her the leeway to work as a writer and publish anonymously.

But it was very difficult to make money from writing.

Jane had a compatible partner, but she never married.

Various elements of her situation are found in many of the characters: women who are intelligent, resourceful, practical, and lead spiritually rich lives.

These stubborn heroines play a role in keeping the raucous, romantic story interesting.

Irreverent Elizabeth Bennett, blind to clumsy suitors because she devoted herself to sisterly love in Pride and Prejudice,

After losing her first love in "Persuasion," Anne Elliott with an iron will decided to remain unmarried.

And Eleanor Dashwood ferociously protects her family at the expense of her own desires in Sense and Sensibility.

All of these women are faced with tough decisions involving love, children and financial security, but they work through them without sacrificing their values ​​or their sense of humor.

Of course, these characters are far from perfect.

Sometimes we think we know all the answers

By telling the story from their point of view, Austin skillfully persuades the reader that the heroine understands that all they have to do is suddenly push him away.

In Emma, ​​the title character, Emma, ​​feels surrounded by boring neighbors and friends who don't match her wit.

As her guests continue to tell their silly stories, readers begin to recognize Emma as the only uplifting character in the quiet neighborhood.

But while her self-esteem grows, she may not have as much control over her life and relationships as Emma herself believes.

Austen's approach to building rapport by putting us through the eyes of his characters makes it doubly surprising by revealing the truth, and it strikes at the weaknesses of both Emma and the reader.

But rather than discredit many heroines, these shortcomings confirm that "everyone has a contradiction."

So hopefully, new readers will continue to find friends in Austen's work.

"Can you taste the words?"

I was surprised by this question

This summer, I was giving a talk at a cultural and arts festival, and after the talk, I was signing books, and a teenage girl came up with a friend and asked me that question.

I told them that there are people who have different kinds of overlapping senses, and that they can hear colors and see sounds, and that many writers, myself included, are interested in this subject.

But she was a little impatient and said,

"I learned in school that it's called synesthesia.

My mother is reading your book, and she says there are a lot of food and ingredients and long dinner scenes in the book.

Every page makes me hungry

So I thought, are you not hungry as you write?

Maybe you can taste words?

Does it make sense? ”

This question really hits the spot, because since I was a child, each letter in the alphabet has a color, and that color brings a flavor to me.

For example, purple is very tangy, it's like it's been perfumed, and any word that is associated with purple tastes the same.

But I was hesitant to tell this girl these things because I thought they were too abstract, they might be strange, and I didn't have enough time, because there were people waiting in line.

And then I did what I usually do in these situations: I stuttered, I paused, I stopped talking.

I stopped speaking because the truth was too complicated, and I knew deep down that people should never be silent because of the complexity.

So I'd like to start today's talk with an answer that I wasn't able to give at the time.

Yes, I can taste words. Not always. Happy words taste different than sad words.

I like to try different flavors of words What does the word 'creativity' taste like? What does the word 'equality' taste like? "love is? What is a "revolution"?

And what about the word "motherland"?

This last word has been particularly bothering me lately.

It leaves a sweet taste on my tongue Like a drop of cinnamon or rose water Like a vernonut

But underneath, there's a sharp bitterness, like nettles and dandelions.

The taste of my home country, Turkey, is a mixture of sweet and bitter.

The reason I'm telling you this is because there are more and more people around the world today who share the same mixed feelings about where they come from.

We love our country, right?

how can i hate

I feel close to my country's people, culture, land and food.

But at the same time, little by little, I feel a growing dissatisfaction with my country's politics and politicians, and sometimes I feel hopeless, hurt, and angry.

I want to talk about emotions and the need to develop emotional intelligence.

Unfortunately, mainstream political theory pays little attention to emotions.

Analysts and professionals are often so busy looking at data and metrics that they forget things in life that are hard to measure and hard to cluster with statistical models.

I think this is a mistake for two reasons.

First of all, we are emotional beings.

I think all human beings are like that.

The second reason is a new one. We are entering a new phase in world history, a time when collective sentiment drives and sometimes misdirects politics, and it is more influential than ever before.

Through social media, social networking, these emotions are increasingly amplified and polarizing, traveling quickly across the globe.

Our time is a time of anxiety, anger, distrust, resentment and great fear.

And here's the big part: while there's a lot of research on economic factors, there's relatively little research on emotional factors.

Why do we underestimate emotions and cognition?

This will be one of our greatest intellectual challenges, because our political system is full of emotions.

In many countries, we see bigoted politicians preying on these sentiments.

In academia, or even among intellectuals, we still don't take emotions seriously.

should handle

As much as we focus on global economic inequality, we should also focus more on global emotional and cognitive gaps and how we can bridge those gaps, because that's what matters.

A few years ago, when I was still living in Istanbul, an American scholar who studied women writers in the Middle East came to see me.

In our conversation, she said, "The reason you're a feminist is because you live in Turkey."

I replied, "I don't understand why you're not a feminist, you live in America."

(Laughter) (Applause) She laughed.

I thought it was a joke, and that time has passed.

(Laughter) But her view of dividing the world into two fictional, opposing groups baffled and concerned me.

In her mental map, some parts of the world are liquid nations.

These countries haven't calmed down yet, they're like rocking waves.

Some other regions -- the West -- are solid, safe and stable.

So the liquid land needs feminism, activism, human rights, and we, unfortunately, from the liquid land, must continue to fight for these most essential values.

there is hope

History moves forward, and even the most volatile lands will eventually catch up.

At the same time, people of solid lands can find solace in the progress of history and the triumph of the liberal order.

They can help other people in other lands struggle, but they themselves don't have to fight for the foundations of democracy, because they're past that stage.

In 2016, I think this hierarchical regionalization has been shattered.

Our world doesn't follow the pattern of dualism that the scholars just described, although it may have once did.

We now know that history doesn't always move forward.

Sometimes history moves in circles, sometimes it even slips backwards, and generations can repeat the mistakes of our great-grandfathers.

We now know that there is no conflict between solid and liquid nations.

In fact, we are all living in liquid times, as the late Sigmund Baumann taught us.

Baumann gives another definition of our time.

They say we're walking on moving sand.

If that's true, then this is more important for women than for men, because women have more to lose when society reverts to authoritarianism, nationalism, and religious fanaticism.

So this is a very important time, not just for global activism, but in my opinion, for women's unity.

(Applause) Before I go any further, I'd like to make a small confession.

Until recently, when I attended international conferences and international festivals, I was usually the least energetic speaker.

(Laughter) I've seen the dreams of democracy in Turkey, the dreams of coexistence, crumble, sometimes slowly and sometimes with astonishing speed, and I've become more depressed over the years.

And at these festivals, there were other pessimistic writers from Egypt, Nigeria, Pakistan, Bangladesh, the Philippines, China, Venezuela, and Russia.

We empathized and smiled at each other, a doomed camaraderie.

(Laughter) Call us WADWIC, the Worried and Depressed Writers International Club.

(Laughter) But then things changed, and suddenly our club became popular, and new members started coming in.

I think (Laughter) I think the Greek writers and poets came first.

Then came writers from Hungary, then Poland, and interestingly, writers from Austria, Holland, France, and then from England, where I live and call home, and finally writers from America.

All of a sudden, more and more people were worried about the fate of their country and the future of the world.

Perhaps more and more people feel like they've become foreigners even though they're in their own country.

So this strange thing happened

After being so depressed for so long, we started to feel a little better, while the new members weren't used to feeling like this and became even more depressed.

(Laughter) We've seen writers from Bangladesh, Turkey and Egypt trying to comfort writers from Britain who has left the EU and writers from post-election America.

(Laughter) Jokes aside, I think the world faces unprecedented challenges, and there's a psychological resistance to this challenge. Many people want to slow down when the pace of change is too fast, and they want the familiar when there's too much unfamiliarity.

And when things get too confusing, people crave simplicity.

This is a very dangerous crossroads, because this is where the demagogues show up.

Demagogues know how collective emotions work, and they understand how they, who are usually men, can benefit.

He tells us that we are all of our own tribe, and that we are safe surrounded by people of our own tribe.

There are many different types of provocateurs.

It could be the eccentric leader of a small political party somewhere in Europe, or the leader of a radical Islamist preaching doctrine and hatred, or someone somewhere giving a white supremacist Nazi-worshipping speech.

At first glance, these people have no connection.

But it seems to me that they are fueling each other and needing each other.

When I look at demagogues talking and inciting people all over the world, they seem to have one glaring quality in common: they strongly and strongly dislike multiple options.

they can't handle diversity

Adorno said, "Intolerance of ambiguity is a mark of an authoritarian personality."

I asked myself, what if this same mark -- intolerance of ambiguity -- was the hallmark of our time?

because nuance is disappearing everywhere you look

In a TV show, an opposition performer faces an affirmative performer.

Yes, you can get viewer ratings.

It would be even better if they shouted at each other

Even in academia, where intellect should be cultivated, we see atheist scholars competing with strongly theist scholars, but it's not really an intellectual exchange, because it's only a clash of two certainties.

I think dichotomy is popping up everywhere.

And so, slowly and systematically, we are being denied the right to be complex.

Istanbul, Berlin, Nice, Paris, Brussels, Dhaka, Baghdad, Barcelona, ​​we are witnessing one terrible terrorist attack after another.

And when you express your grief, when you speak out against this cruelty, you get all the reactions and messages on social media.

But some of the messages are overly pervasive and disturbing.

They say, "Why mourn (only) the victims of terrorism?"

"Why mourning (only) the victims of terrorism?

Don't you care about Yemeni civilians (during civil war)? Syrian civilians (during civil war)? ”

What these writers don't understand is that we can equally mourn and unite with the victims of terrorism and violence wherever they happen in the Middle East, Europe, Asia, America.

They don't seem to understand that there's no need to pick one pain, one spot.

But this is what tribalism does.

This certainly atrophies the mind, and it atrophies the mind, as a result of which we become numb to the suffering of others.

Sadly, we weren't numb to begin with.

I published a children's book in Turkey, and when the book was published, I organized a lot of events.

I visited many primary schools and was able to observe young children in Turkey.

I was constantly amazed by children's empathy, imagination and audacity.

Children at this age are far more likely to be global citizens than nationalists.

It's amazing that so many kids say they want to be poets and writers. Girls are so confident, at least as much as boys.

But when I visit high school, everything changes.

No one wants to be a writer anymore.

Both the East and the West seem to be losing diversity, both within society and within individuals.

Coming from Turkey, I know very well that the loss of diversity is a huge loss.

Now my home country has the most journalists in detention in the world, surpassing even China's sad record.

We believe that what is happening in Turkey can happen anywhere.

even in this america can happen

In the same way that a solid nation was an illusion, a single sense of belonging is also an illusion, because we have multiple voices within us.

According to the Iranian or Persian poet Hafez, "You have in your soul all the necessary ingredients to make your existence a joy.

You just have to mix these elements together.”

i think we can do this

I'm from Istanbul, but I also have a love affair with the Balkans, the Aegean, the Mediterranean, the Middle East, and the Levant.

I was born European in my choices and values

Longer being a London citizen

I like to think of myself as a global-minded citizen of the world, a nomad, a traveling storyteller.

Like all people, I have multiple attachments.

And diverse attachments mean diverse stories.

Of course, as a writer, I chase stories, but I'm also interested in silence, the things we can't talk about, the political and cultural taboos.

I'm also interested in our own inner silence.

I have spoken out broadly and freely about minority rights, women's rights, LGBT rights.

But as I was thinking about this TED Talk, one thing came to my mind: I've never had the courage to publicly identify myself as bisexual, because I was so afraid of the slander, the stigma, the ridicule and the hate that would follow.

But of course, we should never be silent in fear of complexity.

(Applause) I'm no stranger to anxiety, and I'm talking about the power of emotions here -- I'm very familiar with the power of emotions -- but I've come to realize that emotions are not infinite.

Yes there are limits

There comes a time when you get tired of being afraid and feeling anxious, like a tipping point or a threshold.

And there are emotional tipping points, not only within individuals, but perhaps also on a national scale.

So even though consciousness is stronger than emotion, life itself is fluid, just like gender and belonging.

Emotions are trying to divide us into tribes, but we're connected across borders.

Emotions demand certainty, but we know that life is full of mysteries and ambiguities.

Emotions encourage dualism, but we are nuanced beings that cannot be represented by dualism.

What can you do?

I think we need to go back to basics, back to the colors of the alphabet.

Lebanese poet Khalil Gibran said, "I learned silence from the talkative, tolerance from the intolerant, and kindness from the unkind."

I think it's a great slogan for this era.

Learn from the populist demagogue that democracy is essential for us

Learning from isolationists the need for global solidarity

We can learn from tribalism the beauty of global citizenship and diversity.

Finally, let me tell you about one word or one taste.

The Turkish word "yurt" means "motherland"

means "motherland"

What's interesting is that the word also means "a tent used by nomadic tribes."

I like this combination because it teaches us that our homeland doesn't always have to be one place.

you can carry it

you can take it with you wherever you go

And I think that writers, storytellers, after all, have one big homeland, and it's called the Land of Stories.

And the taste of this word is the taste of freedom

thank you

(applause)

My specialty is shortcuts — quick tricks.

I'm a natural born master

What I'm going to show you is an unconventional way to remove the difficulty and get to the answer quickly. It's faster than Arthur Benjamin's Math Magic.

May I? palm up

To turn this over, in theory and common sense, turn your wrist

you need it, right?

Then

First, I'll show you how to do it without moving your wrist, and then you can do it in seconds.

do a shortcut

Like this, palm up

Don't move your wrist Watashino English Takusan Naidesuga Ganbarune

Iron de casting lare taha true shiidesuka?

Just kidding, I'm—

Keep your palms up like this, don't move your wrists

Don't move your wrist above your heart

forward without moving your wrist

Keep your wrists up above your heart Keep your wrists still

Previous Look

Now (Laughter), in theory, I went from this state to this state without moving my wrist.

(Laughter) Then there's the shortcut.

(Laughter) It took me six times earlier, but now it's only once.

With your palms down, if you don't mind, come with me

please watch

Yah! (laughs) One time.

It's warm-up now

I need someone to help me

I asked a girl named Zoe

I wonder if he's gone home Oh, I'm so tired Please give me a round of applause

(Applause) Good, sit over here.

there was water here

I would like to show my appreciation for water.

Water is enough for me, but some people want a toast.

(Laughter) There's water in beer, so that's good.

(Laughter) Now, I'm going to show you how to memorize and control cards.

I'm going to take this off

I use a special method quickly

Precise movement and— oops excuse control and very powerful... um...

It's a mnemonic

(Laughter) So I studied poker, because I like gambling.

Officially, I'm not supposed to gamble, but...

I'm going to play poker as if there were five of us here.

I'll ask the question, so each time a different person will answer, don't answer the same person

It is a promise

Who shall we give a helping hand?

What number? 1 2 3 4 5? (Audience: 3rd person) 3rd person, okay.

So— the mat is a little warped. The point is... oops.

When the card masters collected the cards, just before they dealt the cards -- you were the third one, you put in a full house.

(Laughter) Q and... it's okay. Q and 10 full house.

It's hard, but I like this

I will explain later 12345

First of all, three Qs

Can you tell the difference between the cards?

and two 10's

It went well

(Applause) But everyone else has good hands.

Actually, it's a stronger hand. A3 sheets and K2 sheets

This person is stronger. Four of a kind 2.

No response? This is

Maybe it's in order 34567 but

My hands are the strongest

10 Ｊ Ｑ Ｋ Ａ

See, it worked

(Applause) The third person looked really good at first, but in the end, it sucked.

it's like life

Can you mix it for me?

If you're interested, I can show you a trick.

would you like to see

I do estimating and shuffle tracking oh good

good job thank you

(Laughter) The first trick is estimating.

Accurately estimate the number of cards to a royal flush

I could count the cards, but this is better

much faster

I know exactly where the card is

So you can bet, this is where you make money

10 Ｊ Ｑ Ｋ Ａ

It went well

(Applause) Now, let's do it quickly, Steele.

I know where the card is

I'll spread out the cards, so when your finger comes up, say stop.

(Zoe: Stop)

Do you know what's missing here?

steal the card

(laughs) OK

Next is Shuffle Tracking

It's about keeping track of the cards while others shuffle them.

there's a little risk

can you still see

Can you arrange it for me? Then shuffle and cut

Chasing the cards requires watching from the beginning of the shuffle Have you done it already?

okay okay

I'm kidding

It doesn't matter how you do it

I have to do the math here, but I don't like math.

I do it directly with my right brain.

When you use your left brain, you get caught up in logic and common sense.

(Laughter) Arthur Benjamin was doing something similar.

When you do it with your right brain and wrap it in humor, it's the key to accessing the source of knowledge in the universe and finding the answer to any problem.

I'm dropping the card, so please say stop

before the last card drops

(Zoe: Stop)

It's faster when you're sober, but let's see.

(Laughter) Oh, out of order, I failed.

it's a joke

(Applause) Sometimes I make mistakes on purpose, but that's the difficulty.

for the sake of directing

i forgot about it last night

I remember this time

This deck of cards was bought here

Padded underneath for softness

This playing card

It's called a "bicycle," and it's something I bought in the United States. It's very flexible.

This will fit in your wallet

you see? No reaction?

(Laughter) But does that camera show you well?

(Laughter) (audience: visible) Here's how to undo it.

if it gets too thick

I will push again

Can you put the two mountains together so that everyone can see them together and staggered?

it is perfect

thank you for doing it till the end

Now let's take a look at Russian satellite technology, probably copied from America.

We talked about shortcuts

look at the cards quickly to find patterns

chaos theory is old

I think everyone is familiar with fractals, like the Mandelbrot spiral.

It's much easier to remember the cards when you think in patterns. When you focus and do math, it goes to the left side of your brain.

already

I got it

then someone else

say the name of the card

(Audience: J of spades) It's a J of spades.

The J of spades is

I think it's the 12th from the top

12345678 9 10 11 12 you got it

Oops, was it a spade?

spade? (Audience: Yes)

I made a mistake, don't clap, this is the club

The J of spades is

･･･

23rd No, it's 24th

123456789 10 11 12 13 14 15 16 17 18 19 20 21 22 23 25 Look

finally found

I will do it faster this time

Another person -- oh, you can't cut it. (Laughter) My technique is to constantly peek.

I'm peeping when I lift the mountain

Already understood

3456 calculations are perfect

(Laughter) Another person, another card. (Audience: Seven of Diamonds) Seven of Diamonds, my favorite card.

I'll do it quickly, but I'll do it in slow motion so you can see it.

(laughs) What was that 7? (Audience member: Diamond) Okay, I'll start from here.

Do you agree?

(Applause) All I did was voyeur.

I know where the card is and I'm picking it Another person another card

(laughs) Who?

(Audience: Ten of Diamonds) What?

(Audience: Ten of diamonds) Ten of diamonds

I'll do the same, because I know where it is.

10 of diamonds

I'll do it at normal speed this time.

10 of diamonds

hey

cut it

lift it

thank you another person another card

(Audience: Club 5) What? (Audience: 5 in the club) 5 in the club Same place, but not the same person.

I'll ask that person later. I'll drop the card.

say stop somewhere

5 of clubs

I can't find the last one.

(Laughter) Let's do it again.

Whoever said the five of clubs, say stop while the card is in the air.

(Audience: stop) So come on

Look

(Applause) I had to use the Force a little bit.

Let's keep the 5 of clubs

What card is paired with the 5 of Clubs?

(Audience: Heart's Q) Heart's Q

nice card i like it

Let's do the hardest thing here

Suppose you're sitting in Las Vegas betting, and you've accidentally shown this card to someone else.

If you lift this card, the cards will be swapped What was the card?

(Audience: Heart's Q) Heart's Q

it's a difficult challenge

If you grab this, it's a 5 of clubs, isn't it?

That becomes the Q of the heart

This is difficult, because you're swapping it for the 5 of clubs.

I'm going to do false counting next.

Which card should we use? Q or 5?

(Zoe: Q) It's Q.

Use Q, 5 of clubs here

False count 123 45678 Always the same card

9 10

It's an illusion that I'm handing out

When I put one card on the table, it's not one card.

That's why

then the difficult

I'll leave the Q here

I'm going to use the satellite guy here.

This is— sorry don't look at the beam

(Laughter) It's a high-frequency laser that completely destroys the retina in a fraction of a second.

sorry i should have said

But don't worry, it takes about 30 minutes for it to take effect, so you can watch my magic all the way through.

(Laughter) So I'm going to put the laser here, and I'm going to deal the cards into the laser.

Are you on camera?

Is it not reflected?

at all?

what happened?

(Audience: disappears) Let's do another pair.

Are you on camera now?

Is it not reflected? (Audience: can't see everything) Can you see my hands?

good good

this is okay

Can you see the card now?

(laughs) okay

So (Laughter) that's a lot of laughter.

(laughs) Interesting, right? It's a little dangerous

(Laughter) Good.

someone please tell me the name of the suit

(Audience: Spades) It's a spade.

I have to look through a lot of cards here.

How many spades are there? There are about 10 or 15 spades, right?

(Laughter) Every time I lift a mountain, I peek.

then sort them for quick collection

ok done

I'll start with A Look, it's A Oh, was it a spade?

same failure again

Line up the spades and the clubs

I'll do it right away I'll take the spade first

I'm nothing special I fail often

not a problem for me

So you can sympathize with me, right?

1 234 Are you on camera? 56 78 9 10 J Spade's J Q That laughter sounds good Look Q

(Applause) Wait, wait, draw a card.

any hurry

replace it with K

It's a diamond A

With the diamond A as a guide

the K of spades

find

it was here now it's here

right?

(Applause) A little more difficult.

I don't want you to think that the cards are already lined up, so I'll ask you to cut them again.

tell me the name of another suit

(Audience: Armani) What? (Audience: Armani) (Laughter) I was going to do that after the blindfold trick.

you're funny

This should be the last one, but let's do it.

Who said Armani? you?

Drop the card What size would you like?

It's not difficult I like the challenge

what size?

(Audience: Extra-large) Extra-large OK

Say stop (audience: stop) (laughter) So it's Armani.

(Applause) It's not easy.

I played clubs and spades before

Another suit (Audience: Dia) Dia

Now look at one card and find the location of the diamond.

Please help me

If it falls face up, flip it over (Zoe: Okay)

Then

Hurry up with both hands It's okay

(Laughter) I understand

Is there a diamond heart here? No, it's a diamond

See, can you see the pattern?

can not see? copper?

Did you see it? good

i use patterns

oops one fell

It's probably an important card. Look at the 9 of diamonds.

So -- I always ask myself why I put myself in this position.

There's a lot of stuff to find. If you lose the card—but I like it.

It's too easy if it stays like this

this

I do it blindfolded

This distance works instantly

Ugh!

(Laughter) It's duct tape.

keep the card out of sight

Can you paste it?

I would appreciate it if you could sympathize

Did you hear that?

Women are voices of sympathy, but men should do more

(Laughter) Yes

(Laughter) I think I can see through my nostrils.

oh yeah

Are you satisfied?

Cool like Batman, right? Oh!

(Laughter) Please keep your dignity and dignity.

But I like her, but it's a little tight

one more

It is the end

OK

perfectly

Now you'll admit it, you have to use a different sense.

i use vibration

So what was the card?

Diamond? i thought it was a heart

I need to improvise again

maybe you should stand up a little

First, the diamond A

this is a joke warm up

Heart K (laughs) I'll give you a diamond card, so please line it up here Can you see it?

Is it the A of the diamond? (Zoe: Right)

2 is — Hi

2 never failed

I always find 2 but it's a different color spade sorry

I'll give you this deck of cards later.For those of you who are skeptical, check it out.I'll give it to you later.

It's the 2 of spades

It's a different diamond 2

3 of diamonds

4 I like challenges

ok done

(Chris: Are you watching?)

What's that?

You're peeping, aren't you? It's a request from the lady over there.

(laughs) That's all right

so give it a try

and ears

That's it

this can be a little difficult

let's do it

May I?

(laughs) How far have you gone? 5? (Zoe: 4)

5 next?

(Zoe: Five of Diamonds)

not out yet? (Zoe: not yet)

then

Are all the cards face down now? (Audience: Yes) Can you see it on the screen?

turn the table upside down

Is the next card 5?

(Zoe: 5) Only one is face up.

how is it? (Zoe: Right)

6 is thumb

７

Let's do this. I took a peek, so I know where it is.

This is it, right?

８

then 9

hey

I actually used this in Las Vegas the day before yesterday.

9 Do you agree?

different? Right?

10 Like John Wayne

can you pick it up

Is the J of the diamond correct? (Audience: No) Right?

Q is the technique of misdirection

It's misdirection. (Applause)

Then K in exactly 5 seconds

5 seconds

1 234 Huh!

Check

Matches?

(Chris: Diamond K)

good

Touch me feel no no no

It was Renato Green!

dog hobbies

Sniffing each other and chasing squirrels.

If you don't make it a reward for training, it will lead to rebellion against orders.

There's something I always thought was a terrible idea. Suppose you see a dog owner calling out to a dog in a park, "Dog-chan, come here." Then the dog thinks. "Hmm, interesting.

I'm smelling another dog's butt, but my master is calling me.

Hmm, what should I do?"

Is it the buttocks or the master? Butt wins.

In other words, it is the owner's loss.

If you have the brains of an adolescent dog, you can't beat the environment.

Therefore, when training, I try to incorporate the dog's point of view as much as possible.

Now, the main reason I'm here is because there's a disagreement about dog training right now. On the one hand, some people say that training a dog starts with setting human rules.

It doesn't take into account the dog's point of view.

So humans say, "Do it like this!"

I will try to force you to do what I say.

Second, keep the rules secret from the dog.

Third, you can punish your dog. Dogs don't even know they broke the rules.

Suppose you bring a puppy. A puppy's only sin is to grow up.

When he's a puppy, put his front paws on your paws. Look, it's cute, isn't it?

So you say, "Oh, you're a good boy."

Bend down to pet the puppy. It's a reward for jumping.

The only mistake the dog made was being a Tibetan Mastiff, and after a few months it grew to just under 36kg.

Every time you jump, you will receive various treatments.

They are being punished really badly.

So, when it comes to the issue of dominance, when it comes to upbringing, it's a very simplistic interpretation of this very complex social system.

Dogs take this very seriously.

Male dogs greatly value hierarchy to prevent physical fights.

Of course, on the other hand, female dogs have a slightly different class system than male dogs.

For example, "I have what you don't have!"

How easy it is for a very low-ranked bitch to hide a bone from a high-ranked male.

So, we're going to bring this alpha, dominance concept you know, into your dog's training.

Dogs are often punished.

Dogs, horses, and humans, these three animals suffer a lot in their lifetime.

Because they have a habit of always coming back and apologizing.

For example, "I'm sorry for hitting me. I'm really sorry. Yes, it's my fault."

They are easy prey and therefore subject to violence.

The poor puppy jumps up and one opens the training book. what is written?

"Grab front paws, squeeze front paws, step on hind legs, spray lemon juice in face, slap newspaper on head, kick dog's chest with knees, flip dog over backwards."

Is it because the dog has grown up?

Is it because you performed the actions you taught?

This is folly.

Ask the owner, "So how would you like your dog to greet you?"

"I don't know, but sit down, maybe," the person replies.

"Well, let me tell you how to sit," I say.

And give your dog a reason to sit.

The first stage is like teaching English as a second language.

I said to you, "Leitarcher, Paise, Paise."

please do something

why are you doing nothing? Ah, I can't speak Swahili.

Now for the news.

Dogs don't speak English, Spanish or French.

Therefore, the first stage of training is to teach the dog English. English as a second language.

Then they use the food as decoy. The reason we use food is because it is now intended for the owner.

My wife doesn't use food, she's a great trainer. than me.

I don't use food either, but a normal owner needs it. "Puppy, sit down!"

Or "Sit, sit, sit!"

For some reason the owner signals towards the dog's rectum. As if there was a third eye there. Weird, isn't it?

You know, "Sit down! Sit down!"

Now say, "Puppy, sit down." - Great success after 6-10 tries!

And gradually eliminate food as a temptation. Dogs learn to understand what "sit" means. Owners and dogs can communicate in sentences structured in English.

"Come on Phoenix, take this to Jamie's."

"Phoenix," "Come," "Take this," and "Go." I told him my son's name, "Jamie."

And the dog has a note, and here's my personal rescue dog.

Jamie will find you wherever you are. Places where children play, such as playing with rocks by the river. He gives Jamie a note saying, "Come back for dinner."

At this point the dog knows exactly what you want it to do.

Can you do it properly?

Not necessarily.

Why would you go to your owner when you're sniffing other dogs' butts in the park?

Dogs living with their owners can see their owners at any time.

You can sniff your owner's butt whenever you like.

Now the dog is in the park and you are competing with scents, other dogs and squirrels.

The second step in training is to teach your dog to do what you want it to do. It's very easy.

It uses the Premack principle.

Basically, after a low-frequency behavior that your dog doesn't want to do, you have a high-frequency behavior, commonly called "problem behavior," or "dog hobbies," or something your dog likes to do.

This is a reward for performing a low frequency behavior.

So that's it. "Sit", on the couch, "Sit", pat his stomach, "Sit" Here, throw a tennis ball, "Sit" Greet other dogs.

"Sniffing the buttocks" is also included properly.

"Sit down" Smell the buttocks.

Now, these nuisances that were unfavorable to training have turned into favorable rewards.

What we're doing is essentially training dogs, but we make people think we're training humans.

"My owner is really easy to train. He's like a golden retriever."

If I just sit down, they'll do anything for me.

Open the door, drive, give me a massage,

Can you throw a tennis ball? I'll make you some rice and serve it up. As if to sit down, a dedicated doorboy, driver,

masseuse, chef and waiter

I can see him saying, "I think I got it."

the dog is very happy

this is real training for me

By motivating the dog, the need for punishment is almost eliminated.

Now, let's move on to the third step. There are times when you say, "Daddy knows everything."

There's a magnet on the fridge that says, "Why? Because it's my daddy."

No explanation needed "I'm the daddy, not you. Sit down."

There are cases like this. For example, my son's friend left the door open. Dogs must know not to go outside

It is life threatening.

If you leave the sacred space of your home, you could be hit by a car on the street.

In other words, "This must never be done" is non-forced.

I have to let it run.

People are confused as to what the punishment is.

They misunderstand that punishment is painful.

I'm sure you all think so too

You might think that punishment is painful, frightening and unpleasant.

Not necessarily.

Punishment has multiple definitions. The most widely known of these is the definition that promotes a decrease in the likelihood that a previous action will occur in the future.

It doesn't have to be uncomfortable, scary or painful.

In my opinion, if you don't have to, you shouldn't.

About a year ago I trained a very violent dog.

The dog hospitalized two owners, their brother-in-law, and one child.

After making the owner promise to always keep it indoors and never let it out of the house, I undertook to train it.

This dog was later euthanized. However, I trained him for a while.

Many acts of aggression took place in the kitchen. The fourth time I asked, I spent four and a half hours with my dog ​​doing "down" and "stay still" on a dog mat.

The dog obeyed the owner's calm and assertive tone.

When trying to leave the mat, the owner commands, "Rover, on the mat, on the mat."

In the 4.5 hours that his owner was preparing food, he broke the do not lie down command 22 times. This is because many food-related attacks have occurred.

Breaking orders became less and less frequent.

The effect of punishment was manifested

Problematic behavior began to disappear.

The owner has never raised his voice.

If I had, I would have been bitten.

This dog is not someone you should yell at.

Many of my friends have trained very smart animals. It's like a grizzly bear. You may have seen grizzly bears on TV or in movies, but my friend is training them. The same goes for killer whales. I like them because they fascinate their trainers.

How do you scold a brown bear?

"Bad bear, bad bear!"

Your head is probably 90 meters away in the air.

It's scary, isn't it?

So what should we do?

Need to find a better way.

Dogs should be treated better.

But for me this has to do with dogs.

Watching people train puppies shows how inexperienced they are in interaction and socializing.

Not just with puppies, but with other family members in the class.

There is "come" that I always think is funny.

I don't want to wake you up, so I'll cover the mic. When we went to the park, the owner said to the dog far away, "Lova, come, Lova, come."

Rover come here! Damn it," he shouts.

The dog says, "No."

(Laughter) Who would want a dog to go to someone who's screaming?

Instead, the dog said, "I know that tone. I know.

I had a bad experience the last time I approached,” the dog thinks.

It was time to board the plane. This was an important moment in my training career. It was the moment when I realized what I really wanted to do. In terms of puppy training, it is the concept of how to do dog-friendly training. Instead of forcing the dog to do it, let the dog voluntarily do it.

Actually, I'm doing the discipline of the child with the puppy training method.

What happened was, in the same row, a man who seemed to be a father was accompanied by a 5-year-old boy. The child was kicking the back of the chair.

"Johnny, stop it."

Con, Con, Con,

"Don't do it, Johnny." Kon, Kon, Kon.

I was standing right next to him with my bag.

The man bent down and grabbed the child like this, giving him a frightened look.

A scary face is when you face a child or puppy and say, "What are you doing! Stop it now, stop it, stop it!"

I wondered if I should do something.

The child has lost everything. One of the two people I trust the most in the world tripped me up.

I wondered if I should pay attention to this guy.

But I told myself, 'Don't get involved, don't get involved, just walk'.

When I got to the back of the plane, I sat down. And then an idea came to me.

If it had been a dog, I would have knocked him unconscious.

(Laughter) If I had kicked the dog, I would have hit him.

I turned a blind eye when the man kicked and grabbed the child.

That's it.

Social skills are easy.

When choosing a life partner, people snobbishly do so based on the 3Cs: coat color, conformation, and cuteness.

You look like a robot.

We started dating and a year passed happily.

And some behavioral problems come to the fore.

Husband won't put away his clothes,

It's like your wife always being late for appointments or your dog barking.

Once you start, it becomes a habit. There are two things in my opinion.

When I see people interacting with animals and people, it's too rare, so I don't have many impressions.

When I wake up, I feel terrible and uncomfortable.

Especially between family members, spouses, children, and parents.

I see it especially at work. Above all, from the boss to the employee.

Like good luck, bad luck, and bad luck, he seems to take pleasure in people's mistakes. There you can lament, complain, and be mean.

If you ask me, this is a human weakness.

It's true.

We take good things for granted and complain about bad things.

I think all these abilities need to be taught.

Calculus is great.

As a child, I was a calculus genius.

I don't remember it now, but I used to do it when I was a kid.

Geometry and quantum mechanics are wonderful! These are cool things.

But I can't protect my marriage, and I can't raise a child.

What I want everyone to know about the future that I see is that my husband can easily train a dog in the same way.

Easier than getting a Rottweiler.

Children can be easily trained.

All you have to do is watch. Take a behavioral sample and ask, say, "Is this good or bad?" every five minutes.

If it's a good thing, say, "Well done, thank you."

It is a very effective breeding technique.

should be taught in school.

Relationships, how do you negotiate?

How should I negotiate with friends who want to borrow toys?

How should you prepare for your first romantic relationship?

how to raise a child

When I thought I was lying in bed, I was pregnant. And the most important thing in my life, I was raising my children

Right way of life and habits, these should be taught. Breaking good habits is just as difficult as breaking bad habits.

This is my hope for the future.

I want to finish on time.

(applause)

99% of us have dreams as listeners.

Not of the musician, but of the listener. Sounds good?

We very much hope that there is. Even if you don't always notice it

I would like to be in the same room as the musician on the day it was recorded and played.

We go to concerts with live music, and we should go as much as possible.

Yet 99% of the music we listen to is recorded.

You can see that the older the historical recording, the rougher the sound.

We have found a solution for this.

It separates the performance from the recording as something else.

Recording is by leaving the mic in the room all day.

But the performance itself contains information about how the musician moved his fingers and what instrument he used.

That data is hidden in the recording.

Achieving this requires a lot of very precise hardware and software.

That's why Yamaha created an amazing tool called the "Disklavier Pro". That one looks like a nice grand piano.

You probably don't know how it all works. It is the highest precision machine made in Japan, packed with solenoids, optical fibers, and computers.

It cannot be used unless it is more than what is called high quality.

We were able to cross this line called the uncanny valley. It's an artificial intelligence term.

The process we're trying to do is put it into a computer, digitize it, and analyze it as a whole.

We looked at every single note, every single characteristic of it, how hard it hits the keyboard, how it's held down, how it moves its fingers.

A whole new science of fingering had to be developed.

It's something our piano teacher teaches us, but it's something we haven't been able to capture scientifically.

Let's start with Glenn Gould.

He died 25 years ago. This year is the 75th anniversary of his birth.

Much loved and perhaps the most enthusiastic pianist of the 20th century.

He grew tired of playing concerts and felt like, as he puts it, "a performing monkey."

So I retired and devoted myself to recording.

Gould's specialty was Bach.

His most famous recording is probably the Goldberg Variations.

Bach wrote variations only once.

There are actually some early works, but later in life, in a mature period, Bach himself said, "This is the theme and 30 variations."

Actually, the subject is not the melody, but the bassline.

Gould left two great recordings of this song. One is mono and the other is stereo.

By the way, for mono recordings he used a pedal. All he said in his old age was, "No, no, wait a minute

I try to be very scientific. I don't use pedals. ”

Let's listen to the 1955 recording. I'll play the first few songs.

Glenn Gould, 1955.

(music) How was it?

(Applause) So let me explain how we did it.

First of all, let me talk about the final process.

This one. It's a very complicated process. It takes software, musicians, and more, but in the end, your ears are the final judge.

Play the original on one side and the new recording on the other.

I'll try it now.

From the right speaker I have the original recording, and from the left speaker I have a new recording of an instrument like that over there, both playing at the same time.

(music) This is the original. (unintelligible) This is the performance together.

(music) Before Jurassic Park, there was no science about how skin was attached to muscle, right?

Now, in the world of video, we are able to create natural movements.

And this is another example of using science to create natural behavior.

I heard the original.

Ultimately, I started with an experience.

I want to experience listening to music by sitting with musicians.

You can buy something like the one here.

If that's not possible, we now have high-definition surround sound.

If you don't know high definition surround, go to an audio store.

It's much more realistic than a normal stereo.

If not, try listening with headphones.

This disc contains 5 recordings. Sony has 5 sound sources.

You can listen to what is called a binaural recording with headphones.

Sitting in front of the piano is a dummy head. I have a mic in my ear.

If you put on headphones and listen to this, you'll feel like you're inside Glenn Gould's body.

It's funny how the musicians who played the piano with this system heard it and said, "I can't believe it! It's like I'm playing the piano myself."

Being inside Gould playing the piano, it feels like your fingers are making the decisions and going through the whole process.

This is going to change the world.

By the way, about the great quality

The whole process is very sensitive to temperature and humidity.

What you have heard today is not perfect.

A fusion of wood, cast iron, felt and steel strings, all of which are remarkably sensitive to temperature and humidity.

So when I participate in the recording, if necessary, I reassemble the piano for each song.

This photo shows a series of actions. Dummy heads and recording engineers stand around during reassembly.

Little by little, without putting dates on these events, music is transformed into data. Just like in many fields that have happened in the last 35-40 years.

Audio came last in this game. I'm not talking about digitization or bit depth or remastering.

I would like to talk about converting information about how a piece is played into data.

Audio comes last because our ears are highly sensitive and have a direct connection to our emotions and cannot be fooled so easily.

Your eyes love color and movement, don't they?

Well, there is such an episode in "Star Trek".

(laughter) Just got it yesterday.

James Diley, who played Methuselah... Remember this story?

One time he was dancing... Oh, I don't want to spoil this story from 1967.

Well, are you all following me?

Nimoy, excuse me, Spock sits at the piano and plays a Brahms waltz, and everyone dances to it.

Spock suddenly says, "James, I know all the Brahms waltzes, but this is not a Brahms song."

That's exactly what I do.

I want to hear the waltzes that Brahms didn't make.

I want to hear the songs that Horowitz didn't play.

What we're doing now is collecting data and extracting styles, templates, formulas, etc. Something similar happened before in the world of computer graphics.

That's what's happening in the world of music right now.

The changes are like this.

Now we think that "music = note + how it is played",

It becomes "music = data + algorithm".

What you just heard is the data played by the computer, and Glenn Gould is not in the room.

Yet it is human.

The next step will soon be the listener's true dream.

So far, every time I listen to recordings, every time I use my iPod or whatever, I listen to the same thing. It's fixed.

Wouldn't it be nice if the song was different every time you listened to it?

If you're feeling sad this morning, I'd like to hear the usual song played sadder than yesterday,

I want to hear it played by a different musician,

I want to listen in a different room, etc. "Star Trek" thoughts

It is also a virtual reality event.

I get goosebumps every time I listen to it.

Amazing and exciting.

Every time I listen to the recording, I'm like, "Oh my God, we're in the same room! This is actually happening!"

It's a far better experience than anything I've ever heard.

Finally, I would like to conclude with one minute of Art Tatum.

This is way over budget.

We recorded a new recording of him playing at the Shrine Auditorium in September.

Originally recorded at the Shrine Auditorium in 1950.

The lab where we assemble and measure is in Raleigh, North Carolina, and I flew all the way to Los Angeles.

I was on the spot as the president of the company, and I couldn't calm down at all.

I really didn't care. By the time all the equipment had been brought in and the whole Sony team and people were about to take their seats.

Place the piano where it sounds best on stage On a 6,000-seat theater stage that hasn't changed since 1949

Tatum started playing.

Notes, beats, slurs, accents, pedaling everything was perfect. Because he was playing there that day.

And we saved all the data again.

let's hear it now

Luckily it's right here.

This song is one he often used as an encore.

one minute

Irish jig (folk dance). listen to his humor.

(Music) (Applause) The audience at that time gave the same applause as they do now.

(Applause.) Thank you very much, Michael, for this opportunity.

People often ask me how my research differs from the work of a typical long-term strategist at the Pentagon.

The answer to that question is that they think about future wars in the context of war.

I've been doing this work for 15 years, and what I've learned over the past 14 years is that the future of war will be considered in all contexts other than war.

So I specialize in the phase between war and peace.

I'm going to show you one of the many ideas in this book.

I'm flying around the world right now to exchange information with foreign militaries.

This document is the result of a two-year study of America's new national strategy for the Secretary of Defense.

I would like to present a problem and try to think of a solution.

This is the ridiculous concept of the 1990s Department of Defense, the theory of "Asymmetric Strategy with Anti-Access/Area Denial."

why do you call it that?

I think it's because the "A"s are lined up in such a row.

It's a roundabout bureaucratic expression, but if America is going to fight anyone, it's going to be a big fight against the decimals.

about it

And if they can go the traditional head-to-head, kick their ass off, so no one does that anymore.

I met the last Air Force general who actually shot down an enemy plane in an air combat.

He's now a one-star general

This means that we haven't even encountered an enemy air force challenging us for that long.

Excessive combat capability creates a problem, what the White House calls a "catastrophic success."

(Laughter) It's an amazing ability, and I'm going to take a closer look at it.

The question is, "What good can it do?"

May I?

The "Asymmetric Strategy of Anti-Access/Area Denial" theory -- it's red tape to sell to Congress, because if we just say we can beat anyone, they won't buy us what they want.

That's why when we say "anti-access/area denial asymmetric strategy," they go blind.

(Laughter) They say, "Please put it in my constituency."

(Laughter) (Applause) One parody.

For conflict areas

For example, the Taiwan Strait in 2025

For enemies within the conflict zone, e.g.

"A million swimming soldiers"

(Laughter) The United States must rush to the conflict zone instantly.

It's time for "Asymmetric Strategy with Anti-Access/Area Denial"

It's a banana peel on the pavement

(Laughter) Trojan horses on our computer networks expose our Achilles heel.

"Mr. China belongs to you"

Primarily by geographic definition, "Prometheus Law" focuses almost exclusively on the origins of conflict.

A team dedicated to the first half of the league is put into the league match, which is required to keep winning until the end.

this is a problem

We can score against any opponent, but in the second half, we get kicked in the butt, it's called the Fourth Generation War.

I'll explain it like this instead

There is no area that the US military cannot invade.

Afghanistan was supposed to be impossible, but it was easy.

Iraq was also said to be impossible

We did it with 150 dead in six weeks.

It was so fast that I was not prepared for the destruction of the enemy.

There is no enemy we cannot defeat

The question is, "What do you do with that power?"

Effortless access to conflict areas

The challenge for us is what will inevitably continue to be access to the Interim Territory and to create a safe zone for us to occupy.

And here's the problem, the Department of Defense shown here is going to take down the enemy with ease.

The State Department showed me this side and said, "Here you guys can do it."

And that poor country jumps off a cliff and falls down like a cartoon.

(Laughs) This is not a story about overwhelming strength,

We're talking about technology that doesn't kill people, because if a group of women and children turns into a mob and you shoot live ammunition, you'll quickly lose all of your friends.

Unlike invading forces, stationed forces are subject to local legitimacy.

Who are you going to contact in this Interim Territory?

We need internal collaborators and partners in other countries to work with.

We have requested 17,000 peacekeepers from India.

An Indian military leader I knew wanted to cooperate.

He said, "This is the problem

In the Interim Territory, America is mostly lip service.

It's not going to work. 17,000 people can't be disposable."

We asked Russia for 40,000 people.

the answer was "no"

In August, he went to China and said, "We should send 50,000 peacekeepers to Iraq.

Your oil, not ours."

It's true, that's their crude oil.

The Chinese military said, "Dr. Barnett, you're right.

In an ideal world, I would send 50,000 people.

But the reality is not ideal, and the American government is pushing us away from it."

I have a problem with the means of governance after the invasion

Frankly, I made a good choice.

We face different opponents in these three stages.

It's time to admit that we can't let the same 19-year-old soldier do everything day in and day out.

it's too hard

We have unparalleled war-making capabilities.

But everything else doesn't do so well.

I'm actually better than anyone else, but I'm no good.

We have a wise Secretary of War

There is no "everything else chief".

Because if there was, that person would still be testifying before the Senate about Abu Ghraib.

The problem is that no such person exists.

There is no "everything else chief".

No one matches our ability to wage war.

It's "Leviathan Force"

We need an execution force for “everything else”

I call them "sysadmins"

What this shows is that there are no global rules outlining how to handle politically bankrupt countries.

There are rules for dealing with economically bankrupt countries.

The IMF's "National Bankruptcy System" is

we discuss it every time we apply it

Argentina broke a ton of rules

We finally got out of there, but we said, "Okay, don't worry."

It's transparent, and it gives you a sense of non-zero success with a degree of certainty.

There are no rules about what to do with a country that is politically bankrupt and, quite frankly, wants to disappear.

People like Saddam Hussein and President Mugabe and Kim Jong Il who killed hundreds of thousands and millions of people.

And 250,000 people have died in Sudan so far.

What is the system that determines

I would like to divide it into two parts, the first half and the second half.

And let's call this red line "Mission Accomplished."

(Laughter) (Applause) Right now, the first grand jury in this system is the United Nations Security Council.

What can you do?

it can accuse you

we can discuss it and create a document

You can put it in an envelope and send it off, and then you can say straight to the point, "Please don't do it."

(Laughter) Under that formula, in Central Africa, in the 1990s, four million people

250,000 people died in Sudan in the last 15 months.

One day your grandchildren will ask you what you did to the genocide in Africa, you better have an answer ready.

We have no means of turning that will into action.

There's the Leviathan Force, a purveyor of America, saying, "You want me to beat that guy? I'll do it.

I'll do it on Tuesday, but it costs $20 billion."

(Laughter) But there is a way.

As soon as there's no one left to pick up on the plane, leave immediately.

It's called the "Powell Doctrine."

The destination is the International Criminal Court.

I'm good at that sort of trial, and now it's Milosevic's turn.

What are we missing?

A functioning enforcement agency to put will into action, which we don't have.

Every time we try to lead these efforts, we have to face an "imminent threat."

We haven't faced an immediate threat since the 1962 Cuban Missile Crisis.

But we've been using this term for a long time to intimidate ourselves into doing something because we are democracies and this is the price.

If it doesn't work out, "I have a gun!"

I shout and rush in

(Laughter) And then he looks down at the body, finds an old lighter, and says, "Man, it was dark."

(laughter) France, do you want to do that?

France says, "No, but I love to criticize you later."

In the process that follows, the mighty force we need is what we call the Sisad Army.

Maybe they should have followed Leviathan's march toward Baghdad with 250,000 men pouring into Iraq.

What did you get?

There would have been no looting, no army lost, no weapons lost, no ammunition lost, no Muqtada al-Sadr, no rebellion.

Talk to someone who was there in the first six months.

We took half a year to get the job done, half a year of wasted time.

Then they started turning

Why? they were just fed up

they saw what we did to hussein

"You have the power to restore this country.

You're America,' he says.

Sebastian Mallaby of The Washington Post said, "We need an international recovery fund," which is a good idea.

Modeled after the IMF

Instead of spinning a fundraising hat every time

Where can I find enforcement agencies? It's easy. It's G20.

Their policy after 9/11 is

Everything is safety first

They decide first what to do with the money, just like the IMF.

Votes will be allocated according to contributions

It's my challenge to the Ministry of Defense.

We must create and nurture such an execution team.

Track down allied forces and keep a record of their success.

and this model can

You say it's too hard

In the case of the Balkans, the six steps are now in place.

was carried out in this way

The proposal is to specify this to increase transparency.

Are you glad Mugabe is gone?

Do you want to get rid of Kim Jong Il who killed 2 million people?

Prefer a better system?

This is why it's important for the military

They've been through an identity crisis since the end of the Cold War.

I'm not talking about the difference between reality and desire, and I'm not a government person, so I can.

(Laughter) It was the 1990s.

It was the time when the Berlin Wall fell and Operation Desert Storm was carried out.

A chasm began to form within the military between those who thought they could survive and those who feared their own future, like the American submarine force that saw the Soviet Navy disappear overnight.

oh!

(Laughter) So they moved from reality to desire and created their own particular language to describe their journey of self-discovery and self-actualization.

(Laughter) The problem is that you need big, exciting enemies.

If you can't find it, you have no choice but to create it

China? I'm sure you'll be beautiful when you grow up!

(Laughter) Others in the military were dragged into the mud all through the 1990s and invented this cynical term: military action other than war (MOOTW).

Who joins an army that does anything but war?

Actually, almost everyone got in.

Jessica Lynch never tried to shoot back.

most of them didn't carry guns

I think it's an internal military cipher that means, "I don't want to do this."

In the 1990s, they operated in a chaotic place between the globalized and the non-globalized regions, "the core and the gap," if you will.

The Clinton administration didn't care about this.

It's been eight years since I ruined my relationship with the military from my first day in office by acknowledging homosexuality in the military.

(Laughter) So we stayed in the country for eight years.

What were you doing during that time?

I bought one army and operated another.

Like a man who goes to the doctor and says, "Doctor, it hurts when you do this."

(Laughter) The doctor said, "Then you should stop."

At the Pentagon in the early '90s,

Buy one army, run another, and one day it'll hurt, that's wrong

Bad Pentagon! Bad guy!

(Laughter) Dr. Barnett, you're right.

Can you come back next year and remind me?

(Laughter) Some people say that 9/11 will close the gap, dragging long-term change leaders looking down history from 10 kilometers into the mud and saying, "You want a networked enemy?

Please find me anywhere."

So MOOTW -- how do you pronounce it -- elevates from junk to grand strategy, because that's how you close that gap.

Some people put the two together, and they call it "empire strategy," and I think it's a silly concept.

"Empire strategy" is about enforcing the rule of the maximum must, not the rule of the minimum what is not.

It's not the system of governance that we employ.

I didn't even ask for that kind of relationship with other countries.

I prefer the word "system administration"

Enforce only the minimum rules necessary to stay connected to the global economy.

Do not engage in certain types of cheating

How will this affect the future of war?

The whole Pentagon is blaming me for this concept.

At the same time, it also makes them very popular.

everyone has a different opinion

If you look back at our founding days, defense historically meant defending the homeland.

security meant everything else

It's two different military forces, two different functions, as written in the Constitution.

We create an army when we need it, and we maintain a navy to keep in touch on a day-to-day basis.

Ministry of War and "All Other Ministries"

club and baton

This one is a complete blow-out This is the networked army

In 1947, we combined these two within the Department of Defense.

Our long-term rationale is that the United States is in a high-stakes situation with the Soviet Union and will attack us.

It was to expose the whole world to the brink of destruction.

We've combined national security with international security with a delay of seven minutes.

it doesn't matter now

They could kill three million people in Chicago tomorrow, but we don't prepare for war with nukes.

That's the scary part

The question is, how do we reconnect America's national security with global security to make the world a much better place to live in?

And then the branching point I mentioned earlier was born.

We've been arguing about this ever since the end of the Cold War.

To have a ministry of war and "everything else"

Some people say, "9/11 did it."

So now we have home and away games.

(Laughter) The Department of Homeland Security is a strategically satisfying measure.

It will be the 21st Century Agriculture Department.

TSA (Transportation Security Administration) means "queuing for thousands"

(Laughter) I supported the Iraq War.

he was a villain with many criminal records

We didn't have to find him actually killing people to arrest him.

Winning wars with the Leviathan Force

I knew I was going to have a hard time after that.

But this organization doesn't change unless it experiences failure.

What do these two forces mean?

This is the military force that Hobbes spoke of.

i love it i don't want to lose it

And nuclear weapons deter all-out war.

This is the military power the world wants from us.

That's why I'm talking to other militaries around the world.

What does this mean?

It's about not pretending that the same 19-year-old soldier can handle two completely different skills.

Morning, noon, and night are just switching, morning, noon, and night

Hand Aid and Shoot Back Hand Aid and Shoot Back

you can't do that

It's impossible to switch like that at the age of 19, right?

(Laughter) For this military force on the left, we can train 19-year-old soldiers.

A 40-year-old police officer would be a good fit for the right-hand execution force.

you need experience

What does this mean operationally?

The rule looks like this

The sisad unit is a unit that never returns home and does most of the work.

I rarely use the Leviathan Force in combat.

But we need a promise to the American people -- to our own people and to the world.

If you unleash the Leviathan Force, it's a guarantee and a promise that you'll put tremendous effort into managing the system in the immediate aftermath.

Don't plot war if you're not ready to win peace

(Applause) There are other differences, too. Leviathan's traditional partners are like the British Empire and its former colonies.

(Laughter) Don't forget we're in.

There are many partners on the "other" side.

International Organizations, Non-Governmental Organizations (NGOs), Volunteer Organizations and Contractors

you can't escape them

The Leviathan Army is all about joint military operations.

it's over

What we need is a cross-agency effort led by Condi Rice.

I'm surprised no one asked that question when she was confirmed in the Senate.

The Leviathan Army is "Dad's Army"

I'd prefer a young, single, hot-blooded type.

(Laughter) The sisad army is "mom's army."

Everything the men's army hates

They've always had a balanced gender mix, they've been educated for ages, they're married, they have kids.

In the left army, if you don't get promoted, you're fired.

I'm in and out of the army on the right.

The military on the left is restricted from using force inside the United States and is under a "law enforcement ban."

The Right Enforcement Force will obliterate that restriction.

National Guard belongs here

The Army of the Left will never be tried before the International Criminal Court.

The Sisad Forces Should Be Subject to Judgment

"Network centrality" has different definitions

One disrupts the network, the other builds it.

Now you have to think about networking later, and then wage war.

Need more budget?

Do you need conscription to get this done?

not at all

For years, the proponents of RMA, the Military Revolution, have told us that we could do an equally deadly attack faster, cheaper and on a smaller scale.

I said, "Good, I'll take the sysadmin's budget from you."

here is the big point

Sith administration forces will first be created within the US military.

But in the end, about two-thirds of them will be civilianized.

Internationalize across ministries and departments.

Yes, it will start at the Pentagon and eventually cross the Potomac River (which has departments other than the Department of Defense).

(Laughter) I was on top of a mountain because I could see the future.

I don't know if I'll live until it happens, but it will happen.

"Everything else" will be born between war and peace.

this is the last slide

who will be the guardians of the children

This is where Marines get their hearts fluttering.

(Laughter) Maybe he's thinking of ripping me off afterward so I can't say shit.

(Laughter) Read Max Boone.

This is Marine Corps History - Small Conflicts and Small Armaments

Marines look like my terrier

I wake up every morning wanting to dig a hole, wanting to kill something

(Laughter) I don't want the Marines handing out aid.

I want them to be in the Marine Corps.

Don't let the Sisad army become lazy

Don't be like the United Nations

If you shoot these people, the Marines will kill you.

(Laughter) (Applause) Department of the Navy, the strategic missile submarines are here, the surface combatants are here, they're so tiny.

(Laughter) We call it the "smart dust" Navy.

I tell a young officer, "Maybe one day I'll be in command of 500 ships.

Unfortunately, it's a ship with no one on board."

Aircraft carriers belong to both sides because they are swing assets.

You see the pattern, an airborne is like an aircraft carrier.

Here are the armored forces

Air Force secrets they don't want to tell you - even if you can beat the enemy with bombing

But to win peace, you need a lot of ground forces.

Secretary Shinseki was right on that point.

It's the Air Force. Strategic Airlift is both.

Click here for bombers and fighters

Special Operations Command in Tampa-

infantry here

Here's the infamous civil affairs unit

go back to the army

It's about infantry and special operations command.

They're never off, they're always on active duty.

They suddenly appear, do their duty and leave.

"Come see me now, don't say that later."

(Laughter) "Because I was never supposed to be here."

(Laughter) So the world is your playground.

(Laughter) Infantry is "Trigger Happy."

Rules should be as loose as possible

Because if three million people die in Chicago and the war stops and our government is irretrievably deformed, they'll be the first to defeat them.

I'd rather have them there even if I make a few mistakes along the way, rather than being shown that kind of situation.

As for reserve forces, the National Guard has an overwhelming Sith Ad force.

how to make them work for this army

Most firefighters in this country work for free.

it's not about the money

It's about being honest with them

And finally, intelligence, workers and defense ministries are here, and so is the CIA.

Public information, analysis, open source stuff should go here.

The information we need from you is not confidential.

it's not a secret

It's an article in The New Yorker about how Echo Boomers in Iraq, ages 19 to 25, teach each other about their sysadmin jobs via Internet chats.

"Al-Qaeda might be listening," he said.

"They already know this!"

(Laughter) With your left hand, take the gift.

It's a simple thing with sunglasses that doesn't scare people.

Both include sensor, transparencies and OHP

thank you

What do you think when you see this?

Emeka seems to have tried a lot of things with you, and I'll repeat some of those topics.

But I'm just going to attempt to summarize the issues I've discussed so far by fleshing them out with personal experience.

Africa has many contradictions.

as in other countries

(Laughter) (Applause) Surprisingly, on the African continent,

It takes so much time for meetings to talk about the good side.

Why?

This is a classic example of the challenges we face in the media.

why is this a problem?

Africa's scourge is disease, corruption and poverty.

All of you Harvard graduates

You might think I'm telling you, 80% of Africans need help.

While this is my experience

It's a story shared by many other Africans.

about poverty

Even though I didn't grow up in a slum, I know how hard it is to live in poverty and support a family.

We talked about indicators earlier.

Breakfast is an indicator of family economics

I wish I could get eggs and meat

When it hurts, just porridge

Like the rest of the family, my parents supported us, so we had no savings and were financially precarious.

My parents, who realized I was smart, didn't let me go to the free neighborhood school.

Interestingly enough, my parents, who were very pedagogical, could not afford it in our household.

I got him into Catholic school, and that's where I am today.

In elementary school, I was often kicked out because I couldn't pay my tuition.

A staff member came with a list of students who couldn't pay their tuition and told them not to come until they had paid their tuition.

So I thought I should just go to a local school.

It was embarrassing to find out that I was poor, because when I was young, I cared about my surroundings.

But my parents sent me to private school even though they were struggling financially.

about corruption

There is an entrance exam to go to high school in Kenya

We have top-notch national high schools and state high schools.

I attended a national Kenyan high school

fall by one point

I was very disappointed and was wondering what to do

father came

If only one point is not enough

He said if I spoke to the principal, he'd let me in.

I went to school with my father, but he was treated badly because he was just an ordinary citizen, he didn't hold any position, he wasn't from a good family.

The principal says to his father, what is it?

Do you think your daughter will be able to enroll if there is a vacancy?

My classmates, the daughters of politicians, went to national high schools even though their grades were much worse than mine.

I didn't like it when my parents made fun of me in front of me.

So I decided that I should always rely on others.

Even though I was contacted later that I had passed the exam, I ended up saying, "Pick someone else in."

(Laughter) (Applause) Now let's talk about illness.

in brief

Father died of AIDS in 1999

It's a disgraceful disease, so I hid the name of the disease for a long time.

I was living and studying in America at the time.

Okay, on the phone when I first got sick

I heard the name of the medicine

i looked it up online

No detailed explanation was given by the doctor.

It didn't feel like it would be easy

I read a lot of articles on the Internet about my father's illness, and I knew what had happened.

Although the initial symptoms subsided,

I needed medication, which was developed by an American company and cost 30 dollars a tablet.

If you don't keep drinking, it will kill you.

money is running out

the disease recurred

By having a friend of my father who often travels to India buy a cheap generic product and drink it,

Somehow I survived

I can't buy it either

I had symptoms on Friday.

But back then, there were no ATMs, and my family didn't have cash, so we couldn't get treatment until Monday.

Just lay on the drip table in the hospital for 3 days

Then go to a public hospital and get it treated.

I decided with my family and consulted about money

But the ambulance didn't arrive in time, and in the end my father died.

I can talk as much as I want.

looking at me

I feel sorry for you

Africa is also sympathized

That's why you're losing

that i am a blogger

The fact that he's a Harvard-educated lawyer and a lively personality is overlooked.

let's think personally

When the story gets bigger, I can only think of it as someone else's affair

I can't see the good side

not just me

You know a boy who grew up in a poor village.

Even if you don't know about windmills

just heard the story

i ended up crying

He challenged and succeeded

you can get a job at nike

(Laughter) In short, people

(Laughter) (Applause) Instead of looking at the possibilities.

so what should i do

Let's talk about our experience first.

always in africa

to see and hear

I'll tell you. Blogs are also effective.

There's a South African site that collects African blogs.

for our development

let's talk about the situation

This is the Swahili Wikipedia

A language spoken by 50 million people in Africa

only 5 people wrote

4 of them are white men

Another one, you may be here, is a Tanzanian blogger.

he is the only african

But don't criticize what Westerners write.

Others who speak Swahili

raise your voice

to create my own country

Act, not criticize

Reuters collects African blogs to enrich its Africa column.

There have been many other activities so far.

offering fake aid

"Cheetah Generation" caught my attention

There was also Live 8, but I still don't see a good future

you are different

(Laughter) I want you to know that criticism alone is not enough.

If you live away from your home country and are wondering whether to return to your home country or stay abroad in the future

go back to your homeland

africa needs you

May I

I used to work for a top-tier company in Washington, D.C.

My salary was good, so I sent a lot of money to my family.

But I left the company where I was needed

I wanted to do something useful

Out of Harvard Law School, what I'm doing now is a very respectable job.

actively take advantage of opportunities

I am using my knowledge

I usually work as a corporate lawyer for South Africa and East Africa.

supporting entrepreneurs

We help businesses grow through loans and stock issuances.

In Kenya, we launched a project to track the performance of parliamentarians.

For the server expenses prepared by my friend M

It costs $20 a month

All other work is free

I entered the data one by one.

You can check each person's background and Diet questions.

If you write your question in the comment section

Some lawmakers ask questions in parliament.

In the past, people were tired of criticizing politicians.

Politicians won't explain if the public doesn't demand it

It's useless to expect the conscience of politicians.

Africans are also in the actions of lawmakers

let's pay attention

Nothing will change as it is now

New policies we need Who will make them?

National leaders are mirrors of society.

It's not the Martians who hold meetings in African governments.

we are the same people

A society where people choose politicians they hate

to change?

"Muzarend" is beginning to educate its citizens to hold their leaders accountable.

Everyone in the gathering

to share opinions

that's great

If you go home and get someone to share the wisdom you've gained here, it could change your future.

And again, by all means, listen to the personal stories.

We talked a lot about what Africa needs.

I don't do aid, I'm a hot-blooded liberal

I'm sure you think I'm thinking

to measure in money

it's hard

But once in a while, listen to what your peers and colleagues have to say, and you'll change your mind a lot. Africans live by supporting each other.

When I was a freshman in law school, my mother lost her job and I helped her.

i'm a college student sister

pay school fees

Poor excellent cousin

paid school fees

When a cousin dies of AIDS, the child left behind

mother took over

because I was able to save these people

that's what's important

that changed my life

of Vanderbilt University

Professor Mitchell

My professor advised me to go to Harvard

I listened to the class so intently that I stood out among the cold Americans and was personally summoned.

I was asked about my career path and wanted to become a lawyer.

when i say

America has too many lawyers

I told you why, the professor is a political science major, I don't know about law.

promised to cooperate as much as possible

which school is better

When asked, I said that the university I was attending at the time was like heaven compared to the one in Kenya.

I said the name of it

Then the professor said you were smarter.

But when I say that the tuition is cheap and I like the locality,

I was told that I had never heard of such a student.

And my professor encouraged me

"If you're as good as you, you can get into Harvard.

If they don't let you in, they're wrong."

That's why I became interested

this is just an example

other people here

just a step

Take the next step

Finally, I will talk about my image of Africa.

Yesterday, a gentleman said that being forced to leave the African continent allowed him to show his talent.

I want African children, including my daughter, to do what they want without leaving Africa.

I want you to get out of the environment you were born into and go to a higher level

Any American

I think that if the environment in which you were born is bad, you should move.

Being born in Arkansas doesn't mean much.

But for many Africans, the environment in which they were born dictates their life.

Please change this situation, we will change it

Take responsibility as an African

thank you

(applause)

We have a lively debate about the definition of life.

Is life about reproduction, metabolism, evolution?

I don't have an answer so I can't speak

It can be said that life requires calculation.

this is a computer program

Inside the cell, the program starts up and runs, and the result is this person.

If you compare the genome to a program, Chris Anderson, Jim Watson, Craig Venter, and all of us are ready-made computers.

As you can see from this analogy, there are many similarities between genetic programs and computer programs.

Especially compelling is that small changes can make a big difference in the course of biological development.

A small mutation makes a two-winged fly four-winged A small mutation makes a two-winged fly four-winged

Legs grow where the sense of touch should grow

People with six fingers appear, like "Princess Bride."

A feature of this computer program is that it is sensitive to small changes.

You can turn $1 into $1,000 by changing just one bit in your bank account.

It shows that these small differences are amplified and lead to large differences due to the complex calculations performed during development.

It shows that there is a fundamental molecular program in biology, and that the power of that program is at work.

I'm going to write a molecular program to establish technology I'm going to write a molecular program to establish technology

Many scientists are participating, many of them synthetic biologists, such as Craig Venter. Many scientists are participating, many of them synthetic biologists, such as Craig Venter.

they're looking at using cells

they are cell oriented

A friend of mine, a molecular programmer, and I are looking at biomolecules.

We're looking at DNA, RNA, and proteins, and we're trying to build a new language with biomolecules from scratch, which may have nothing to do with biology.

These are all intracellular machines

there is a camera

The solar panel of the cell The switch that turns genes on and off The skeleton of the cell and the power unit of the muscle

My team of molecular programmers is trying to recreate all these parts from DNA.

We're not DNA fanatics, but DNA is the cheapest, the easiest to understand, and the easiest to program.

We will use other substances, such as proteins, if they become readily available.

This is what happens when molecular programming succeeds

sitting in front of the computer

Design something like a cell phone Define a cell phone in a high-level language

And then you use a compiler that understands that definition, you turn it into the actual molecule, and you send it to the synthesizer, which packs the molecule into a seed.

If you give the seed the right amount of water and nutrients, the seed will do calculations along the developmental process, molecular calculations, and build an electronic computer.

From my point of view, life is a molecular computer that creates an electrochemical computer that creates an electronic computer that merges to create a new molecular computer that creates another electronic computer.

If you agree with this theory and think that life is computation, then you are looking at the great biological problem through the eyes of a computer scientist.

How do babies know when to stop growing?

The problem with molecular programming is how does your cell phone know when to stop growing?

(Laughter) How does a computer program know when to stop running?

Furthermore, how do you know the program will eventually stop?

I still have questions like this

The question posed by Craig Venter is

he's the mark of a computer scientist

He asked what the minimum genome size a microbe needs to be to function.

How small can we make the genome?

It's a lot like the challenge of writing a minimal program that works like Microsoft Word.

(Laughter) It's like writing a working genome for a very small microbe, you write a little program that works like Microsoft Word.

The problem with molecular programming is, how many molecules can you pack into a portable seed?

what would be the minimum number?

This is a key problem in computer science

It's a problem of complexity, and it's a pretty hard problem.

Most are unanswerable

Some questions are beginning to have answers

I'd like to ask this question about the DNA structure that I'm going to talk about next.

Now this is normal DNA as you know it.

It is double stranded and has a double helix structure There are A T C G bases that bind the strands

Sometimes I describe it this way because it's easier to understand.

We want to focus on individual strands rather than double helices.

What we're synthesizing is a single strand. In this tube, there's a blue single strand. In another tube, there's an orange strand. In the single-stranded state, the structure is flexible.

When you mix them together, you get a rigid double helix.

Over the past 25 years, Ned Seaman and his students have enthusiastically created beautiful three-dimensional structures using this DNA strand binding reaction.

The method is brilliant but time consuming

It can take years and can be difficult to design.

So a few years ago, I invented a new method called "DNA origami." So, a few years ago, I invented a new method called "DNA origami."

But this requires long single-stranded DNA, which is technically very difficult to synthesize.

Therefore, we rely on natural materials

If you look at the off-the-shelf computer-generated product, the genome is double-stranded, which makes it unsuitable.

There are billions of bacteria in your gut

they are also inappropriate

They're also double-stranded, but they have a virus inside. The genome of this virus is a long, clean, single-stranded genome that you can fold like paper.

this is how to do it

this is part of the genome

And put in this some short pieces of synthetic DNA that I call staples.

In each case, the left side binds to a specific portion of a long DNA strand, and the right side binds to another location, and then it pulls the long strand like this.

The whole reaction is a long chain that folds into a rectangle.

I can't show you the actual video of this process, but Sean Douglas from Harvard did a great job visualizing it. Here's the long chain, and this is the short chain.

Mixing these DNA strands together

Heat it up, add a little salt, heat it almost to a boil, then cool it down. During the cooling process, the short chains combine with the long chains.

You can see a little double helix here.

If you look closely at DNA origami, you can see how complex it actually is. Many double helices run parallel to each other.

One chain joins along one helix, jumps to another helix, and then comes back like this.

This is how you fold a long chain

To show you that you can make any shape or pattern, I'm going to make a shape here.

It's shaped like an eye. Go down, nose, then forehead, come back, draw a loop and you're done.

I thought that if I could do this, I could make anything

So I designed a short stapler programmatically.

I ordered it and it was delivered by FedEx

We mixed the ingredients, heated them, then cooled them. 50 billion smiley faces per drop of water. 50 billion smiley faces per drop of water.

Each of these is only 1/1000 the width of a human hair. Each of these is only 1/1000 of the width of a human hair.

All of these things float in solution and you have to stick them to some surface to see them.

When you pour a solution onto a flat surface of something, they start to stick to the surface, and I took pictures with an atomic force microscope.

It has a stylus like a record stylus that can be traced over the surface to record the steps on the surface.

"Touch" DNA origami

Because the landing was a little rough on the atomic force microscope, the landing was a little rough on the atomic force microscope.

If you zoom in, you'll see that the weaker jaws are curling up toward the head, and some of the noses are collapsed, but it's still working pretty well.

If you zoom in further you can see these little goatee-like loops If you zoom in even further you can see these little goatee-like loops.

What's great about this is that anyone can do it

A year later, I received an unexpected email from someone

Anyone know what this is?

China, right?

This is the remarkable achievement of Chinese graduate student Lulu Qian.

She developed this DNA origami design in her own software, a beautiful shape of China, including Taiwan, connected by the shortest string in the world.

(Laughter) This job worked really well. You can draw patterns as well as shapes.

You can also use DNA to map America and spell 'DNA'

And what's really clever is that this is like nano-artwork, but you can use nano-artwork to make nanocircuits.

Circuit components such as light bulbs and switches can be placed on the support.

you can collect them to make some kind of circuit

Then wash away the remaining DNA and you're left with a circuit

It's the work of a colleague at Caltech.

They used DNA origami and carbon nanotubes to make this little switch that you see here, wired it up, tested it, and it actually worked.

This is just one switch, and one computer needs 500 million switches, so there's a long way to go.

But it's very promising. This origami can make parts one-tenth the size of a normal computer. This origami can make parts one-tenth the size of a normal computer.

Promising to make a small computer

Let's go back to the compiler

DNA origami is proof that compilers really work

when you start something on your computer

A computer program gives a conceptual definition, a conceptual definition for origami.

Compile that definition into a molecule and feed it into a synthesizer to create a DNA origami.

A company has written a good program that is so much better than my poorly-crafted code that it enables clean, visually-assisted computer design.

You may wonder why DNA origami isn't the end of the story?

With a molecular compiler you can do anything

but not really scalable

If you want to make a human using DNA origami, you need 10 trillion times longer bases than you need 10 trillion times longer bases.

That's three light-years of DNA, so it's impossible.

We're looking at another technique, the calculated self-assembly of tiles.

Eric Winfrey started advocating using tiles that are 1/100th the size of DNA origami.

When you zoom in, the tile has 4 short DNA single strands, and when you zoom in, the tile has 4 short DNA single strands, and when the strands match, they bind to other tiles.

Draw these tiles as small squares

If you look at the DNA strands on each side of the cohesive side, you'll see a checkerboard pattern.

Intricate self-organizing checkered pattern

The point is that tiles are a kind of molecular program that creates patterns.

What's really cool is that any computer program, especially computation, can be turned into a tile program.

Combined tile combinations can be viewed as binary counters instead of checkerboards Think of binary counters as binary counters rather than checkerboards

You can read numbers like 5 6 7 in binary

In order for this kind of calculation to proceed correctly, we need some input, a seed.

DNA origami can be used for seeds

If you encode the number 32 on the right edge of the DNA origami, encode the number 32 on the right edge of the DNA origami, and add tiles that can be calculated, the tiles will start counting until they reach 32, and then stop.

Now we have a way to know when our molecular program will stop working, and counting will tell us when to stop growing.

Now we have a way to know, by counting, we know when to stop growing.

I know how big

Here is the answer for the first problem I mentioned

But we still don't know how a human baby does it.

Then I applied this calculation to try to make something bigger than DNA origami, and then I tried to apply this calculation to make something much bigger than DNA origami could do.

So here you have DNA origami, and you encode the number 32 on each end, and you use a watering can to water the tiles and let them grow and start making squares.

The counter is the basis for filling the middle with a square.

By combining DNA origami and tiles, by combining DNA origami and tiles, we were able to create something much larger than DNA origami.

Even better, it's reprogrammable.

For example, you can change 32 to 96 by making a few changes to the DNA strand in binary notation.

So, even though the origami is the same size, the resulting square will be three times as big.

That's the summary I want to say about development That's the summary that I want to say about development

There's a very delicate computer program, and if you make some small mutation, it can go from making a square of a certain size to making something very big.

This counting and using developmental processes to design and build things overlaps with Craig Venter's question.

The question is, how many strands of DNA do you need to make a square of a given size?

If you want to make a square of size 10 100 1,000 using only DNA origami, you will need as many DNA strands as the square of the square side.You will need as many DNA strands as the square length of the square.

this is not possible

But if you use math, you use origami, and you use countable tiles, you can fit in 100, 200, 300 DNA strands.

And you can exponentially reduce the amount of DNA strands you need by just counting and doing some simple math.

Computation is a powerful way to reduce the number of molecules we need to build things, and to reduce the size of the genomes we're building.

Ultimately, I'm back to the crazy idea that computers make computers.

If you look at the origami squares and counters, if you look at the origami squares and counters, the patterns are exactly what you need to create memories.The patterns are exactly what you need to create memories.

If you put wires and switches on tiles instead of supports, if you put wires and switches on tiles instead of supports, they will self-assemble into complex circuits, the demultiplexer circuits needed to make this storage device.

With a little math, you can build complex circuits.

It's a molecular computer that builds an electronic computer, so to speak.

So how far have we progressed so far?

Introducing the results of last year's experiment

This is a DNA origami rectangle, and you can see the tiles growing.

I know how you count

1 2 3 4 5 6 9 10 11 12 17

There are some mistakes, but I'm counting them

(Laughter) We came up with this idea nine years ago. It takes years to do this kind of thing.

I have an idea to correct these mistakes

In the next five to 10 years, I think we'll be able to build these squares and self-assemble circuits that I talked about.

What I want to tell you in this talk

Here's how life does math to create a huge variety of complex shapes.

The computations we're doing are molecular computations, and as Feynman said, the best way to understand, to learn, is to build something.

We take molecules and we improve them, we build everything from the bottom up, we use DNA in ways that nature never intended, we use DNA origami to seed this algorithmic self-assembly.

It's all very cool science, and what I want you to understand is that when you think about it in terms of big problems, molecular programming isn't just about building gadgets.

The goal is not to self-assemble into mobile phones or circuits.

It's about using computer science to shed new light on the big questions, to ask the big questions to a new level. It's about understanding how biology can create amazing things.

Thank you. (Applause)

I'm going to try to explain that we really don't know as much as we think we do.

I'll ask you four questions first.

It's not some kind of cultural thing that happens at this time.

Well, this is a joke among friends.

These four problems are actually the ones that people with a scientific background find very difficult.

And then we put these problems out to science program producers, science educator audiences, science teachers, and seven-year-olds, and the kids did a little better than the rest of the audience, which is a little surprising.

So the first question, folks, if you don't mind, write it down on real paper, or on a virtual piece of paper in your head.

A small seed weighs very little, but a tree is heavy, isn't it?

I don't think anyone would disagree with that. So where did the wood get the material that makes up this chair? Where did all this come from?

(Claps a chair) The next question is, can you turn on a light bulb with a battery, a light bulb, and a single wire?

And you don't have to actually write it, but if you need it, can you draw a schematic? Or are you saying that's impossible?

The third question is why are summers hotter than winters?

We all agree that summers are hotter than winters, but why? And finally, can you draw a floor plan of the solar system? Please draw it if you like Please draw the orbit of the planet

can you draw?

Draw a diagram if you can

Children don't get their ideas from their teachers as much as they think they do. In fact, they get them from common sense, from their experiences, from all the experiences that happen with their friends, their caregivers, their parents.

One of the great experts in this field, of course, is Cardinal Wolsey.

(Laughter) How did he die?

Did you get your head chopped off? Or hanged?

(Laughter) Now, of course, I'm sure you all got the right answers to these questions, but you haven't shared your answers yet, have you?

I usually pick someone out and humiliate them, but let's not do this this time.

Small seeds are heavy, and basically 99 percent of the whole thing comes from the atmosphere.

About 85 percent of you, maybe a little less at TED, would have said that it came from the dirt, and some of you, maybe two, would come later and argue with me that it really came from the dirt.

So if that's true, if we could run trucks and fill people's yards with dirt, it would be a great business.

But I don't actually do that.

These are made of things in the atmosphere.

I passed all my biological tests in England with very good grades.

Still, I graduated from school thinking that trees are made of things found in the earth.

Question 2: Can you light a light bulb using a battery and a single wire?

yeah you can i'll show you how

But I have some bad news for you. I have a video that I was going to show you, but unfortunately it doesn't work well in this room.

Because it's so far away from here that you wouldn't really notice it.

When I asked science graduates these questions, they couldn't answer.

And many graduates said, "You wouldn't say that trees are made of air."

I'm a science student

I cut him off, saying, "I came from one of the best science universities in the world."

(Laughter) And when I gave this problem to engineering graduates, they said, "Impossible."

I gave them a battery, a wire, a light bulb, and I said, "Can you turn on the light bulb?"

It's the same thing you do at Imperial College in London, it's not anti-American.

The problem here is that we spend so much money on education, so of course you'd better get it right.

And there's also a social reason, to help people understand how photosynthesis works. For example, one side of the carbon dioxide balance is how much we've released, and the other side, which as a board member of Kew National Botanic Gardens, I'm very interested in is how much plants are absorbing.

That's exactly what plants do to live

Is there anyone from Finland in this group? Well, as I say in Finnish terms, if you don't understand how it works, you really feel like you're stepping on thin ice.

Now I'm going to show you how to turn on a light bulb with this battery.

So easy, right? Of course you all knew

But if I'd never played with batteries and light bulbs, and had only seen schematics, I probably wouldn't have been able to, and that's the problem.

So why is summer hotter than winter?

We learn as children that when we get close to hot things, we get burned.

And that leads me to believe that the reason summers are hotter than winters must be because we're closer to the sun.

most of you would think so

Hey, everyone is shaking their heads, but only a few are shaking their heads with confidence.

This is how others feel

Summers are hotter than winters because the sun is more diffuse, because the earth is tilted.

If you think it's because this slope brings you closer, you're wrong.

The sun is 93 million miles away and the tilt of the earth is

In fact, in the northern hemisphere, summer is farther from the sun, but that has nothing to do with climate in the northern hemisphere.

So here's the solar system diagram, which I think most people do.

If you thought that summer is hotter than winter because it's closer to the sun, you would have drawn an oval.

Is it wrong? Can you explain this?

But you... you're nodding your head.

Australia and here are you okay? It's summer over there and winter here So does it mean that the earth hurries to the sun at night and hurries back? There's something very strange going on. We have two models in our heads, one right and one wrong, and humans do the same thing in every field.

Now, here's a plan of the solar system that Copernicus drew.

This is exactly what I wanted you to draw

And here's one from NASA, it's surprisingly similar.

Did you notice the coincidence here?

What would you do if you knew that your childhood experiences would lead you to misunderstand elliptical orbits?

What diagram of the solar system would you show your child? Can you show me something different than this?

Perhaps you could show me a picture like this?

This is a plan view from directly above

But what I found in my textbook is this

This is what people show you. These are the ones you see in textbooks and educational websites.

The reason is that concentric circles are very boring, but from this angle it's more exciting, right? And from this angle, if you're making this mistake, three dimensions in two dimensions is an ellipse.

It must be silly, really

We look for evidence to strengthen the models (interpretations) we believe in.

In racial issues, in politics, in all sorts of other things, and in science as well. Scientists are always looking for evidence to solidify their interpretations.

You're in America, so let's speak ill of Europe.

These are bad habits when it comes to science, kind of like learning centers, La Villette in France and the Science Museum in London.

If you look at the structure of these buildings, there's a lot of glass partitions, and it's blue, and it's kind of professional. It's like, when Woody Allen came out from under the sheets and said in that scene in "Annie Hall," "Oh, how professional." It's built, and it's actually available for kids to experience and experiment with.

If an MIT or Imperial College graduate could turn a light bulb on with just a battery and a wire, he would have learned how it actually works, instead of just following the schematic and thinking it was impossible.

In other words, the proper interpretation is from everyday life that you can actually touch

You get it, not from some fantasy thing with glass and mechanical partitions.

San Francisco's science museum does it very well

And it's amateurish, and that's good, because the word amateur comes from love and passion.

Now, children are not empty containers.

The idea of ​​emptiness is, in Monty Python's terms, something like the Lord of the Seals (an archaic position in the British government): children are not empty containers.

We have our own ideas and theories, and unless we know them, we can't change their minds.

How is this new technology

It's the same when it comes to marketing, the UK is pushing the switch to digital TV for the whole population.

The difficulty is when people have preconceived notions about how things work, and these are very hard to change.

In other words, we are not empty containers, and the models we have as children are retained in adulthood.

Poor quality education really does a lot of harm and no gain.

In this country and in the UK, children understand magnetism better before they learn it in school.

It's the same with gravity and attraction. This is really shameful. If you're a teacher and you're comparing before and after teaching, it's very worrying because you're doing worse on tests after you've learned it in school.

So we cheat, and at least in England, we make tests that our students pass.

The government does really well and indulges in complacency.

May I? I'm cheating. If you'd designed a test to see if I really understood it, and not just like if you put iodine in starch and it turns blue, but if you'd done it to test if you knew that plants grow by absorbing things from the atmosphere, maybe I'd be better at science.

So the most important thing is to be able to explain your model (interpretation) well.

Now for homework: How do airplane wings create lift?

It's a simple question, you probably have the answer in your head

So I'm going to ask you to explain to me how an airplane can fly upside down.

Ah, the second question is why is the ocean blue?

I'm sure you have an idea in your head

So why is it blue even on cloudy days? I uh

(Laughter) I wanted to say this in America.

(Laughter) Last but not least, I would like to ask you to give yourself and your children the opportunity to touch and play with objects, because touching objects complements other learning.

thank you very much

well ah yes please please

(applause)

let her introduce herself

Name is?

einstein

This child is Einstein. Greetings?

Hello

Can you be more polite?

Hi, sweetheart. (Hi, sweetheart.)

It's so much better to be at TED 2006 with modern Einsteins

It's such an honor and I'm so excited

wow

(Laughter) Since I've been here, I've been hearing rumors of more and more amazing speakers.

About Tom Riley's session this morning -

I heard you whisper, Einstein, did you hear me?

(whispering sound) yeah yeah

(Laughter) Einstein seems to have been intrigued by Penelope's speech.

Her research is in a cave, so it's dusty, isn't it?

Hacking (Achoo!)

You might sneeze, but the bottom line is that her research-

It might be possible to cure Einstein's throat thorns.

(Coughing voice) Kon Kon Kon Kon!

(Laughter) Bob Russell talked about his work on nanotubes.

It's pretty cool, but Einstein would rather be genetically engineered into giant peanuts.

Oh my God! My God! My God!

You seem very excited

(Laughter) It's a big peanut, because Einstein is a bird --

i am interested in flying

He seems to have been very impressed with Burt Rutan.

Oh

You seem to particularly like the recent accomplishments of SpaceShipOne.

Would you like to ride in Bert's spaceship?

(Sound of a spaceship) Pikopikopiko Lasers don't have to be on?

(Laser sound) Pew pew pew pew (laughs) It's so funny Einstein

Einstein thinks about working in caves and flying in space, but it's a very dangerous job.

something that might fall

Hugh Potot Well

(laughs) Will it hurt if I fall?

Ouch, ouch, ouch (Ow, ow, ow.)

It must be hard work

whew it might be stressful

Gah, I'm sure that's what happens when you don't have work to do

Einstein enjoys art

If the kids in Uganda need a dance partner, Einstein is for them, because they love to dance.

let me dance

(Shakes head - laughs) Let's all dance

You can make me dance too.

Whooooooooooooooooooooooooooooooooooooo

head together

Whooooooooooooooooooooooooooooooooooooooo

(Laughter) Sirina Wong - I might want to play arias on the violin Einstein Can you do opera?

(Acting like an opera) You're so good

(Laughter) Maybe Stu needs a backing singer.

can you sing

If you don't put out the seeds first

la la ♪

yes yes even if everyone is no good

Run away and enjoy the festival

lulu lulu

I was too shy to say it before, but you just confided in me about your troubles.

Are you in trouble? (What's the matter?)

It's you, not me

You said you're in love with a pirate and you're worried, right?

Yar

So what do pirates drink?

beer (beer)

But you don't drink beer, do you?

you drink water

(Sound of water) This kid is really nervous

Because my favorite person from my hometown is coming, and I'm very nervous in front of him.

This kid thinks Al Gore is really cool.

What do you say to a cool person?

Hey baby

(Laughter) What if they were people back home in Tennessee?

Yee how!

(Laughter) I know it's his birthday because he's such a big fan.

Einstein wanted to do something special because he didn't expect him to come.

Can you sing "Happy Birthday"

Sing me "Happy Birthday"

Happy Birthday to you

once again

Happy Birthday to you

once again

Happy Birthday to you

one last time

Happy Birthday to you

well done

(Al Gore appears - applause.) Finally, he wants to say hello to his friends at the Knoxville Zoo.

What do you say to the owls?

ho ho ho ho

What about other birds?

piyo piyo piyo

What about penguins?

quack quack quack

Hey Hey

(Laughter) It's different, isn't it? What about chimpanzees?

Ooooooooooooooooooooooooooooooooooo

good

(Laughter) What about wolves?

Oooooh

What about pigs?

boohi boohi boohi

the rooster?

Cock-a-doodle!

The cat is?

Meow

(Laughter) The zoo also has a big jungle cat.

Gurururu

(laughs) What about skunks?

habit (stinker)

(Laughter) I'm a comedian You're popular, aren't you? You're popular, right?

Super star

yeah superstar

(Laughter) I would like to ask you all to help protect Einstein's animal friends -- help protect the places where they live.

Einstein best explains

Why do you protect your home?

It's special (I'm special.)

You're special to these kind people—

What do you say? i love you

Send a nice kiss?

(Kissing sound) Whoosh What do you say at the end?

goodbye

well done thank you very much

(applause)

Ever since I was a kid, my life goal was to take people into space.

There will be permanent migrations from Earth in our lifetimes, and that's exciting.

I believe that exploring space is an ethical imperative.

It's going to give you the first chance to have a planetary reserve -- the chance to back up the biosphere.

When we think of space, the things we value on Earth -- metals, minerals, land and energy -- are inexhaustible in space.

The Earth is like the crumbs in a resource-filled supermarket.

Just like Alaska once was. America bought Alaska.

It was in the 1850s, and it was called Seward's Folly at the time.

Alaska's value was calculated by how much seal pelts you could get.

But then we found gold, oil, fish, timber... we've got a trillion-dollar economy, honeymoon destinations.

We are about to enter the greatest age of discovery in human history.

There are three reasons for exploring space, the least of which is curiosity.

It's what has supported NASA's budget so far.

This is an image sent from Mars in 1997.

I have no doubt that within the next decade we will find life in the soil of Mars and everywhere.

A stronger motivator is fear.

This is what drove us to the moon, literally out of fear, as America competed with the Soviet Union to get to the moon. There are millions of rocks in space that are several kilometers in size, and if one of them hits the Earth, the odds are small, but the impact would be huge.

And the third motivation, which I'm drawn to as an entrepreneur, is wealth.

It's also a very large asteroid, and there are lumps of iron and nickel, and if you could dig up one rock and bring it back, the market value of the platinum metal element alone would be $20 trillion.

My plan is to buy a put option on the rare metals market and declare that I'm going to mine.

That will be the source of funding for the mission.

Fear, curiosity and greed drive us.

As for myself - the little one on the right

Motivated by the Apollo program

There is no greater motivation than the Apollo program.

What happened? On May 25, 1961, John F. Kennedy said, "We're going to the moon."

And so they all quit their jobs and gathered in the middle of nowhere to join this incredible mission.

I knew nothing about going to space.

Eight years from scratch to Alan Shepard's suborbital flight to mankind reaching the moon, the average age of the participants was 26.

I didn't even know what was impossible, I had to build everything.

I didn't even know what was impossible, I had to build everything.

And that was a huge motivator.

My friend Eugene Cernan, the last man to land on the moon, said, "If you can go to the moon, nothing is impossible."

But I dare say, it's not the government that will take you to space.

Governments can't take risks like space exploration.

The launch cost of the space shuttle is

One billion dollars, a desperate, absurdly high number.

We should not accept such things

What we've embraced with the Ansari X PRIZE is that it's okay to take risks.

In order to embark on the new frontier of space, we must be willing to take risks.

We need to put aside those who say we shouldn't take risks, because the biggest discoveries we've ever made are before us.

If space entrepreneurs are mammals, the military-industrial complex, Boeing, Lockheed, and NASA are dinosaurs.

If you can access resources in space, you'll have planetary-scale redundancy, where you can collect all the information, including genetic information, put it in a database, back it up off Earth, and prepare for a catastrophic disaster.

The big hurdle in getting there is the cost of getting into Earth orbit.

If we can get it into orbit, we're about two-thirds done. Whether it's going to the Moon or Mars, there are currently only three vehicles to get there: the U.S. space shuttle, the Russian Soyuz, and the Chinese one.

On the space shuttle, it costs 100 million dollars per person.

Space Adventures, the company I started, sells tickets.

We've sold two so far, and we're selling two more tickets to the space station on the Soyuz for $20 million.

But it's expensive, and given the potential of the universe... (Laughter) Yes, it's expensive, but some people are willing to buy it!

we are living in very interesting times

Enough wealth is accumulated in the hands of individuals to explore space with pocket money, using available technology.

But how cheap can this be? I would like to set a target point

Now tickets cost $20 million, how much cheaper can this be?

Let's do a little physics review

The potential energy is mgh, it can carry a man and a suit up to 200 km altitude, and accelerate to 26,000 km/h, so the kinetic energy is 1/2 mv^2.

Do the math and you get 5.7 gigajoules

If you do that in an hour, that's 1.6 megawatts.

Electricity sells for 7 cents/kWh in the cheapest places... Anyone good at math?

How much does it cost to get a man and a spacesuit into orbit?

It's $100. If you're going to draw a graph of falling prices, you're going to need a physics discovery somewhere.

(Laughter) History teaches us that if you can imagine it, someday you can do it.

I believe the day is not far when physics and engineering will enable us all to fly in orbit.

The difficulty is that you need a real market that can attract investment.

Boeing and Lockheed today aren't spending a penny of their own money on research and development.

It's all a fraction of the government's research budget.

The truth is, big companies and governments can't take risks.

So we need to create an explosion of economic activity in space.

What does the world's commercial rocket market look like today?

There are 12 to 15 launches per year.

How many companies are there? 12 to 15 companies

One company, one at a time. We're not aiming for this. One target market is the launch of carbonaceous autonomous mobile payloads.

Freight that comes on its own money—

Human Ansari X PRIZE was my answer, I found out reading about Lindbergh, a way to build a vehicle to get there.

We offered a $10 million prize for the first reusable spacecraft that could carry three people to an altitude of 100 kilometers and back, and then repeat it within two weeks.

Twenty-six teams from seven countries entered the competition, each with between one million and 25 million dollars.

And it was SpaceShipOne that made two successful flights and came out victorious.

Let me take you all to the morning of the day. It's a short video.

detach the body

to wish a success

(Applause) We've reached an altitude of 112 kilometers.

(Applause) As the referee for the Ansari X PRIZE, I hereby declare that Mojave Aerospace Ventures has won the Ansari X PRIZE.

(Applause) Perhaps the hardest part was raising money, which literally seemed impossible.

I met with 100, 200 CEOs and CMOs.

No one believes, they say, "What would NASA think?"

"People are going to die." "How are you going to proceed with this story?"

Sponsored by the visionary Ansari family and Champ Cars, we were able to secure some of the funding, but not all of the $10 million.

What I ended up doing was going into the insurance industry and insuring an award.

When an insurance company goes to Boeing or Lockheed and says, "Would you like to enter a competition?"

The answer is, "No one can achieve it."

So they made a bet that no one would make it until January 2005, and I made a bet that someone would make it.

(Applause) The best part is that their check didn't bounce.

(Laughter) We've done a lot, and we've been very successful.

For me, I'm especially happy that SpaceShipOne is now hanging in the Air and Space Museum with the Spirit of St. Louis and the Wright Flyer.

Isn't that amazing? (Applause) Let's look a little ahead of the future and tell you what you can do today.

Everyone can experience weightlessness

By 2008 Virgin Galactic will cost $200,000 for a suborbital flight.

There are three or four serious efforts underway to bring this price down.

Orbital flight takes you to the space station

And what's going to happen is that once we're in orbit around the Earth -- and if no one else does it, I'll do it -- we'll stockpile fuel in orbit, and from there we'll fly straight to the moon and grab a little bit of land.

(Laughter) A word for all the designers out there.

It took 11 years to get FAA approval for weightless flight.

Let me show you a fun image. This is Bart Rutan in a weightless state and his best friend Greg Melonek. Everyone thinks they have a weightless chamber where they can turn off gravity at the flick of a switch.

Seven-up made a commercial and it's running this month.

Could you turn up the volume?

Here's your chance to get your first free ticket to space Look out for special packages from Diet 7Up

If you want a taste that doesn't weigh you down, choose UP

This was filmed on our plane. You can do it too.

working in florida

Let me introduce you to another thing I'm obsessed with

It's the award of the future. Awards are an old idea.

It's borrowing ideas from the method of longitude and the Ortigue Prize that pushed Lindbergh.

At the X PRIZE Foundation, we decided to take this concept to other areas of technology, and created a new mission statement: "Innovate space and other areas of technology for the benefit of mankind."

i'm really excited about this

I showed this slide to Larry Page, who recently joined the board.

50 cents for every dollar you donate to a non-profit organization

Matching gifts are usually 2 to 3 for 1

If you set up a prize, you get a leverage of 50 for 1, that's how big it is.

And then Paige turned around and said, "Well, let's fund an award organization and have 10 awards, and we're going to get 500 for 1."

I said, "That's fine."

So we're actually trying to make the X PRIZE a global awards organization.

This is what happens when you set up a prize, announce it, and different teams start trying.

It's going to be well-known, and when the winner is decided, it's going to be very well-known, and if it's managed properly, that's a big advantage for the sponsor.

And then there are the social benefits that come with the award, new technology, new capabilities.

The advantage for the sponsor is a combination of name recognition and long-term social benefits.

This is the value we propose in the award

If you're going to directly create a new technology like SpaceShipOne, you have to fund it from the start and keep funding it with uncertain outcomes.

You never know if you'll succeed or not. The great thing about having awards is that you can keep your maintenance costs very small and you pay when you succeed.

Ortigue didn't pay a penny to nine teams trying to cross the Atlantic, and we didn't pay a penny until someone won the Ansari X PRIZE.

That's why awards work so well.

When innovators and entrepreneurs of the world are working toward their goals, the first thing they should do is believe they can do it.

And then you might get ridiculed by people saying, "That's a stupid idea."

And then we have to convince people to help us raise money. We have to deal with the bureaucracy of governments and institutions that don't want to move forward. And we also have to deal with failure.

must be a good idea

After all, there are people willing to spend 10 million dollars just for that.

Through the Ansari X PRIZE, we've been able to help take innovation shortcuts to all of these issues.

As an organization, we've put together an award discovery process, and we've created rules for how we come up with awards, and we're trying to create awards in different categories.

We're trying to tackle energy issues, environmental issues, nanotechnology, and I'll talk more about that later.

The way to do that is to create a team within the X PRIZE, we have a space prize team.

Pursuing awards for orbital flight

We are considering various energy awards.

Craig Venter has joined our board of directors, and we're preparing the Rapid Genetic Sequencing Award, which we're going to announce this fall.

We're looking at clean water, education, health care, and even social entrepreneurship.

This is my final slide. The most important tool for solving humanity's greatest conundrum is neither technology nor money.

(applause)

Hegel famously said that Africa has no history—it is a place without a past and without a story.

But I don't think there is any other continent that has so carefully nurtured its history, fought for its history, and celebrated its history so unitedly.

The struggle to preserve the story of Africa has been, and continues to be, one of the most coherent and hard-fought endeavors of African peoples.

The struggles endured and the sacrifices made to hold the story together in the face of slavery, colonization, racism and war are the underlying stories of our history.

And our story doesn't just survive the scorn of history.

He left behind a large number of material cultures, artistic dignity, and intellectual products.

They made maps, they charted them, they recorded history in a way that is standard everywhere in the world.

Long before the arrival of the influential Europeans, when Europe was still in its Dark Ages, Africans were pioneering recording techniques and inventing revolutionary ways to nurture history and tell stories.

And a living history, a vibrant legacy, remains important to us.

This manifests itself in various ways

As many of you may remember, just last year, members of the al-Qaeda affiliate Ansar Dine were sent to The Hague for the first time as war criminals.

One of the most infamous of these is Ahmad Al-Faqi, a young Malian who was accused of neither suspected genocide nor ethnic cleansing, but of inciting sabotage of Mali's most important cultural heritage.

This is not just vandalism, nor is it an act of shallow thinking.

Al-Fakhi said in court during the questioning, "I went to college and worked as a teacher."

Throughout 2012, they were involved in campaigns to destroy Mali's cultural heritage.

This is the most powerful act of deliberate warfare imaginable, destroying the story.

The targets were nine mausoleums, the Central Mosque, and 4,000 books.

He understood the power of stories to bring communities together, and by destroying those stories, he sought to destroy a people.

But just as powerful were the stories that drove Ansar Dine and his riots, so were the locals' forces to protect Timbuktu and its library.

These communities developed with the story of the Mali Empire and lived on the benefit of Timbuktu's great library.

Ever since I was a child, I've heard songs about Timbuktu's origins, and I wouldn't give up on Timbuktu without a fight.

During the difficult period of 2012, when Ansar Dine invaded, Mali's commoners risked their lives to hide their books in safe places or take them out, doing what they could to protect historic buildings and ancient libraries.

It wasn't always successful, but many of the important books were fortunate enough to survive, and all of the mausoleums damaged in the riots have now been rebuilt, including the 14th-century mosque, the city's iconic centerpiece.

fully restored

Even in the most hopeless times of the occupation, many people in Timbuktu did not bow to a man like Alfaki.

We didn't allow history to be erased. Anyone who visits a place can understand why stories are so important to history.

history is very important

its value is immeasurable

This is vitally important for people of African blood who have seen their own stories tarnished over the centuries.

In this way, the common people's battle to protect stories and history has been repeated throughout history.

It's like the 19th-century African slaves in the Caribbean who risked punishment to follow their religion, celebrate carnivals, and fight to keep history alive.

Ordinary people were prepared to make great sacrifices for history, and some made the ultimate sacrifice for it.

The most destructive colonial policies were enforced by controlling narrative.

The worst effects of colonialism were felt by one story dominating another.

When the British attacked Ashanti in 1874, Kumasi was captured and the king was taken prisoner.

But they knew that territorial control and king restraint weren't enough.

He understood that a country's emotional authority lay in its story and the symbols that represented it, like a golden stool.

He knew that the real imperative to controlling people was controlling stories.

The Ashanti understood that, too, so they never gave up their golden stools, nor did they completely surrender to the British.

story is important

In 1871, while studying South Africa, German geologist Karl Mauch came across an astonishing group of stone buildings.

And he couldn't forget it, a city built of granite masonry—a ruined Great Zimbabwe ruin outcropping above the bare savannah.

Mauch had no idea who had built this clearly outstanding structure, but he was sure of one thing: who owned this story.

He later described the elaborate architecture of Great Zimbabwe as too sophisticated and special to have been made by Africans.

Mauch, like dozens of Europeans who followed, guessed who built the city.

One of them hypothesized, "It wouldn't be out of the question to assume that the ruins on this hill are replicas of Solomon's Temple."

But as we all know, what Mauch discovered was not the Temple of Solomon, but the very elaborate architecture of Africa, built by the Africans themselves from the 11th century onwards.

But when German anthropologist Leo Frobenius first saw the heads of Ife in Nigeria a few years later, he speculated that they must be relics of the long-lost kingdom of Atlantis.

Like Hegel, almost instinctively, I felt the need to wrest history from Africa.

These ideas are so irrational and so deeply ingrained that even from a physical archaeological point of view they can't be rational.

I can no longer see the truth

As with too many Enlightenment Europe-Africa relations, this involves privatization, humiliation and domination of the continent.

There was an attempt to distort the story to suit European purposes.

If Mauch really wanted an answer to the question, "Where did the Great Zimbabwe and the great masonry come from?"

1,600 kilometers from Great Zimbabwe—I would have had to start my quest at the eastern tip of the African continent on the Indian Ocean.

It would have been necessary to trace the gold and goods from the great commercial centers of the Swahili coast to Great Zimbabwe, to feel the scale and influence of this mysterious culture, and to capture Great Zimbabwe as a political and cultural entity through the kingdoms and civilizations it ruled.

For centuries, merchants from as far afield as India, China and the Middle East have been drawn to this small coast.

You might be tempted to interpret it because of its very elaborate and beautiful architecture.

But this site was undoubtedly the core complex of a cluster of important economic zones that marked the region for millennia.

this is important

these stories matter

Even today the battle to tell our story is not just a race against time.

It's not just a battle against an organization like Ansar Dine.

After centuries of forced history, it's about establishing a true African voice.

We have to find a way not only to restore history, but also to restore the intellectual foundations that Hegel denied existed.

We have to rediscover the philosophy, the perspective, the history of Africa.

The rise of Great Zimbabwe was no whim.

It represents some of the dramatic changes across the continent.

The most notable example is Sundiata Keita, founder of what is perhaps the most magnificent empire in West Africa ever, the Empire of Mali.

Sundiata Keita was born around 1235 and grew up in turbulent times.

You may have seen the transformation of Berber dynasties in the north, the rise of the Ife Kingdom in the south, and the Solomonic rule in Ethiopia in the east.

You must have realized that you were living in the midst of accelerating change, a time of growing confidence in Africa.

In the distance, you would have noticed the rise of new nations, such as Great Zimbabwe and Swahili under the Sultanate, each directly or indirectly across continents, actively working to protect their intellectual and cultural heritage.

Sundiata Keita may have traded with these peers and become part of the vast conglomerate of medieval African economies.

And like these great empires, Sundiata Keita devoted himself to preserving his legacy through history through storytelling, not only giving shape to the concept of oral literature, but establishing the very habit of telling and telling stories, the key to building the story of his empire.

Stories like this are still sung today in the form of music.

Decades after Sundiata's death, a new king has succeeded to the throne, the most famous emperor, Mansa Musa.

Mansa Musa is famous for his vast gold reserves and for sending envoys to royal courts in Europe and the Middle East.

In every way he was as ambitious as his predecessor, but he used different means to establish himself in history.

In 1324, Mansa Musa embarked on a pilgrimage to Mecca with thousands of followers.

It is said that 100 camels carried 100 pounds of gold each.

According to records, he built a mosque ready to worship every Friday along the way. He did so many good deeds that the great Berber travel writer Ibn Battuta wrote, "He filled Cairo with good deeds, spending so much gold in the markets of North Africa and the Middle East that the price of gold was affected for the next decade."

Upon his return, Mansa Musa built a mosque in the heart of his empire to commemorate his pilgrimage.

Thus, his legacy is Timbuktu, which represents one of the largest collections of historical documents written by African scholars. There are about 700,000 medieval manuscripts, ranging from manuscripts to letters, which were sometimes kept in private homes.

At its height in the 15th and 16th centuries, the University of Timbuktu was as influential as any other European institution, attracting about 25,000 students.

In a city of about 100,000 people

This has made Timbuktu a global center of learning.

But this was a very special study led by Islam and focused on Islam.

Since my first visit to Timbuktu, I've visited libraries all over Africa. Contrary to Hegel's view that Africa has no history, this continent has an abundance of history, but it's also a continent that has developed a unique system of collecting and promoting history.

Thousands of tiny archives and storage of drums of fabric are no longer mere repositories of manuscripts and material culture.

It is a source of narrative and a symbol of continuity in the community. Many of the European philosophers who questioned African intellectual traditions must have been aware, behind their own prejudices, of Africa's intellectual contributions to Western learning.

They should also have noticed the great North African medieval philosophers who led the Mediterranean.

You must have been aware of the traditions that are part of Christianity and the Three Wise Men.

In the Middle Ages, the third Dr. Balthazar is represented as King of Africa.

It gained tremendous popularity as the third pillar of Old World intelligence alongside Asia and Europe.

these things are famous

These communities didn't develop independently.

Timbuktu's wealth and power grew as the city became a hub for profitable intercontinental trade routes.

It was the center of a borderless, internally connected, ambitious, extroverted and confident continent.

Berber merchants crossed the deserts of West Africa, bringing salt and cloth with valuable new goods and knowledge.

As you can see from this map, made shortly after Mansa Musa's death, there were also links to sub-Saharan trade routes, along which African ideas and traditions were added to Timbuktu's intellectual value. There was also a cross-desert route to Europe.

Books and material culture became sources of narrative and symbols of continuity in the community.

I am convinced that the European scholars who have maligned our history must have had a fundamental knowledge of our traditions.

And while assertive groups like Ansar Dine and Boko Haram are thriving in West Africa today, it's the spirit of truly indigenous and powerful intellectual rebellion that keeps the ancient traditions useful.

When Mansa Musa made Timbuktu his capital, he saw the city in the same way that the Medici saw Florence as the center of an empire where brilliant ideas flourished, open, intelligent and thriving in trade.

The intellectual genealogy of this city, of this region, of this region, remains so beautiful, complex and diverse that it will continue to live, in part, in the tradition of storytelling, an indigenous pre-Islamic tradition.

The successful form of Islam that developed in Mali spread to the people because it embraced such freedom and inherent cultural diversity.

This celebration of complexity, this love of rigorously debated discourse, and the comprehension of the story has always been and will always be, no matter what, the very heart of West Africa.

And now, the mausoleums and mosques destroyed by Ansar Dine have been rebuilt, and many of those who instigated the destruction are imprisoned.

We are left with a powerful lesson: how our histories and stories have protected the solidarity of our communities for thousands of years, and how they are the lifeblood of modern Africa.

And it also reminds us that our confident, intelligent, commerce-powered, outgoing, culturally-absorbing, tariff-free African roots were once the aspirations of the world.

And this root will remain

thank you

(applause)

What does it mean to be a witness?

Why is it important to testify to people's suffering? especially if those people are isolated

What if we turn our backs?

Three years ago, I traveled to the Central African Republic to cover the ongoing war.

We had heard that there were massacres in the jungles and deserts, but no one could pinpoint where they were, and we didn't know who was killed and when.

I entered the battlefield without even good information.

I witnessed a tragic and surreal sight, and it wasn't until the last moment that I realized that I was witnessing the preparations for a gradual process of ethnic cleansing.

The Central African Republic is a country of about five million people, about the size of Texas, in the middle of the African continent.

French colonial rule ended in 1960, and violence has continued ever since.

I covered the civil war between the minority Muslim government, the Seleka, and the Christian-dominated militia, Anti-Balaka.

The first sign that ethnic cleansing was imminent was a breakdown of trust within the community.

Three days after arriving in Central Africa, I saw a small town called Gaga abandoned.

The battle was on the verge of breaking out

In order to protect themselves, many became government insiders, and their friends and neighbors who were tipped off were killed.

No city, no town, no place with people is safe.

so people moved to the jungle

When I saw empty houses populated by pigs and livestock, I felt a strange sense of isolation.

In war zones, when people leave, you know the carnage is near.

The civil war crossed the jungle and reached Gaga's land, and I was surrounded by the roar of bombs.

Government forces marched into the jungle and attacked towns harboring militias.

I rode for hours on a motorcycle, over jungle streams and meadows of elephant grass, only to find the town deserted after the government had burned it down.

I wanted someone to listen to me, so I shouted out, "I'm on your side and I'll do no harm."

A woman in a red shirt ran out of the woods.

Others came cautiously out from behind the trees and asked me (French), "Do people know?"

(English) "Do people know?"

I was surprised to hear that

The children were hungry and sick, but they didn't ask for food or medicine.

They asked, "Do people know what's happening to us?"

Feeling helpless, I wrote down this question.

I made up my mind that this moment in their lives should never be forgotten.

I felt a small connection with these people as I witnessed their crisis.

From a distance, the war seemed like a side note to foreign news.

But after seeing it with my own eyes, war felt like history unfolding one after another.

The government denied any involvement in the violence, but I went on to walk around town, passing places where people said there had been a "government killing" the day before or the week before.

I felt overwhelmed and tried to calm myself down.

When I was covering the massacre, I bought a small snack and ate it because I wanted to eat something familiar and calm myself down.

Central Africans eat these sweets to quench their hunger, leaving countless plastic wrappers on their way out.

The few radio stations that were still broadcasting in this country mainly listened to pop music.

As the war progressed, information about the carnage dwindled.

I tended to mistake it for normal times

I have experienced the effects of lack of information.

Two weeks later, I drove slowly and anxiously into an isolated militia headquarters in a town called PK100.

So the Christian warriors said that all Muslims were strangers, bad guys, allies of the government forces.

they called muslims bastards

Because there were no neutral bystanders or media to refute such nonsense, their camps were filled with such stories.

The militias began hunting Muslims, and nearly 140,000 Muslims left the capital, Bangui, in just a few months.

Almost no witnesses documented the killings or exodus of Muslims.

Even as I talk about my coverage in the Central African Republic, the question I ask myself is why did I go there?

Why did you put yourself in danger? and

The reason I do this work is because I feel that throughout society, through people who are marginalized, we learn something important about who we are.

Lack of information gives people the power to manipulate facts.

If it weren't for the witnesses, you would think the thousands of murdered people were still alive, and you would think the hundreds of burnt homes were still standing.

Even if it's a war zone, if no one is looking, it will pass as a mostly peaceful land.

That's why the witness becomes so valuable, and the eye of the witness becomes essential, especially when the violence passes silently, without any eye or ear.

thank you

(applause)

Imagine a big tattooed, sweaty man standing in the ring in a cowboy hat and chaps, and the arena full of fans cheering him on.

Their hero—"Cowboy" Gator McGraw

Gator bounces off the ropes and slams into the mat with a quick bodyslam

A daring opponent soared into the air and jumped onto Gator's ribcage

Gator struggles to breathe and thinks, "Is this really what my father wanted me to do?"

(Laughter) That wild guy in leather pants.

was me

(Laughter) (Applause) (Cheers) And the answer to that question, surprisingly, is yes.

(Laughter) From an early age, I grew up watching wrestling with my father.

And like my father, I loved all of it -- the service spirit, the motor skills, the acting.

I was a little boy who jumped around my living room and pretended to be my favorite wrestler on TV.

In fact, my father looked a little like Hulk Hogan, but I was Hulk Hogan and my father was Andre the Giant.

I said very seriously, "Dad-

Someday I will be the world heavyweight champion."

And my father usually smiled and said very calmly, "Well, then you can take care of me when I retire."

(Laughter) When I was 16, there was a small wrestling show in my small town in Minnesota.

I couldn't believe it

Because no such group had ever come to my town.

So on the day of the show, I went to the arena early in the morning and waited in the parking lot to find out if any wrestlers had stopped.

I didn't look like a stalker

But I could definitely tell who was a wrestler by the way they walked.

They were tall, confident, intimidating, dressed in tank tops, Zubaz pants, and waist bags.

Why not admire them?

(Laughter) My mind was full of questions. Who are these people and what are they like?

How did you become a wrestler?

So before the show started, I asked them if they could go into this little arena, more like a gymnasium, and help put the ring together.

"Of course, boy, no problem."

And I begged them to show me some wrestling moves.

"Of course, boy, no problem."

They punched me and kicked me - so hard!

but i didn't complain at all

They would come to my town once every few months of the year for one night and then disappear the next day.

The next year, he finally told me about an actual wrestling camp run by one of them, and I begged my parents to sign up.

Before I knew it, I was a senior in high school during the day and wrestling in front of an audience at night.

I had a big alligator poster on my bedroom wall.

When it came time to come up with a ring name, Jesse "The Body" Ventura was already taken (Laughter), so I decided on "Gator."

I wrestled in a T-shirt and camouflage pants, because that was the only clothes I had in my closet.

I didn't yet know how to establish my character, but I was learning, kind of like an apprenticeship.

but i was a wrestler

My dad came to watch all my games, and he wore a T-shirt that said "Papa Gator" in big letters.

(Laughter) And I bragged to my friends that one day I would pay for my retirement.

(Laughter) I was going to

Shortly after I started wrestling, my father passed away suddenly.

As you can imagine, I was devastated, especially as a teenage boy.

You know how hard times can be when you lose someone you love.

I'm insane

everything feels unreal

I wanted to get back to myself for a second, and I got back into wrestling almost immediately.

Wrestling was something special for me and my dad.

So I was sitting in the locker room getting ready to play a game a few days after my father passed away.

father is no more

Sitting there alone, I felt like I was hiding.

But I also felt that I needed to be there.

One of my longtime wrestlers knew about my plight and came to see how I was doing.

i can't say anything

Just say, "I don't know what I'm doing."

We sat in silence - we were just silent.

Before he got up to prepare for his fight, he gave me one piece of advice that changed the course of my life.

The best wrestler is the one who can be himself

He taught me that successful wrestlers find their most distinguishing trait and use that as a core to decide who they're going to be in the ring.

I was sitting there, a frightened teenager who no longer knew who I was or why I was wrestling.

I looked around the locker room with the other wrestlers and thought, "I'm not like them. How can I be like them?"

And it hit me

That was the moment I realized I didn't have to be like them.

All I had to do was be myself

What makes me special and how can I use it?

I wasn't the bulky athlete they were, but I didn't really care.

So the first thing I thought was, "How can I simply emphasize that I'm happy with my body?"

i didn't understand

And I thought - Speedo.

(Laughter) (Applause) Or "Trunks" in wrestling.

That's Trunks

In front of many strangers, I became a big man with little trunks.

So I ditched my t-shirt and camouflage pants for a new gator outfit.

(Laughter) I was also pretty good at drawing cartoons, so I figured I could take advantage of that.

If you design your own wrestling costume, you can make each pair of trunks a unique design and color, making each one unique -- and by the way, very comfortable.

(Laughter) I was also the funny kid in school, you wouldn't believe it.

I thought I might be able to use that special skill there.

Maybe you can go from a boy who made his friends laugh to a man who makes hundreds or thousands of people laugh.

So I made sure my character wasn't going to be scary like other wrestlers.

I decided to be an interesting person from the moment I entered the arena.

Digging deeper with each match

I realized that I could laugh at myself

This wrestler sings and dances to his entrance song as he walks into the ring.

By the way, right now it's a dance

(Laughter) I was an okay wrestler, but a great entertainer.

And I left a strong impression on the fans by expressing myself strongly.

What I was trying to find in myself was something simple yet special, and I thought, "How can I emphasize that?"

Now I wanted my character to be a man among men, like my father.

I thought, "What could be more manly than a cowboy?"

And then Gator's name was "Cowboy"... Gator...

yeah i needed a last name

I thought about it until my head hurt, but I couldn't come up with anything.

He was sitting in front of the TV one night, flipping from channel to channel, and he was talking about a country singer who won Entertainer of the Year for a commercial.

Tim McGraw - a cool cowboy with a great last name.

i liked his music

That's all

I put myself out there and became Cowboy Gator McGraw!

(Laughter) (Applause) And I also knew that if I kept trying to be who I was, and that I would continue to work harder, opportunities would come.

and finally came

I got a call in the middle of the night

It was the content that I wanted my father to hear

The WWE, the biggest wrestling organization in the world, asked me to come on Monday Night Raw.

Yes - all my hard work and miles of travel have finally paid off.

(Laughter) I was able to walk the WWE Raw walkway on live TV, dressed as a fake security guard -- (Laughter) and escorted another wrestler to the ring.

(Laughter) Of course, it was disappointing that I didn't get to compete, but regardless of the content, there are very few wrestlers that the WWE calls out to.

Probably 1 in 100

Thanks to being Cowboy Gator McGraw.

So that day, instead of turning my back, I decided to show myself again and do my best to be the best security guard.

It actually worked out really well, and I was the only security guard that got a close-up on TV that night.

this is amazing

(Laughter) I got to spend an entire day backstage with some of the most famous professional wrestlers in the world, some of whom were my childhood heroes.

I was able to hear and learn from them, and that day I was recognized as one of them.

My WWE experience may not have been ideal

I couldn't go to the game

But I put in more effort, and year after year, I was able to express myself more strongly.

I was my biggest self in the ring, and other people took notice.

Before I knew it, I had gone from wrestling once a month in Minnesota to wrestling across the country four times a week for an indie show.

It was a dream come true

During the next few years of wrestling, I injured my shoulder pretty badly, and around the same time, I found out that my wife was pregnant with her first child.

I know what you're thinking, but these two events are really completely unrelated.

(Laughter) But I needed shoulder surgery and I wanted to stay home with my family.

it was my turn to be a father

So on July 27, 2007, I retired from professional wrestling to play my last match and start the next chapter of my life.

As time went on, strange things began to happen.

I've found that once you put yourself out there, it's very hard to take it down.

Even after I left the ring, Gator stayed with me and was that version of me every day.

My beautiful wife has been with me on this journey of life from the beginning.

By the way, my wife doesn't like professional wrestling.

(Laughter) Not at all.

But you were always my number one fan

still so

My wife knows there's a piece of Gator McGraw in me, and she wants our daughters and twin sons to find themselves in the same way as I do, but I don't want them to body slam or punch me in the head with a pipe chair.

Do you know how many times my wife reminded me not to throw a lariat to the referee at a kid's soccer game?

(Laughter) Only once, when my daughter was clearly fouled!

(Laughter) As a parent, I realized that my father wanted something more valuable than retirement funds.

Like most parents, he wanted his children to reach their full potential.

What I try to teach my children is that making yourself stand out is not a perfect idea of ​​being great, but a way of life, always looking for what makes you different and how you can highlight it to show the world.

By the way, my kids don't like wrestling either.

(Laughter) But that's okay, because they each have their own special abilities that can be enhanced, and so do all of us.

my son is a master of electronics

Help him master that skill, and he could be the next Steve Jobs.

Another son and daughter have artistic talents, and if you help them master their talents, they could be the next Pablo Picasso.

You never know what talents you have until you dig deep.

don't be afraid to expose yourself

take a look around

People say if you're nervous in front of an audience, imagine them in their underwear.

(Laughter) (Applause) You don't have to have a wrestling troupe come to your town before you receive an invitation to be who you really are, to be your bigger and more attractive self.

you don't need to be influenced by your parents

Empowering yourself means looking inside yourself for who you really are and using the voice that says, "Maybe maybe I'm more than I thought I was."

thank you

(applause)

I realized the role that was forced upon me at an early age.

What I recognized was a notion that persists in our language and media, that women should not only have children, they should want them.

I've seen this concept everywhere

It was the same when adults asked me about my future events.

"When you get married..."

"When you have children..."

This kind of future talk has always haunted me, as if it were part of the American dream, but I felt like it was someone else's business.

A value that was always in me was that I would never want children.

When I tried to explain, as a child, this discrepancy between women's roles and my values, the adults often laughed, almost as if it was a childish nonsense.

And with an understanding look on his face, he said, "You'll change your mind when you grow up."

That's what everyone has been telling me all along

A polite conversation can suddenly become intrusive.

"Do you know your master?"

(laughs) "Do your parents know?"

(laughs) "Don't you want a family?"

"Don't you want to leave descendants?"

When people talk about not having children, the most common phrase they hear is, "That's selfish."

When a woman chooses not to become a mother, there are many possible reasons, most of which are not selfish.

But such public denunciations of women are still socially acceptable, because for whatever reason they don't fit the conventional wisdom.

No one has ever explained to us how common the many factors that women consider at an early age, when they were taught that women were born to bear children, such as the risk of passing on genetic diseases to their offspring, the risk of having to stop taking critical, life-threatening medications during pregnancy, concerns about population growth, access to resources, and the fact that 415,000 children in America are in child care at any one time. is also

I decided to get sterilized because, among many other reasons, I didn't want to "accidentally" leave something so serious.

I eagerly began to look

I wanted to fully understand everything that goes into tubal ligation surgery, which is ligating the fallopian tubes.

I wanted to know everything from surgery approvals to post-op satisfaction to risk statistics.

I was encouraged at first

I thought it would be very rare for a woman not to want children from the conventional wisdom I've been taught all my life, but then I learned that one in five American women doesn't have a biological child, sometimes by choice, sometimes by accident.

(Applause) I wasn't alone.

But as I investigated, I became discouraged.

I also read stories of women desperately trying to get sterilized.

After years of going from one OB-GYN to another, I've learned that there are too many women who run out of money, are repeatedly turned down and often blatantly disrespected, and give up on surgery.

Doctors often look down on women and don't listen to their reasons for wanting surgery.

If you have children and want to be sterilized, you'll be told you're too young, or you'll have too few children.It's funny, because the law in my state requires that you must be at least 21, be mentally healthy and act of your own free will, and have a 30-day cooling off period.

I was puzzled that I had to meet all of these legal requirements and still have to fight for my rights to my body in the doctor's office.

I felt atrophied, but my heart was made up

I remember that on the day of my first visit, I was properly dressed.

(laughs) Sit with your back straight

I spoke loudly

I wanted to give my doctor every single reason why I wanted him to treat me as a person.

And I didn't forget to say, "I've graduated from college, and I'm applying to some graduate schools, and I'm planning to major in this."

"My long-term partner does this job."

I fully understand the risks.”

I wanted my doctors to know that I'm not just on a whim, that I'm not emotionally driven, and that I'm not a 20-something who wants to play without worrying about getting pregnant.

(Laughter) And being an integral part of who you are.

I understand medical agreements, so I was hoping you could explain the procedure to me again.

At some point, I began to feel that the doctor's explanation was a mixture of prejudice, exaggerated statistics, and the other party's expectations.

the question started to feel like an interrogation

At first, the doctors were asking questions that seemed to give them a better understanding of my situation.

I felt like a witness being cross-examined.

the doctor asked about my partner

"What do you think of your partner?"

"I've been with the same man for five years and he totally agrees with my decisions about my body."

"What if we change partners in the future?

What if that person wants a child? ”

I struggled with the answer to that question, because it sounded like a doctor telling me that if my partner really wanted children, all my own thoughts were taken for granted.

I told my doctor not to worry about it

Because the topic on the first date was always about not having children.

(Laughter) (Cheers) (Laughter) And then, as if I hadn't even thought about it, in 20 years, I might really regret it, so think about it.

I have been told

So I told my doctor, "If you wake up one day and realize that if you had made a different choice, you would have just erased one path to parenthood.

You didn't need biology to make a family."

(Cheers) It's much easier to accept that you wake up one day to regret not having children than to have a child you didn't really want and weren't ready to take care of.

One of the choices affects only me

And the other is about the child and the development and well-being of the child. (Applause) Humans are not gambling.

And this male doctor told me why no doctor would approve the surgery, let alone the doctor, because of the idea of ​​medical patriarchy, that as an expert health care provider, he would make decisions for me.

In the name of my best interests, no matter what I, the patient, want or believe.

The doctor left and went to talk to my potential surgeon, and I heard the way he treated me like a child from the other side of the door.

i was very angry

I want to protest

It made me want to tell each and every one of the health care providers there how badly they were treating me, how lighthearted and sexist they were, and how they couldn't stand it.

But I endured

Resisting the temptation to say harsh words, I gritted my teeth and answered every derogatory question and word.

I came in to seek objectivity and support, and yet I felt slighted and silenced. I hated myself.

I hated myself for being treated rudely over and over again.

But this is just one attempt

It was one of those interviews that I had to take many times.

At one point, I saw five or six doctors in a short space of time.

I felt like I was heading to a door where clowns popped out one after another, rather than an examination room.

Starting with the attending physician, to his colleague, and then to the hospital director

It felt like I was going around begging for smallpox rather than being spayed.

But I didn't change my mind. I persisted, and finally convinced a gynecologist.

In the doctor's office, signing consent forms, injecting hormones, and taking care of the rest

The doctor shook his head and said

"I'm going to change my mind"

It wasn't until this experience that I fully understood how society clings to this role of mother.

Time and time again, I've experienced firsthand how people -- whether they're health care providers, co-workers, or strangers -- can't think of the woman I am as separate from motherhood.

I've always believed that having children is an extension of being a woman, not a requirement.

A woman's worth shouldn't be determined by her having children, because it robs her of her entire identity as an adult woman and as a self.

Women have an amazing power to create life, but if that's what they're doing, then their very existence becomes a vehicle for procreation.

It's all too easy to forget that the role society imposes on us is much more than the name "mother."

The burden of the role and the pressure to meet the standards

Fear of questioning it What happens to the desires you give up when you accept them?

There are many paths to happiness and fulfillment

They all look very different, but I believe they are all paths that guarantee the right to self-determination.

I want women to know that the choice to be a mother or not to be a mother is not tied to your worth, your identity as a spouse, an adult, or a woman.

The choice about motherhood is definitely out there, and it's your choice.

thank you

(applause)

According to the United Nations, billions of people still live without a home.

According to economist Hernando de Soto, "Not having an address is the same as living outside the law.

The inhabitants are as good as non-existent."

I'd like to share with you what my team and I are doing to change this situation.

If you look at a map on the Internet of a shantytown in Brazil or a black township in South Africa, you'll see a few roads and a lot of empty space.

But if you switch to satellite imagery, you'll find thousands of people, homes, and shops in this vast, unmapped void of addresslessness.

In Accra, the capital of the Republic of Ghana, numbers and letters are scribbled on the corners of the walls, showing that the address system was introduced but not completed.

But these unaddressed places have enormous economic potential.

I'll tell you why I'm stuck on this issue.

I've worked in the music industry for 10 years, and if you don't know it, in the music world, every day, I'm stuck with an address problem.

Everyone gets lost in one way or another, from the musicians who have to go to the venue to the production companies who bring in their equipment.

There are times when you need more people for your project and you call them thinking you've arrived, but they still haven't arrived.

I've had some pretty bad days, like in Italy, where a truck driver unloaded all his gear, but instead of an hour south of Rome, it was an hour north of Rome.

(Laughter) Shortly after this fateful event in Rome, I told the whole story to a friend of mine, who is a mathematician, and thought that maybe we could do something about this problem.

We thought that maybe we could create a new system, but it shouldn't look like the old system.

They both agreed that the address was bad.

I need something very precise, but the latitude and longitude display of GPS coordinates is too complicated.

So we divided the world into 3m squares.

We found that if we divided the world into 57 trillion squares, three meters square, and combined the three words in the dictionary, we could give every square in the world a different name, in just three words.

We used 40,000 words, and if we multiply that to the power of 3, there are 64 trillion possible combinations of the three words, so even if we give each of the 57 trillion squares a different name, there's still a little bit left over.

did exactly that

We divided the world into 3-meter squares, and gave each a unique three-word identifier, a so-called "three-word address."

For example, this place where I'm standing is "Mustard/Coupon/Pinup." (Laughter) But if you move here.

I'm standing in "Pinchito/Singulari/Tutorial"

But I didn't just do it in English

What we thought was that users should be able to use this system in their own language.

So far, we've assembled in 14 languages, including French, Swahili, and Arabic, and we're working on Xhosa, Zulu, and Hindi.

But the idea is not just about hiring musicians to get to the venue on time.

If 75 percent of the countries that currently lack a reliable address start using the three-word address, it will be applicable to a much more important and diverse range of applications.

In Durban, South Africa, a nonprofit organization called Gateway Health distributed 11,000 three-word addresses to local communities so that when labor began, expectant mothers could call emergency services and tell them exactly where the ambulance was going, otherwise it would often take hours for the ambulance to find them.

In Mongolia, the state-run postal service has adopted this system, and it is now delivering to many people's homes, a first in history.

The United Nations uses this system to geotag photos from disaster areas so that aid can be delivered precisely where it's needed.

Domino's Pizza is also using it in the Caribbean, because it's hard to find a customer's home in that area, and they really wanted to get their pizza to them before it got cold.

In the near future, you'll be able to get in your car, say three words, and a self-driving car will guide you to the exact location.

On the African continent, mobile phones have leapfrogged landlines to become a direct mobile payment method, ahead of traditional banks.

It's really an honor to say that the postal services of three African countries -- Nigeria, Djibouti and Côte d'Ivoire -- quickly introduced a three-word address system, so people in these countries can say where they live very easily today.

For me, bad addressing has been troubling and stressful, but for billions of people, it's a huge impediment to business efficiency, a huge drag on infrastructure growth, and it's deadly.

We're on a mission to change this, and we're working with three wards.

thank you

(applause)

Let's go back to 1957

Delegates from six European countries were in Rome to sign the Treaty of Rome, which established the European Union.

Europe was devastated

WWII started in Europe

The suffering that followed was unbearable and unprecedented for mankind.

They wanted a peaceful and democratic Europe, a Europe for the people.

And one of the many cornerstones of peace was the European Economic Community.

Already at that time, they realized that if the market was left alone, it would become the private property of the big corporations and the cartels, so that they would not meet the needs of their customers, but the needs of a few large corporations.

So from day one in 1957, the European Union (EU) put in place rules to ensure fair competition.

It means that competition is based on the performance of the companies, which means they compete on the quality of their products, on their prices, on the services they offer, on their innovations.

That's performance competition

In such a market, everyone has a chance.

My job as European Commissioner for Competition Policy is to ensure that those doing business in Europe comply with the rules.

Let's step back and look

Why does competition need rules?

Should companies just compete?

Is that a welcome situation for us consumers? Because when companies compete freely, there will be more competition, which will lead to higher quality, lower prices, and innovation.

certainly most of the time

But the problem is that sometimes competition is bad for companies. As long as there is competition, the race is never ending, and the game never ends with a win.

In other words, no matter how much they have held the upper hand in the past, they are always looking for someone else to take their place.

So the temptation to avoid competition is strong.

Already back in the days of Adam and Eve, we've had these motives: the desire for more money, the fear of losing market position and its benefits.

When greed and fear join forces, they make a dangerous combination.

You can see it in politics too

In some parts of the world, greed and fear are the reason those in power hold onto their seats.

One of the reasons I love and admire democracy is because of norms, which is why leaders relinquish power when they lose elections.

Competition law plays a similar role in the marketplace, ensuring that greed and fear do not trump fairness.

Because those laws prevent companies from unfairly exercising their power to unfairly undercut their competitiveness.

Let's take a car as an example

There are thousands of parts, from the padding in the seat to the wires that connect the electrical system to the light bulbs.

For many of those parts, car manufacturers around the world rely on just a handful of suppliers.

So you can understand why those parts makers want to collusion and fix prices.

But that would hurt the price of the car.

this is a real issue

In fact, the European Commission has so far uncovered seven car parts cartels and is still investigating them.

Here in the United States, the Department of Justice is investigating the auto parts market and has declared it to be the largest criminal investigation of its kind ever.

Without competition laws, we wouldn't be able to investigate, we wouldn't be able to stop bid rigging like this, and we'd just watch the prices of cars go up.

But companies aren't the only ones who can undermine fair competition.

so does the government

By giving state subsidies to only an unfairly selected handful of companies, it undermines fair competition.

Sometimes the government gives state aid to companies, but it comes from the taxpayer's money.

It's in the form of tax exemptions, like preferential treatment, that Fiat, Starbucks and Apple have gotten from several European countries in the past.

Such state-subsidized tax incentives hinder fair competition for companies.

What this state aid can mean is that the companies that are most successful in the market are the ones that receive the most state aid and have the most government connections, not the ones that should be successful -- serving the interests of the consumer.

So from time to time we have to step in and make sure that the competition is being done right.

Then we lead the market to work fairly, because competition gives consumers the power to demand fair prices.

Businesses know that if they can't offer affordable prices or the service they expect, their customers will go elsewhere.

Such fairness can be far more important than we think.

Very few people are always politically conscious.

Some people may not go to elections.

But we all live in markets

We are in contact with the market every day

We want companies to stop behind-the-scenes price rigging.

arbitrarily making arrangements to share a share of the market

Don't let one company crowd out competitors and rob them of their market potential.

When that happens, we feel like we've been duped, that we've been ignored or underestimated by the market.

Our trust in the market is shaken, and in turn, our trust in society is shaken.

In a recent survey, more than two-thirds of Europeans said they felt the negative effects of lack of competition: electricity bills were too high, the medicines they needed were too expensive, they didn't really have a choice when it came to traveling anywhere by bus or plane, and the service provided by their internet providers was poor.

So I felt that the market wasn't treating consumers fairly.

These things seem so trivial, but they make people feel that the world isn't a fair place.

And the market, which should have been equal for everyone, now looks like it belongs to a few powerful companies.

But the market and society are different.

Of course, our society is much more complicated than the market.

But a lack of trust in the marketplace has a negative impact on society and undermines trust in our society.

And trust may be the most important thing

We can trust each other only when we stand on equal footing with each other.

In order for everyone to have an equal chance, we all have to follow the same basic rules.

Of course, there will always be people and companies who are more successful than others, but we can't trust a society where success is given to us before we even compete.

This is why we need competition laws, because only when the market is fair can companies compete on the basis of their performance, and build the trust that citizens need to feel safe and in control, and the trust that society needs to function.

Lack of trust makes everything difficult

We can't even go about our daily lives without trusting strangers. We trust banks, we deposit money, we trust contractors, we build houses, we trust electricians who fix wiring, we see doctors when we're sick.

We have no choice but to trust them to do the right thing.

And the more developed our society is, the more important trust becomes, and the harder it is to build.

That's the paradox of modern society

This is especially true when technology changes how we interact with one another.

To some extent, of course, technology can help build mutual trust through things like rating systems that enable a sharing economy.

But technology also poses a whole new set of challenges, such as asking people to believe algorithms and computers instead of other people --

Of course, we all benefit from new technology, and we appreciate it.

There are many good points

Self-driving cars can help people with disabilities become independent

It helps us to use our resources more efficiently.

Algorithms that process vast amounts of data can help doctors do things like treat us better.

But if you can't trust the companies behind it, no one will entrust their medical data to someone else or ride in a car driven by algorithms.

And it's not always that trust

For example, less than a quarter of Europeans today do not believe that online businesses protect their personal information.

But what if people could trust technology companies to be fair?

What if those companies competed by helping consumers by doing better, rather than by forcing their competitors out -- for example, by manipulating their competitors' services so that they weren't found in search results to their advantage?

What if the algorithms themselves were designed with compliance built into them, and they were supposed to learn competition laws before they started working?

We can do this with regulation and competition law.

Those rules ensure that new technologies are fair to people and that everyone can compete on an equal footing.

And that's what drives real innovation to thrive and build trust so that society can thrive for its citizens.

trust is not forced

It's what you work hard for

In the early days of the EU, 60 years ago, our competition laws helped build trust.

A lot has changed since then

I don't know if the six delegates were happy about the birth of the smartphone.

But today, just as it was then, competition makes everyone's market work.

That's why I believe that genuine and fair competition plays an essential role in bringing out the best in society in building trust, and it starts with adhering to competition laws to make the market work for everyone.

thank you

(Applause) Bruno Giussani: Thank you.

Bruno Giussani: Thank you

Margrethe Bester: You're welcome.

Giussani: Two questions first.

One is about data, and I felt that technology and data are changing the way competition works, changing the way competition laws work and how they are applied.

how about that

Vestager: Yes, of course it is a challenge.

Google's response to our complaint examined 5.2 terabytes of data.

this is a huge amount

needed a new system

To do this, it was impossible the way it was a few years ago.

Of course, we are improving the existing method and responding to it.

The other thing is that we distinguish between different types of data, and some data are very valuable, because they can be barriers to market participation, for example.

We should distinguish them from data that will lose its value tomorrow.

We always keep in mind that data has a currency-like value in the marketplace and can actually be a barrier to competition.

Giussani: You imposed a fine of 2.8 billion euros on Google a few months ago.

Bester: No, it's $2.8 billion, although the dollar isn't very strong right now.

Giussani: Certainly in some ways -- (Laughter) Google appealed, so this goes to court.

This dispute is likely to continue for some time

Last year you ordered Apple to levy 13 billion euros in additional taxes.

But your investigation into American corporations garnered the most attention, and also the most condemnation.

Put simply, you used legal action as a counterattack against American companies that dominated European markets on the grounds of protectionism and jealousy.

The Economist magazine opens this week's issue with "Vestere vs. Silicon Valley."

I have written

Bester: Well, first of all, I take it very seriously that there should be no bias in enforcing the law.

We have to fight in court with evidence and facts and jurisprudence.

Second, Europe is open for business, but not for tax evasion.

(Applause) I mean, we're changing. For example, when I ask my daughters -- because they use Google, too -- "Why do you use Google?"

I say, "It's easy to use. It's a good product."

I don't say things like, "I'm using it because it's an American product."

I use google because it is easy to use

that's how it should be

But equally, someone should look out and say, "We're very happy about your company's continued development, but not if you start abusing your dominant position and getting in the way of your competitors serving consumers."

Giussani: That's a very interesting case.

Thank you for coming to TED

Bestair: You're welcome

(applause)

I'm tired of HR terminology.

There are tons of weird abbreviations that no one knows what they mean PIP in OKR

I can do the work of the company using normal words.

that would work better

Series How to work I always wanted to work in human resources and wanted to be able to use the language of management.

But what I've learned over the years is

it's not important

There are a lot of things called "best practices" that aren't at all.

How do you know it's the best? I didn't even measure it

It's just copying what everyone else is doing and calling it "best practices."

The world is constantly changing and evolving

Let me give you some tips on how to adapt

Part 1: Employees are adults

We create layers and layers of procedures and guidelines to manage our people, and the result is a system that treats people like children.

they are not children

Fully mature adults are coming to work.

I want to pay my rent, I have a responsibility, I want to be part of society and I want to change the world.

Everyone is coming to do great work.

Number 2: The job of management is not to control people, but to build great teams.

How can you tell if a manager is building a great team?

something remarkable has been accomplished

customer is very satisfied

The really important metric is that

"Did you come to work on time?" "Did you take time off?" "Did you follow the rules?"

It's not about "Am I getting the proper permission?"

Those three want to do meaningful work.

After you're done, you can go wherever you like

Professional life is a journey

No one wants to do the same thing for 60 years.

Retaining just for the sake of retaining is not good for either side.

What about aiming for a great company to be from?

Those who leave the nest will become ambassadors not only for the company's products, but also for the company itself and its work.

If that enthusiasm spreads around the world, the company will be a great place.

4 All employees understand the company's business

Assuming we're all smart adults, the most important thing to teach us is how our company works.

Companies that are fast-moving, innovative, doing great things with agility and speed are working collaboratively.

The best thing we can do is to constantly teach each other what we're doing, what's important, what we're measuring, what good looks like.

5. Everyone should be able to handle the truth

Do you know why people say it's hard to give feedback?

because I haven't

Consider your annual performance review

Is there anything you do really well that you only do once a year?

What I've found is that people can listen to anything if it's true.

So rethink the word "feedback" and see it as an opportunity to tell the other person the truth about what they're doing well or what they're doing wrong at the time they're doing it.

I like what you just did

that's exactly it

I'll ask you again

I'm sure they'll do it three more times that day.

6. The company needs to realize its philosophy

I was talking to the CEO of a company a while back.

The company was in trouble.

The person himself found that he never showed up for meetings on time.

not once

The most important thing a leader can do to protect the corporate philosophy is to act in accordance with the philosophy.

One cannot become what one cannot see.

I hear people proudly say, "We value equality at home," because women make up 30% of the management team.

30% doesn't mean equality

6. All startup ideas are stupid

I work a lot with startups, and I have a lot of friends who work at big companies.

they're talking about the company i'm working with

I often ridicule it, saying it's a stupid idea.

But all startup ideas are silly.

If it's a decent idea, someone else has already done it.

8. Companies need to be open to change

Don't be blinded by nostalgia

If you find yourself thinking "the old days were better"

I want you to switch your mind, "Let's see how it goes!"

My dream company was like, I walked in and said, "Everything's changed, you never know what's going to happen.

I was running desperately to the right, but I'm going to make a sharp left turn."

There is an exciting world out there, and it is constantly changing.

The more you accept it and put your heart into it, the more fun things await.

I'm Glenn, I'm 25, and I don't know my real last name.

not uncommon in America

Most black people in America walk with the surname of their slave employer.

Black history has been systematically erased and rewritten for centuries.

What I want to tell you today is that there are more than 700 monuments to the Confederate States of America across the United States.

It was built to honor the Confederate soldiers who fought to keep slavery. Most of the slavery was in the South, from the 1890s to the 1950s, when the Jim Crow laws of segregation were in effect.

To this day, blacks have been forced to face public monuments to their slave employers.

Those monuments physically represent the organization's definition of whose lives matter and whose lives don't.

If we want to interrupt this handed-down story, we have to go back to its origins.

It was Christopher Columbus who brought ethnic genocide, slavery and male dominance to America.

Most Americans know about his voyage in 1492.

But fewer people know that he exterminated an estimated 250,000 Awarak indigenous people within two years of his arrival.

What's more, even fewer people know that he wrote in a letter to his supporters that girls aged nine and 10 were in high demand, and that girls of all ages fetched good prices.

His 23-meter-tall statue in New York's Columbus Circle has nevertheless towered over Central Park since 1892.

I started Movers and Shakers, a non-profit organization that wants monuments removed.

This group of activists, artists, educators and technologists is focused on using immersive technology to shed light on the stories of those who have suffered persecution.

Our movement to take Columbus off his throne is a visual form of activism.

We built an augmented reality device based on the true story of Columbus and used it to hold educational events in Columbus Circle and Times Square.

Many believe that the Columbus statue controversy represents the tension between the Italian-American community and the discriminated community.

But the fact is that most black people in this country are here as a result of atrocities initiated by Columbus.

So we've come to hold a slave auction in Union Square to criticize the origins of the transatlantic slave trade.

To raise awareness about this issue, I wore chains and ran the New York Marathon.

He was arrested for reenacting slavery during the football season opener at Giants Stadium.

We tried our best, but in the end, New York City decided to keep the Columbus statue, and the state of New York unanimously decided to make the statue its national icon.

It was shocking and sad news, but it opened another way.

We realized that with augmented reality, we didn't need government permission to set up monuments or make statements.

just take action

Now in New York City, there are more than 150 men's and six women's monuments to famous slave employers in public places.

So we decided to put a lot of monuments to women and people of color around the city that could be seen in augmented reality.

Monuments are typically built to commemorate the deeds of the deceased, but augmented reality can tell a different story.

we started in the sports world

American football player Colin Kaepernick

The starting quarterback for the San Francisco 49ers, he wanted to use the stadium as a platform to challenge systemic racism.

So he consulted with the U.S. Army Special Forces and decided that the most respectful way to do this would be to get down on one knee during the national anthem.

As a result, he was terminated by the team, banned from the American football league, and criticized by millions, even insulted by the President of the United States.

It may take decades for his courage to be recognized, so we decided to take action.

Now, anyone who walks past Trump Tower can see Colin on one knee in augmented reality, and the Trump administration can't help it.

(Laughter) Expression is important.

Serena Williams proved to the world that black girls from poor neighborhoods could reign supreme in sports played in posh country clubs.

honor her

Jackie Robinson is

It broke the color barrier and gave many black baseball players the hope of playing in the National Baseball League.

We're planning to move his memorial to Ebbets Field, so that anyone can see his full swing at that abandoned ballpark in Brooklyn.

Augmented reality gives us the power to tell the stories that need to be told in public.

Frida Kahlo, Audrey Lord, Toussaint Louverture, Madame C.J. Walker, their achievements should become our common sense.

"Pokémon Go" that recreates history is our goal

Augmented reality can also be used to help organizations fight systemic oppression.

In 2019, we will release a free smartphone app that will feature augmented reality monuments and other services.

With a smartphone, without paying a penny, you can get a slice of augmented reality, a scene about bail abuse.

With just a few touches of the screen, you can see the donation screen for the bail project.It is a project to solicit donations for those who are unable to pay bail.

With augmented reality, we have the power to shine a light on oppressed narratives, even when organizations reject them.

We can use this tool to shed light on the histories of people who have been systematically erased.

More specifically, we can use this technology as a way to support efforts to combat systemic racism.

With augmented reality, we have the power to reimagine a world where justice takes precedence over oppression.

thank you

(applause and cheers)

These two paintings show a house.

There are obvious differences between the two pictures, but they looked exactly the same to the patient, Mr. P.S.

P.S. suffered a stroke that damaged his right side of the brain, leaving him unaware of what was happening on his left side.

But even though he didn't know the difference between the painted houses, when the researchers asked him which house he would rather live in, he chose the one that wasn't on fire.

Because P.S.'s brain was still processing visual information from both sides.

He could see both paintings and could tell the difference, but he didn't know it.

If someone throws the ball to his left, he probably avoids it.

But he wasn't aware of the ball, and he didn't know why he was avoiding it.

P.S.'s condition, called "unilateral spatial neglect," points to the important fact that we experience information processing and processing in the brain differently.

This experience is what we call consciousness.

We are conscious of the external world and of our own internal world. The way we are conscious of a painting is no different than the way we are conscious of ourselves, our thoughts and feelings when we look at a painting.

But where does consciousness come from

Scientists, theologians, and philosophers have been grappling with this problem for centuries, but they haven't come to a consensus.

One recent theory holds that consciousness is the brain's own incomplete image of its activity.

To understand this theory, let's first explain one important mechanism of how the brain processes sensory information.

The brain builds multiple models of sensory information, and these models are constantly updating simplistic descriptions of objects and events.

All our knowledge is based on these models

Models don't capture the details of things, they capture only what the brain needs to respond appropriately.

For example, a model built deep within our visual system interprets white light as colorless glow.

In fact, white light contains wavelengths corresponding to all visible colors.

Our sense of white light is wrong and oversimplified, but it's enough for us to function.

Similarly, the brain model of the human body knows where limbs are located, but it doesn't know about individual cells or even muscles, because this level of information isn't needed to plan movements.

If our brains don't have this model, if we don't have a sense of body size and shape and instantaneous movement, we're going to get hurt very quickly.

The brain also needs a model of itself

For example, the brain can pay attention to specific objects and events.

It also manipulates the focus, moving it from one thing to another, the inner world and the outer world, as needed.

Without the brain's ability to shift focus, it may be impossible, or even impossible, to judge threats or finish a meal.

In order to focus effectively, the brain needs to create a model of how to direct attention.

With 86 billion neurons constantly interacting with each other, the brain's information processing model cannot fully describe itself.

But like our model of the human body and our perception of white light, it doesn't have to be perfect.

Our belief that we have abstract, subjective experiences may come from a model of the brain, a simplistic picture of what it means to process information intensively and deeply.

Scientists have already started trying to understand how the brain models itself.

Research using MRI is expected to identify related networks.

Studies compare patterns of neuronal activation with and without awareness of sensory stimuli, such as images.

The results showed that the regions needed to process visual information were activated whether the subject was conscious of the image or not, but the entire associated network only fired when the subject was conscious of the image.

Patients with "hemi-spatial neglect" like P.S. usually have damage to certain parts of this network.

Even greater damage to this network can lead to a vegetative state with no signs of consciousness.

This evidence is beginning to explain how consciousness is hardwired into the brain, but there's still a lot more to learn.

For example, how neurons in our conscious networks process specific information is beyond the reach of current technology.

When we approach consciousness through science, we begin a new exploration of the question of what it means to be human.

The world's largest orchid can grow to be several meters tall.

There are orchids that are too small to see

Some bloom on tall trees, others live underground.

There are 28,000 species of orchids on the planet—as many as birds, mammals and reptiles combined.

It grows everywhere in the world and comes in every conceivable color, shape and pattern.

Their orchids serve a cunning purpose. Many orchids even trick insects into copulating with flowers.

Like all flowers, many orchids need to attract insects to carry their pollen.

But unlike most other flowers, instead of luring a variety of pollinators with sweet nectar, this master deceiver uses other tactics, such as masquerading as a female insect, emitting an alluring scent, and mimicking other species.

Perhaps the most interesting of these methods is sexual deception.

Orchids encourage insects to mate with a combination of sexiness and pheromones.

In the case of the bee orchid, its petals almost resemble the velvety body of a bee.

This camouflage is so good that the male bee perches on the flower, tries to mate, and deposits pollen on his body.

Another orchid has high-contrast colors and spots in the ultraviolet range that are invisible to the human eye, but are irresistibly attractive to insects.

There are also some that have proper gripping points to ensure that the insects come to the position where the pollen attaches.

For example, when a male wasp lands on a hammer orchid, its violent mating action flips the hinges of the flower and deposits pollen on the body of the bee.

On the next flower the bee visits, the same hinge pushes its pollen-covered body against the stigma and pollinates it.

Some orchids are so good at mimicry that the insect ejaculates, wasting precious sperm.

But the most important factor in sexual deception is scent, and orchids precisely mimic the scents of certain insect species.

This is possible because many insects and flowers produce simple organic compounds called hydrocarbons that form a layer that keeps them from drying out.

The exact composition of the compounds in this layer varies from species to species.

Its scent doubles the insect's attraction to mates and is called a sex pheromone.

From random combinations of compounds over time, orchids acquire their signature scents that are exactly the same as specific insect species.

Male pollinators, attracted to orchids by this adapted scent, are repeatedly deceived by flowers masquerading as females of their own species.

Orchid's secret gimmick isn't just about sexual deception.

The oldest trick is to imitate the colors and shapes of nectar-producing flowers—without producing nectar.

There are also orchids that pretend to be places where insects lay their eggs.

Some orchids not only have the color and appearance of rotten flesh, but they even smell putrid, attracting flies to lay their eggs on the flower and unwittingly help with pollination.

There are also orchids that look and smell like mushrooms that are laid eggs by certain insects.

How did these strange adaptations come about?

Random genetic mutations may have just happened to create scents and shapes that match the needs of a particular insect species.

The enormous diversity of the insect world also increases the chances of an orchid finding a mate.

With the help of specialized pollinators, orchids can reproduce successfully and become new species by leaving more seeds and offspring.

Relying on a single pollinator also leaves many orchids extinct within a short period of time.

But over the long term, more new species are born than extinct, making orchids the most diverse flowering plant.

With such rich, ethereal shapes, the orchid deceives even the human senses, and in its petals we see little dancing people, monkey faces, spiders and flying birds.

(Bryn Friedman) You run a company that invests in and invests in AI-related businesses.

It's hard to expect you to be so unassuming and offer very useful suggestions about the future of work.

(Roy Bachat) Yeah yeah

When you wake up in the morning and open the newspaper and read, "Robots may destroy jobs," our fund, which invests in startups in fields that affect the future of work, was the first to say, "The future is artificial intelligence."

I read that newspaper one morning and thought, "Wow, that's me. I'm the one who's doing it."

But wait a minute.

If this situation continues, it may not be just the startups that we invest in that will suffer. It could hurt the economy and society as a whole, because when people lose their jobs, nobody can afford to buy what someone else has made.

I guess I should say to you here, "Everything will be fine, it's just going to be good.

Even when ATMs were introduced at banks, the number of tellers would have increased a few years later.”

that's right

Looking at the current situation, I thought that this change should accelerate.

It means that everything can fall apart.

But the world is full of ideas, so I thought someone must know the answer.

I read all the books on the subject, I attended meetings, and at one point I counted over 100 studies on the future of work.

But I found it frustrating, because the debate always went back and forth, and if I said, "Robots are coming!"

Someone else responds, "Don't worry, I've been told all along, it turned out to be fine."

And someone else said, "No, the problem is the meaning of the work."

People shrug their shoulders and go get their drinks.

And then it's like you're in a kabuki theater, and it's dead quiet.

We didn't talk to the rulers, and vice versa, so we worked with an NGO called New America, a nonpartisan think tank.

I started researching this issue

We got a bunch of people -- AI luminaries at tech companies, video game designers, Midwestern conservatives, Wall Street investors, socialist magazine editors -- literally all of us in the same room, sometimes awkward, trying to figure out what was going on.

The question posed was simple

how technology affects work

We looked 10, 20 years ahead, to talk about a near future that's far enough in the future that change could actually happen, but not as far as the era of teleportation.

And what I've learned is that, as I'm sure you realize every year in this world, it's hard to predict what's going to happen.

But there's more you can do than just predict.

We can imagine all sorts of possible futures, so we worked on that.

Incorporating scenario planning, when no job is safe

Assuming that all jobs are safe

I've exhausted everything that could possibly happen

And the results were absolutely astounding. We thought through all those futures, and we thought about what to do about each of them, and what we should have done was actually the same, no matter what happened.

The irony of looking 10 or 20 years into the future is that what we're trying to address is already happening now.

Automation is already here, and that future is now.

Bryn: So what does that mean?

If that future is now, what should we be doing and what should we be thinking?

CA: The first thing is to understand the problem.

As the data show, the economy is more productive, individual workers are more productive, but labor wages aren't.

In terms of the percentage of the population in the prime of life, at least in the United States, there are three times as many unemployed people today as they were in 1960.

That's what I said earlier

When I asked people who work at Walmart, "What do you think about advanced self-checkout?"

"That's fine, but did you hear about the cash machine?

We were just starting to introduce it, and when that machine came in, each store would lose two jobs."

we didn't know what the problem was

So I decided to focus on the voices that have so far been out of the loop, the voices of all the people affected by this change.

We did a hearing, something like "automation and its frustrations."

I've been working on this for the last two years

I traveled to Flint, Michigan and Youngstown, Ohio, and spoke with entrepreneurs who were trying to succeed in environments that were very different from New York, San Francisco, London, or Tokyo.

I went to prison twice, and talked to inmates about jobs after they got out.

I've sat down with a truck driver and talked about self-driving cars, and I've talked to someone who works full-time and cares for an elderly relative.

As we talked about this, two themes emerged clearly.

One is that people don't really want to make more money or escape the fear of robots taking their jobs, they just want stability.

I want something predictable

If you take a survey and ask them what they want from a job, people who earn less than $150,000 a year are more likely to want a steady, reliable income than more income.

Given the fact that the vast majority of people anywhere in the world, regardless of whether or not they are able to make a living, are in precarious situations with variable incomes every month, it's easy to see that wait a minute, this is a big problem.

The second thing, which took me a while to understand, is that people want dignity.

The idea of ​​self-esteem through work came up again and again in our conversations.

Bryn: Yes, I understand.

You can't feed yourself with dignity, and you can't buy clothes for your children with self-esteem.

So how do we reconcile this? What is dignity in the first place, and how do dignity relate to stability?

(Roy) You can't eat with dignity.

Fortunately, there's a lot of talk right now about how to solve that problem.

For example, I'm in the position that we should be looking into income security, but we're also talking about welfare, such as health insurance.

These voices are being heard because the time has come to solve them.

It's a modern crisis.

After talking to a lot of people, I thought, maybe we can fix that, but maybe not enough yet.

Because what we need to do in the first place is to understand why work gives us dignity and makes us who we are.

This idea of ​​dignity

It's kind of elusive, and a lot of people who listen to it, and frankly, especially people with money, understand it as meaning, and they understand it as, "My job is important to me."

If you were to do a survey and ask, "How important is it that your work is important?"

Only people with incomes above $150,000 a year would say it's important that their job is important.

(Brynn) Meaningful?

CA: Is your job important to you?

I think there are various interpretations.

But of course dignity is essential.

The truck drivers we spoke to said, 'I got this job after watching my cousin drive, and it's been great.

I started making more money than I graduated from college."

And at the end of the day, they say, "You eat fruits and vegetables every morning, and I'm the one delivering them."

He earns a lot

At one point, I asked, "Why are you taking care of your aunt? Why don't you just hire someone to take care of you?"

He replied, "I don't like asking other people. I'm good."

So there's the idea of ​​"needed" here.

"Dignity" is a very attractive word.

one of the oldest words in the ancient English language

It has two meanings: one is self-esteem, and the other is that something fits or fits well, and it means being part of something bigger than yourself and connecting with the whole.

It means "needed"

Bryn: But then what if I said, I don't pay teachers, I don't pay people who care for the elderly, I don't pay people who take care of people, they're needed, so that's enough.

CA: Well, it's good that people started asking this question.

As an investor in the AI ​​space, I often get calls from foundations, CEOs, and boards saying, "What should I do?"

In the past, the question was, "What should we do about automation?"

Now it's become "What should I do with my self-esteem?"

They also know that employees, if they have a spouse or are caring for someone, if they don't have dignity, they can't do their job.

I think there are two answers. One answer is the money that makes a living.

That's stable because you have to eat

And then we can think more broadly about our culture and ask, "Who will be the hero?"

A devoted caregiver decorates the cover of a magazine

I'd like it if the people who were dramatized on the Netflix program were the people who supported our lives behind the scenes.

Make this person a hero

If it's a program like that, I'll give it a shot

Some people have chronicled this before: Studs Turkel made an oral history of his experience of working in America.

What we need is the experience of needing and connecting with each other.

Maybe this is how we all fit together as one society.

And I thought, people who lived 100 years ago, grandparents, great-grandparents, tailors, miners, if they saw us working, they'd say it's not our job.

You can just sit at your computer and talk, and you won't get hurt.

But I'm sure 100 years from now we'll still be doing something for each other.

still need each other

you think it's a job

So what I'm trying to say here is that having a job doesn't mean dignity.

Many people say that they need a job for their dignity, but the moment they say that, they're telling every parent, every teacher, every caregiver that they're not getting paid for it, and that they don't have this essential human trait.

This seems like the great mystery of our time, but how do we bring about lifelong stability? And can we create an inclusive society? Can we need each other in a way that encompasses all human experiences, not just race and gender, but across generations?

(Brynn) Thank you. (Roy) Thank you.

(Brynn) Thank you for joining us.

(applause)

About a year and a half ago, in the same week, back-to-back bad things happened.

One night on my way home from work, it was hot outside, and the roads were jammed with cars. As I was walking, a car pulled up sideways.

I just ignored it and went home I didn't care, that's normal, isn't it?

A few nights later, quite late at night, I was on the bus home, and I was talking to my mother on the phone.

At first, I felt like my leg was accidentally touched by the hand of the man next to me.At first, it felt like my leg was accidentally touched by the hand of the man next to me.

i kept calling

When I woke up, the man was actually grabbing my leg and his hand was pointing towards my crotch.

I got up and walked away from him, but he was on the phone, so the words came out of my mouth quite naturally.

"Just got molested on the bus"

All the passengers who heard that either turned their heads out of the window, lowered their heads, or looked down at their mobile phones.

Of course, not only was no one going to help me, but I was like, "What the hell is this woman making a fuss, take care of your own problems.

Don't try to get other people involved."

immediately embarrassed

I felt like I had done something wrong, and it was my fault that I was alone late at night, and I wished I hadn't worn these clothes.

I'm the same this time

I went home, didn't say anything to anyone, and went back to my senses, because that's normal.

A few days later, I was walking down the street in broad daylight.

There was this big truck that was being unloaded, and there was scaffolding behind it, and two guys were working together.

As I walked by, one said to the other, "Look at those boobs."

treated as objects, not people

And he started talking about me as if he wasn't there, and I could hear him walking in front of me.

What's really striking about this chain of events is that if it hadn't happened in the same week, I wouldn't have remembered a single one myself.

Why is it so?

Hundreds of events flashed through my mind over the past weeks, months and years that I had never told anyone because they were normal.

So I started talking to other women, women I knew, women older and younger, women I had just met, and started asking, "Have you ever been through this?"

To be honest, I thought only one or two people would come up with stories of their experiences.

"This happened a few years ago" or "This happened at a certain workplace"

but actually

Every woman I spoke to

And not just one case a few years ago

there were hundreds

“This happened on the way here, this happened yesterday, this happens almost every day.”

But like me, he had never told anyone until he asked.

Because I was used to it and it was very normal.

When I started to realize that this was such a big issue, I tried to talk about it, I tried to talk about it consciously, and I was told the same thing over and over again.

"Stop making noise

Women now have a fair degree of equality.”

So it's an overreaction to talk about and speak out about sexism against women now that women are equal.

It was like being told things like, "You don't have a good sense of humor," "You should just take it as a compliment," "You're unsociable," "You're too serious," "You're a woman who doesn't understand jokes," etc.

I may be right. Modern women are fairly equal, and I may be overreacting.

I decided to check if it's true.

And it turns out that modern women are fairly equal.

The British parliament is an exception, where less than one in four members of parliament are women, where policies that affect all citizens are debated and enacted.

In the Senate, one in five are women.

The UK ranks 57th in the world for gender equality in parliament

If you look at the women in the legal profession, there are only 4 of 35 Court of Appeal judges, and only 18 of 108 High Court judges.

Next, I explored the world of art.

A 2010 report found that only 10 of the 2,300 paintings in the National Gallery, the highest authority in the arts, were by women.

In addition, the Royal Opera House has not commissioned a female choreographer for the main stage in the last 13 years.

And of the 573 statues of famous people across England, only 15 percent are women.

Less than one in ten engineers in the country are women, less than half the proportion of women in France or Spain. The Royal Society of London is one of the highest scientific institutions in the world, but it has never had a woman president and only five percent of its current members are women.

50% of undergraduate chemistry students are women, but only 6% of professors are women.

Only one in five front-page journalists is a woman, and 84 percent of the front-page people and experts are men.

Of the 250 most popular films released in 2011, only 5% were directed by women, 1 in 5 architects in the UK were women, and 63% of those said they had experienced workplace sexual harassment while working.

Then we turn to crime statistics

Modern women are said to be fairly equal.

Yet every week in the UK, at least two women are murdered by their current or former partners.

The police get one call every minute about domestic violence.

A woman is raped every six to seven minutes, with over 85,000 rapes and over 400,000 sexual assaults each year.

British women have a one in four chance of being victims of domestic violence and a one in five chance of being sexually assaulted.

Globally, 1 in 3 women will be raped or assaulted in their lifetime Globally, 1 in 3 women will be raped or assaulted in their lifetime

All of this research has led me to the conclusion that the claim that modern women should be equals or shouldn't make waves is unfounded.

Rather, I thought now is the time to make waves.

So I created a website. I thought it would be impossible to solve the problem if people denied even the existence of sexism. What I wanted to do was to spread out the stories that I had seen and heard in front of me like a map, and make it possible for people to see it in a list, so that they would be aware of the prevalence of sexism and the seriousness of the current situation.

We launched a very humble website called The Everyday Sexism Project, inviting women and men to post about the gender imbalance they experience every day, from the most trivial and normal to the most serious.

We didn't have any funding or publicity, so I figured that if there were 20 to 30 people, they'd probably post, and that would create a sense of solidarity and raise awareness.

But this caught fire more than I expected.

[75,000 women complain about sexism] In a year and a half, 50,000 women from all over the world posted their testimonials.

It included women and men, everywhere, from many countries, people of all ages, races, ethnicities, sexual orientations, and gender identities.

For example, from a 7-year-old girl with a disability in a wheelchair to a 74-year-old woman riding a handicapped scooter, they had almost exactly the same experience, and they were yelled at, "That's why you can't be a female driver."

A woman minister in the Church of England was told that it would be better for a male minister to be present at weddings and funerals, and she said, "I don't mind you."

One man said he got compliments on taking care of his children.

A city worker said her boss told her to sit on her lap if she wanted her Christmas bonus.

A woman who works in a video store says that every time she climbs up the stepladder to get new stock from the warehouse, the store manager slaps her on the buttocks, and when she comes down, he looks down at her upper half and says, "That's why I hired you."

One waitress told me that when she got pregnant, she had to choose between quitting or quitting.

A 15-year-old girl thinks she's smart and funny and could do any job, but she wrote that the reality is the same whether she's a doctor or a lawyer, because people and the media say that women, after all, are about being sexually attractive, whether they grow up to be busty and waisty, or whether they're attractive to men.

A 13-year-old girl was shown a pornographic sex scene on her phone by a boy at school, and now she cries every night because she's afraid of sex because she didn't realize it before, but she learned that sex is about women crying and feeling pain.

A Pakistani woman wrote that she hid the facts of her abuse to protect her family's honor.

In Brazil, there was even a woman who was almost kidnapped by her car after ignoring three men who casually chatted to her while passing by.

One Mexican woman was told by a university professor, "Calladita te ves más bonita."

This is a comment I made when I gave a speech about politics.

Instead of one case a day, we've had 200 cases a day, because we're making a public statement.

Ironically, the very people who are trying to get in the way of this project by throwing out abusive words are a testament to how important and necessary this project is.

[Die, motherfucker] I think my presence was too much of a threat to some people, because I created a platform to empower women's voices simply because they wanted to talk about gender equality.

Meanwhile, another phenomenon began to occur.

When the number of posted experiences exceeded 10,000, stories with a completely different atmosphere began to be posted.

I started hearing success stories

So many different women's success stories, for example, one woman who likes to run was often sexually harassed on the street and thought that was what it was.

After reading the site's testimonials, she learned that other women were confronting sexual harassment, and that some people thought that this was normal, that it was wrong.

Later, when I went out for a run, I was stopped by a man in a car and asked for directions.

When she approached to show her the way, a man put his hand out of the car window and grabbed her breast with all his strength, and it hurt so much.

I was flooded with all the emotions I'd normally experience in this situation -- fear, dismay, shame, the urge to run -- but at the same time, I hadn't felt it before -- the feeling of having other women behind me.

And of the 2,000 that we received, we were able to gather only stories about women's lewdness and violence on public transport and bring them to the British Railway Police to urge them to review their methods of monitoring sex crimes.

We analyzed their experiences and gave women their first-hand opinions as to why they didn't have the courage to report, and then worked with the railway police to reach out to people all over the country to tell them they were taking it seriously, and that it was okay to report it.

Project Guardian has increased the number of reports of sexual harassment and violence on the subway by about 20 percent.

And I started talking to female college students about something very simple: the definition of sexual violence.

Under English law, if someone touches you anywhere on your body, it's a form of sexual violence if the act is sexual, without your consent, and you don't have good reason to believe that you're doing so.

Female students say, "It can't be sexual violence, it's normal."

"It can't be sexual violence, it happens every time I go out with my friends." "It can't be sexual violence, it happens all the time when I go out with my friends."

"There's no way that's sexual assault. You can't call it that. No one took it seriously. I couldn't even go to the police."

We're starting to see improvements in this awareness, and we're starting to hear stories of victims who have previously never thought they had a right to protest.

I also began to hear stories of people fighting against sexism, which was both interesting and important, not because they were placard-waving protests, but because, of course, that's also important, because women and men all over the world came up with stories of how they found their own ways to fight back, and how they did it, and how it changed their lives.

A woman who was sexually harassed at work told me that after she printed out the sexual harassment policy and put it on every employee's desk, it disappeared.

There was also the story of a woman who was fed up with sales calls.

As a single mother, what she didn't like was being asked, "Who's your husband?" every time.

Now, my six-year-old son takes the call.

(Laughter) One man was walking by a construction site when workers yelled at a woman across the street, "Show me your boobs!"

It seems that he rolled up his own T-shirt

Another woman said that every time someone shouted, "Nice boobs!"

(Laughter) (Applause) Another man said he'd never thought about sexual harassment before, but after reading the story, he had a better understanding of how women feel. And then, when he saw a man on the side of the street who was involved with two women, he caught up with him, tapped him on the shoulder, and said, "Excuse me, why did you do that?"

The man couldn't answer because he had never been asked why before, and it was normal for him.

Because I grew up seeing that kind of behavior in a world where it was normal.

This is the really important part. Unfortunately and frustratingly, we can't now pick one policy change or one legislation and say it's bad.

Especially in the UK, we have very good legislation right now, and a prime example is the legislation on sexual harassment in the workplace, which is very well done.

The most frequently posted categories on my site are stories of women being sexually harassed, assaulted, or discriminated against at work.

As a culture, as a society, we need a change in attitudes towards women and violence against women.

The real problem is the people around them, because they laugh off sexual harassment remarks as "jokes," and because women who have their breasts touched just joke about it, the victims are reluctant to deliver.

But this is kind of exciting, because it means that we can all contribute to the solution.

The Everyday Sexism Project at least believes that sexism is not an isolated event.

This proves that everything is related.

Because there are discriminatory thoughts and attitudes toward women, they are treated as "trivial things."Sexism and harassment occur, and many people tell them to take it lightly and don't make a fuss.It is because there are discriminatory thoughts and attitudes toward women that more serious assaults and rapes occur.

What this means is that by contributing to society's changing attitudes towards women anywhere, whether it's in the world of media, the world of work, relationships or the economy, you're joining forces to change how women are perceived and treated in other spheres.

So all of us can be part of the change.

The aim isn't necessarily to hang the perpetrator, nor is it ever to tell the victim how to behave or react in a certain way.

The goal is to change the co-workers who made the woman who was sexually harassed feel like she couldn't tell anyone, or the people who looked away on the bus that day.

Join us for change

Give your niece a chemistry lab set Give your nephew a toy kitchen — be cool uncles and aunts

Let's stop calling women in derogatory terms, and become a young man who can be clearly admonished by his male friends.

Be the one who reminds people that they've been groped that they can be taken seriously -- that they have a right to report it.

If you're a tabloid editor, ask for an article that doesn't have pictures of women's breasts.

If a woman is being harassed at the bus stop, be the one to help her.

Be the person who can tell you to stop when someone is molesting you on the bus.

Because the more we all raise our voices, the more it will resonate

(applause)

I was eight years old

I remember that day like it was yesterday

my mother works as a cigarette roll

I hand roll local cigarettes to support my family.

My mother is a hard worker. She smoked 10 to 12 hours a day.

That day, when my mother came home, she showed me the payroll.

I asked him how much he earned that week.

As I looked through the ledger, what caught my eye was my mother's thumbprint stamped on each page.

my mother never went to school

That's why I use my thumbprint instead of my signature when recording my earnings.

That day, for some reason, I wanted to teach my mother how to hold a pen and write her name.

Mother is reluctant at first

I smiled and shook my head

I knew in my heart that I wanted to try.

It took a little patience and a lot of effort, but I managed to learn to write my name.

My mother's hands were trembling, but her face was shining with pride.

Seeing my mother like that, for the first time in my life, I felt an indescribable feeling, a feeling that I had value.

This feeling was really special, because I've been told I'm worthless.

In rural India, girls are often seen as worthless.

a troublesome troublemaker

The only thing I can do is cook, or clean the house, or take care of the kids.

As the second daughter of a conservative Indian family, I knew from a very early age that no one expected anything from me.

I believed that the three attributes that defined me--poor, rural, and female--meaned a fate in which I had no voice, no choice.

In the face of these three attributes, we think we should never have been born.

but still i

When I was a kid, helping my mother with the business, I always wondered what the future would hold.

Filled with anxiety, I used to ask my mother, "Can I live a different life than she did?

can you choose your life?

can i go to college ”

My mother used to answer, "Leave high school first."

I don't think my mother tried to disappoint me.

I just wanted her to understand that for a girl in this village, my dreams are too big.

When I was 13, I came across Helen Keller's autobiography.

Helen was my inspiration

admired her indomitable spirit

I wanted to get a college degree like her, so I rebelled against my father and relatives to let me go to college, and it worked.

In my last year of undergraduate studies, desperate to avoid being forced into marriage, I applied for an open scholarship program in Delhi, 2,600 kilometers from my village.

(Laughter) I still remember that the only time I could write an application was on my way to college.

I didn't have a computer, so I had to borrow a college junior's mobile phone.

As a girl, I couldn't be seen holding a mobile phone, so I hunched over, hid it under my shawl, and typed as slowly as possible so I wouldn't be heard.

After many interviews, I was accepted into a fully funded scholarship program.

My father was confused, my mother was worried. (Applause) My father was confused, my mother was worried, and I was nervous and restless, because for the first time in my life, I was leaving the village to go to the capital to study.

Of the 97 classmates selected that year, I was the only one from a rural university.

No one looked like me, no one talked like me.

I felt alienated, I felt intimidated, I felt judged by many.

A classmate called me "Coconut Girl"

do you know why

how is it

Because I used a lot of coconut oil in my hair.

(Laughter) Some people asked me where I learned English, and some of my classmates were reluctant to be on the same team as me because they thought I wouldn't be able to contribute in the discussion.

Many of my classmates seemed to believe that rural Indians couldn't offer anything of value, even though the majority of Indians live in rural areas.

I've come to realize that cases like mine are the exception, not the rising star.

We all blindly accept the circumstances we were born into, until something triggers us to wake up and open up to a new world.

The moment I saw my mother's first signature on the payroll, the moment I felt the heat of Delhi on my face after a 50-hour train journey, the moment I finally felt free and found my true self, I saw a glimpse of a new world I had longed for.

By the time I finished the program, my life had changed.

Not only did I regain my ability to speak out, but I was also able to choose a path that would establish my worth.

When I was 22, I returned to my village.

I founded the Bodhi Tree Foundation, an organization that provides education, life skills and opportunities to young people in rural areas to help them become self-sufficient.

I worked with young people in rural areas to change their lives and benefit their communities.

Are the activities of this group going well?

Six months ago, we welcomed a new employee.

This is a woman named Kaviarasi.

I saw her for the first time at a local university in Tirunelveli, during a seminar I was giving.

As you can see, she has a memorable smile.

We helped her to study at Ashoka University in Delhi.

And the great thing about this story is that she's now back at the Bodhi Tree, working as a dedicated trainer to make a difference in the lives of other children in the same situation.

All she wants is a world where she's not the exception.

That's why I want to help someone

Kaviarasi recently took care of Anita, who also came from a remote rural village and lived in a three-square-foot house. Her parents were farmers, too.

With Kaviarasi's help, Anita was able to gain admission to a prestigious department at one of India's top universities, with a full scholarship.

Anita's parents were reluctant to send her child away, but we asked the district government officials to persuade them, and it worked.

and Padma

Padma and I went to college together.

She was the first person in the village to graduate from college.

He worked with me at the Bodhi Tree, but one day he decided to leave and go to graduate school.

When asked why, he replied

I wanted to be sure that I would never be a nuisance to anyone else in my life.

Padma, Anita and Kaviarasi were born and raised in the harshest home environments and regions imaginable.

Even so, the process of discovering the value of my own existence was also useful in discovering the value of their existence.

Of course there are difficulties

You can't make change overnight

A lot of my work is trying to help my family and community understand why education is beneficial to everyone.

Demonstrating is the shortest way to persuade

When you actually see kids getting an education and getting a job, things start to change.

my family is the best example

I was recently honored by the governor for my social work.

That means I'm going to be on TV.

(Laughter) That morning, everyone, including my parents, was glued to the TV.

Seeing her daughter appear on TV, the mother must have realized the value of her existence.

If possible, I would like you to stop pressuring me to get married.

(Laughter) By finding my worth, I freed myself from what society had forced me to be: the poor country girl.

By finding my existence, I was able to get out of the cage I was locked in.

By finding my worth, I gained the confidence to speak up, and regained my self-respect and my freedom.

Lastly, I would like to share with you my thoughts.

Because that's the place where you can express your opinion and regain your freedom.

thank you

(applause)

Let's start with Roy Amara's story

He argues that the impact of new technologies is often overestimated in the beginning, but underestimated in the long run because of familiarity.

It's truly an era of miracles and wonders.

Remember that great song by Paul Simon?

In it was this lyric

What was considered a miracle at the time?

slow down "slow motion" and long distance calls

Of course, the operator interrupted me with, "This is a long distance call. Do you want to hang up?"

Now it doesn't matter where in the world you call

Something similar is happening to decoding and programming life.

Before I get into the details, let me tell you a little bit about telescopes.

At first, the impact of telescopes was overestimated.

This is one of Galileo's early models.

People thought it would destroy religion completely.

(Laughter) Now, I don't worry about telescopes like that.

The space telescope that was launched 10 years ago, which was explained in the talk earlier, has the ability to tell the difference between car lights on the moon's surface if it carries a Volkswagen to the moon.

And when it comes to resolution, it's even possible to see tiny specks of dust (planets) drifting around distant stars.

Imagine for a moment that there's a star tens of light years away, and a tiny speck of dust is coming up to you.

This is what it's like to find an exoplanet

Surprisingly, the space telescope that's about to be launched will be able to distinguish even a single candle on the moon.

What's more, you can distinguish between two candles even from such a distance, as long as you separate them with a single board.

That kind of resolution is needed to capture images of tiny dots, like dust, that orbit stars, and look for the presence or absence of the characteristic blue-green color.

A distinctive blue-green color means that life is ubiquitous in the universe.

If you find one of these distinctive blue-green colors on a distant planet, it means that photosynthesis is taking place there, that water is present, and that the chances of that being the only other planet where photosynthesis is taking place are almost zero.

This is an event that rewrites history

It's a turning point in the question, "Are we the only ones in the universe?"

In the midst of all this thinking, humans are now beginning to take images of much of the universe.

This is the Age of Miracles and Wonders

I take it for granted

The same thing is happening in life.

I hear various techniques about life

Starting with CRISPR, such technology and such technology

But after all, life is a program.

Thinking of life as a program is a really important idea, and it means that the very same things that you can write in English, French, Chinese, the very same things that you can write in English, French and Chinese, the very same things that you can copy, the very same things that you can edit and print, the very same things that you can do with life are now possible.

It means we're learning how to read the language of life.

Of course, even this orange uses that language.

How are you running the program?

It's not written in 0's and 1's like in a computer.

An orange grows on the tree and one day it falls.

Here is the program execution

AATCAAG "Grow Roots"

TCGACC "Make a small trunk"

GAC “Let the leaves grow” AGC “Let the flowers bloom”

And GCAA "Make more fruit"

If you edit the English text in a word processor, you can change one word to another word.

If you edit an orange and insert a GCAAC using CRISPR or some other technique, the orange becomes a lemon, or a grapefruit, or an orange.

Editing a single character in a string of 1,000 characters transforms you into the person sitting next to you.

Please be more careful where you sit

(Laughter) Editing like this was very expensive in the beginning.

just like long distance calls

But costs are falling 50% faster than Moore's Law.

Veritas announced yesterday that it will offer whole-genome analysis for $200.

So when you look at these technological advances, things that you thought were fine, fine, are becoming more important.

Let me show you the full picture of the genome

this is a great find

There are 23 pairs of chromosomes here

splendid

Now let's look at it in telescope mode, but not with a telescope, but with a microscope. This is the shorter part of this chromosome pair, and that's the Y chromosome.

It's one-third the size of the X chromosome, recessive and prone to mutations.

But - it's peculiar to men.

Let's take a look at this chromosome, and it's kind of like a map of the whole country, and as you go from the resolution level where you can see 400 base pairs to 500 base pairs, to 850 base pairs, you can identify more and more genes.

And if you scale it up to the state scale, you'll know who carries the gene that causes leukemia, and you'll know why you got leukemia, what type of leukemia you have, and what genes have moved from where to where.

Enlarged to the scale of Google Street View

If you look at a particular patient with colorectal cancer, base pair by base pair, it looks like this.

What we're doing with our genes is just collecting information and generating vast amounts of information.

It's one of the largest databases on the planet, and it's growing so fast that the computers that store it can't keep up.

It's possible to make an amazing map of your genes.

If you want to know about the plague, why is some bubonic plague some other plague and some other?

This is the genome map of Yersinia pestis

Some are lethal to humans, some are not.

Now look at the bottom one. How does it compare to tuberculosis?

That's the difference between Mycobacterium tuberculosis and the various plague bacilli. And with this map, you can look like a detective, and look at the specific genetic information of the cholera that hit Haiti, and look at the specific genetic information of the cholera that hit Haiti.

let's zoom out

It's not just about zooming in

This is one of the greatest maps ever created by mankind.

It's a collection of all the genetic information of all species, and it's a single page with a genealogical diagram of life that you can zoom in and out.

The ultimate ancestor of life Diversification and divergence The size of the genome is summarized on one page.

It's like the entire universe of life on Earth, and it's constantly being updated and perfected.

And if you look at this page, you can see an important shift: biology used to be "passive."

Many biologists used microscopes, they used magnifying glasses, they went out and looked at animals.

New biology is 'positive'

We don't just observe things, we create them.

This is a really big change, because it allows things like this to happen.

I'm sure you will be thrilled to see this photo.

(Laughter) It took me [10] years and 40 million dollars to make this image.

(Laughter) What we did was, first of all, we took the entire genetic code out of the cell. It wasn't just one gene or two, it was the entire genetic code of the cell. We synthesized a whole new genetic code, injected it into the cell, figured out how to make the cell do this, and created a whole new species.

It's the world's first synthetic organism.

What do you do with this?

this will transform the world

I'm going to give you three short-term perspectives on how to change the world.

The first is that we will witness a new industrial revolution.

this is literally

Switzerland, Germany, England have used machines -- machines like the one in the lobby here -- to change the world and create energy. Just as CERN changed the world and changed the way we think about the universe with new devices, programmable life forms will change the world.

Computers generate pictures, they make music, they make movies, they write love letters, they generate spreadsheets.

There are just 0s and 1s flying around.

If you can pump ATCG into your cells, the software will create its own hardware, which means it will multiply very quickly.

No matter what miracle happens, leaving your phone by your bed won't make you a billion in the morning.

In organisms, multiplication occurs on a large scale.

Producing nearly carbon-neutral fuels on a commercial scale by 2025 is also feasible, a joint venture with Exxon-Mobil.

Can be converted to agricultural land

You don't have to prepare 100 hectares of land to make oil or protein, but you can produce 10 to 100 times more of the same thing per hectare in a tank like this.

You can store information and produce vaccines that the whole world needs in three tanks.

Almost all the information that CERN has can be stored in these three tanks.

DNA is an amazing information storage device.

Second, theoretical biology is starting to get popular.

Medical school is one of the most conservative in the world.

The way anatomy is taught isn't much different than it was 100 years ago.

"Students, this is the corpse for autopsy."

One of the things that medical school is not good at is creating new departments, which is very unusual.

Isaac Kohane founded a department at Harvard Medical School based on information science, data and knowledge.

In a way, what's happening now is that biology is getting enough data that it's starting to follow in the footsteps of physics.

It's the science that we're going to see, because we've got a lot of medical data, and we've got a lot of human data, and we've got the genome, the viral genome, the human microbiome genome.

As this information accumulates, we can start making predictions.

Third is the impact on consumers.

It becomes possible to decipher an individual's genes.

Now companies like 23andMe are being created, and these companies are giving you a lot of data, not just about your relatives, but about your body, and comparing genomes, analyzing changes over time, building huge databases.

On the contrary, it continues to have unintended consequences for other businesses.

Ordinarily, when you advertise, you don't think about asking consumers to take your ad to the bathroom and urinate on it.

Only IKEA thinks like that

If you rip an ad out of a magazine and pour urine on it, it will turn blue if you're pregnant.

(Laughter) And then you get a discount on the crib.

(Laughter) When I say that "consumer empowerment" extends beyond biotechnology, I mean it.

At Synthetic Genomics, we started building a desktop printer, which allows us to design cells, print them, and run programs written to them.

Now vaccines can be printed in real time before planes take off and land.

78 units of this machine will be shipped this year.

This is print biology, not theoretical biology.

I'd also like to talk about two long-term prospects, which in the long run affect you.

The first is species redesign.

Have you heard of it?

redesign the tree redesign the flower

They're trying to redesign anything, whether it's yogurt or cheese.

Of course, it raises an interesting question: When and how will humans be redesigned?

A lot of people think, "I'm not kidding. I'm not going to redesign humans."

Unless, of course, your child carries the Huntington's gene and is destined to die.

In some cases, you don't want to pass the cystic fibrosis gene to your offspring, and in that case, you probably want to redesign not only yourself, but your children and grandchildren as well.

This is a complicated discussion, but it's actually happening.

Let's see a real example

What's being discussed at the National Academies right now is that we have the ability to introduce gene drives to wipe out malaria-carrying mosquitoes.

Some people argue, "Don't do it because it changes the environment too drastically."

Another view says, "Malaria is one of the problems that kills millions of people each year.

What are you saying when you want to save the children of your own country?"

Why is this a complicated discussion?

And once you release a modified mosquito, whether it's in Brazil or in southern Florida -- mosquitoes don't care about walls.

Unleashing a gene-driven mosquito is making a decision that affects the world.

This great Nobel laureate, J. Shostak, has been interested in something since he won the prize: how did life begin on this planet, and what are the chances of life occurring on other planets?

So he says to his master's students, "Make life, but don't use modern chemicals and equipment.

Please reproduce the life that existed on this earth three billion years ago.

Don't use lasers, that, or this."

He handed me a glass jar of something he made three weeks ago.

what did you make?

It's like soap bubbles made from fat.

created the precursors of RNA

It absorbed the precursors of RNA into the cell and caused cell division.

In the near future, 10 or 20 years from now, it may be possible to create life from scratch from a group of pre-living organisms.

The second long-term outlook is that we've lived in the digital age, and we'll continue to do so, as the genomic age begins, biology, CRISPR and synthetic biology, all of that coming together, and the brain age begins.

We're approaching a time when most parts of the body can regenerate, much like tissue regenerates after a broken bone or a burn.

We're figuring out how to regenerate the trachea and bladder,

both transplanted into humans

Anthony Atala has cultured 32 different organs.

But the core is the brain, and the brain is who you are, and the rest are just the parts.

Unless we can repair our brains, it will be impossible to live beyond 120, 130, 140.

this is the most interesting challenge

It's the next frontier. Another question is, "How common is life in the universe?"

"Where are we from?"

I have a question

Finally, I'd like to introduce you to Einstein's quote, whose source is uncertain.

[There is a way of life that sees everything as a miracle, and a way of life that sees there are no miracles.] It all depends on how you think.

It's possible to focus only on the bad and the terrifying aspects, and the world is indeed full of terrifying things.

But let's keep it to 10%, 20%, 30% of your brain to think about these things.

Because think about it, we live in an age of miracles and wonders.

To live in this era and see technology like this

I'm lucky enough to be able to speak directly to the people who make everything in this place.

Thank you to everyone who has done a great job

(applause)

What we do know about the past of the universe is that according to the Big Bang theory, all matter, time and space began about 14 billion years ago in a very small, dense state.

What we also know about the present is that the movements of galaxies that scientists have observed indicate that the universe is expanding, accelerating its rate of expansion.

but what about the future

do we know how the universe will end

Cosmologists have identified three possibilities for this question: the "Big Freeze," the "Big Rip," and the "Big Crunch."

To understand these three scenarios, let's imagine two objects representing galaxies.

The short, strong rubber bands keep the galaxies together, and that's the gravitational pull that pulls them together.

Meanwhile, two hooks are pulling the galaxies apart, and this is the repulsive force that causes the universe to expand.

If you build a number of such systems, you get something close to the real universe.

The outcome of these competing forces will determine how the universe ends.

The Big Freeze scenario occurs when the repulsive force that pulls objects apart is strong enough to pull on the rubber band and just lose its elasticity.

The expansion of the universe won't accelerate any further, but the universe will continue to expand.

galaxy clusters drift apart

The objects within the galaxy, as well as the stars, planets, and star systems, recede from each other until the galaxy finally breaks apart, leaving just a few celestial bodies scattered across the vastness of space.

The light emitted by (moving away) objects will be redshifted to longer wavelengths with very low, faint energy, and the gas they emit will be too thin to form new stars.

The universe will become darker and colder, approaching a frozen state, a state known as the "big chill" or "the heat death of the universe."

But what if the repulsive force is so strong that the rubber band exceeds its elastic limit and breaks?

If the expansion of the universe continues to accelerate, it will eventually overcome gravity, tearing apart galaxies and star systems, but also defeating the electromagnetic, strong and weak forces that make up atoms and nuclei.

As a result, the material that makes up the star shatters,

Even atoms and subatomic particles are destroyed

this is the big lip

So the third scenario, what if the rubber band wins?

In this picture of the future, gravity stops the expansion of the universe and reverses it into contraction.

Gravity gets stronger as galaxies get closer and closer to each other and shrink.

Stars collide with each other at breakneck speed

The temperature rises as the space shrinks

The universe shrinks so rapidly that all matter shrinks into an infinitesimal space, even atoms and subatomic particles are crushed.

The end result is an incredibly dense, hot, and tiny universe, much like it was before the Big Bang.

this is big crunch

Will this tiny dot of matter explode and cause the next big bang?

Will the universe expand and contract over and over again?

Theories that describe the universe like this are called "big bounces."

In fact, we have no way of knowing how many bounces might have happened in the past, and we don't know how many times they might occur in the future.

When a bounce occurs, the previous history of the universe is erased.

Which of these scenarios will actually happen?

The answer depends on the exact shape of the universe, how much dark energy it has, and how the rate of expansion changes.

So far, observations suggest we're headed for the Big Freeze.

Luckily, the freeze probably won't happen until about 10 to the 100th power years later, so it's still a little too early to stock up on gloves.

Two years ago, MIT (Massachusetts Institute of Technology) found out that according to linguist Ken Hale, 3,000 of the 6,000 languages ​​spoken on earth today are not spoken by children.

So in one generation, cultural diversity is halved.

And every two weeks after that, the last elderly person who speaks the language of that culture dies, and the language disappears.

In other words, the body of knowledge about the natural world that has been gleaned from human experience over the centuries will disappear.

And this happens every two weeks

For the last 20 years -- after working as a dentist -- I've traveled the world and brought back stories about people like this.

I would like to share a few stories with you.

this is tamdin

I am a 69 year old nun.

He spent two years in prison for holding up a small placard against the invasion of Tibet.

When I met her, she had walked 30 days from the Tibetan capital, Lhasa, across the Himalayas, into Nepal, and across India to meet her teacher, the Dalai Lama.

The Dalai Lama lives in Dharamshala, India

This photo was taken three days after she arrived, wearing a pair of tattered tennis shoes with ripped toes.

We crossed 5600 meters above sea level in March with deep snow

This is Polden

Polden is a 62-year-old monk.

was in prison for 33 years

When the Dalai Lama left Tibet, everyone in his monastery was imprisoned in a riot.

And while in prison, he was beaten, starved, tortured, and lost all his teeth.

When I met him, he was a sweet and kind old man.

I was impressed with his demeanor when he showed me, even though he had been out of prison for two weeks after this experience.

I met these people in Dharamshala -- where I spent about five weeks -- and I heard similar stories from these refugees who flowed into Damshala from Tibet.

In the fifth week, the Dalai Lama gave a public talk.

So I saw a crowd of monks and nuns that had gathered there, many of whom I had interviewed and heard stories from, and I was looking at their faces.

The Dalai Lama said treat your enemies like precious jewels because they are the ones who build your tolerance and patience and lead you to enlightenment.

I was so struck by these words that I spoke with people who had gone through these experiences.

After two months, I went to Tibet, where I started listening to people and taking pictures, and that's what I do.

interviewing and taking portraits

At the top of Turnang Temple

I took a portrait of this little girl

Because in Tibet -- it's illegal to have a picture of the Dalai Lama -- you're quickly arrested.

I was smuggling a bunch of Dalai Lama photos that were small enough to fit in my wallet and giving them to people.

When I gave people the picture, they would put the picture on their chest and on their foreheads and they would just sit there.

And this - because I filmed it 10 years ago - was 36 years after the Dalai Lama left.

So I interviewed people and took portraits.

Jigmy and his sister Sonam

They lived in Changthang, on the Tibetan Plateau in western Tibet.

Altitude is 5,200 meters

They had just walked from the plateau at 5,500 meters at this time.

When I gave him a picture of the Dalai Lama, he also put it on his forehead.

After I took the portrait, I gave her the Polaroid that I used to check the lighting, and when I gave her the Polaroid, she screamed and ran into the tent.

This is Tenzin Gyatso, who was found in a remote farmhouse at the age of two as an incarnation of the Dalai Lama.

At the age of four, he was appointed the 14th Dalai Lama.

As a teenager, I was faced with an invasion of my country, and as a leader I had to find a solution.

Eight years later, when his assassination plot was discovered, the people dressed him like a beggar, put him on a horse, sent him out of the country, and made a trip similar to Tamudin's.

I have not returned to my home country since then.

And 46 years later, this man is still non-violent and confronting serious political and human rights issues.

Young Tibetans - Can't Respond Non-Violently

Now they're starting to say that violence is the predominant political tool.

But the Dalai Lama will not compromise this position.

So he's a living symbol of non-violence in the world.

Also a leader

Living in the Ecuadorian Amazon

I'm Moi, 35 years old.

In this part of the Ecuadorian Amazon - in this part of the Ecuadorian Amazon - oil was discovered in 1972.

Since then, as much oil as, if not twice, the Exxon Valdez spill has spilled into this small region of the Amazon, and the tribes here have had to constantly move.

The Moi are from the Waorani tribe, and the Waorani are very savage and also known as the "Auka."

They managed to fend off seismologists and oil workers with spears and blow darts.

We -- me and my team -- spent two weeks in the jungle with them, watching them hunt.

This is when hunting monkeys, using a dart pre-coated with curare.

Their knowledge of the natural environment is truly amazing.

They had a keen sense of hearing and smell, and they could see things that I couldn't see.

In fact, I couldn't even see the monkeys they were chasing with darts.

This is Yadira. Yadira was five years old and lived next door to the Waorani tribe.

Her tribe has been displaced three times in the last decade because of oil spills.

You've never heard of that, have you? What's plaguing these people these days is that thousands of acres of land in the Ecuadorian Amazon are being destroyed with herbicides like Paraquat and Roundup as part of Plan Colombia to fight drugs.

These are the people who are directly suffering from this.

This is Mengatui

It's a Huaorani shaman, and he said, "I'm getting old -- I'm tired -- I'm tired of getting rid of oil workers.

I want you to go somewhere else."

Normally, when I'm at work, I go alone, but this time -- I was doing the Discovery show, and one of the things I was really worried about when I went with the team was going to be crowded with people, especially going deep into the Huaorani.

But when I tried it, these people showed me how to fit in with the local population.

(Laughter) One of the things I did was, just before 9/11, in August of 2001, I took my son Dax, then 16, to Pakistan.

Because -- I've taken my son on trips a few times, and the first thing he sees is people living on less than a dollar a day.

And I wanted them to experience the world of Islam as well.

It was a good experience for my son, and he would play drums and dance with the Kalash people until late every night.

My son had a soccer ball with him, so we played soccer every night in this little village.

And we finally met their shaman

Mengatui, from earlier, was also a shaman for his tribe.

This is John Dourikan, Kalash shaman.

I'm in the mountains on the border with Afghanistan.

In fact, on the other side is Tora Bora, where Osama bin Laden was said to be.

And we stayed with John Dourican.

I've done a lot of research on shamanism, and it's an interesting phenomenon.

Around the world, people enter into a trance in many ways.In Pakistan, people burn juniper leaves, make animal sacrifices, pour animal blood onto the leaves, and breathe in the smoke.

Then, everyone enters a state of nymph and prays to the god of the mountain.

So I think it's important to get children accustomed to different realities. I think it's important, as Dan Dennett said, to have a curriculum that teaches different religions, to develop mental flexibility, to develop mental flexibility in different ways of thinking.

they also pose security problems

So what we started five years ago is to connect American children with Indigenous children.

First, we connected the Navajo Nation with a classroom in Seattle.

now there are 15

Kathmandu, Nepal; Dharamsala, India; Takaung, Kenya;

This is Daniel, one of our students in Arctic Village, Alaska.

I live in a log cabin -- no running water, no heating -- no windows, no high-speed internet.

And then -- I see this everywhere -- four years ago in Ollantaytambo, Peru, when the students got their first computer, and now we have computers in our classrooms.

And the way I did this was by teaching kids about digital storytelling.

And we asked the children to talk about problems in their hometowns they cared about.

This is Peru, and the kids are talking about the river they cleaned themselves.

We hold workshops and bring people who want to learn about digital workflows and storytelling to work with children.

Just last year, I brought in a teenager, and this worked best.

Our dream is to bring teenagers together so that they can not only have the experience of community service, but also experience a different culture, while teaching children in this area and helping build the information infrastructure.

This is the Tibetan children's village in Dharamshala where I teach Photoshop.

On our website, every child has their own home page.

These are all children's videos, and there are 60 of them, and they've been made by children -- they're just amazing.

What I'd like to show you is that after the kids make the videos, they show them to the community.

This is Takaung, and I'm setting up a generator and a projector, and I'm going to show it to the barn, and I'm showing a video.

If you have the chance, please visit our website to see some of the children's amazing creations.

One more thing - I want to give indigenous peoples a voice.

it was a big driving force

Another driving force is our country's lack of interest in other countries.

National Geographic polled 18- to 26-year-olds in the United States and nine developed countries.

It's a two million dollar study.

America is second to last in terms of geographical knowledge.

70% of the children couldn't locate Afghanistan or Iraq, 60% couldn't locate India, 30% couldn't locate the Pacific Ocean.

This survey was only conducted a couple of years ago.

So I'd like to show you, in the last few minutes, a film made by a student in Guatemala.

I recently gave a workshop in Guatemala.

A week before the workshop, 600 people in this village were buried alive in a massive landslide from Hurricane Stan last October.

This kid used to live in this village -- he wasn't there at the time -- and this is a short film he made about it.

He hadn't even seen a computer before making this movie, and we taught him Photoshop... well, let's run the footage.

This is an old Mayan mourning song that he learned from his grandfather.

thank you

(applause)

Good day Good evening

Or Jumbo Guten Abend Bonsois What about something else like this? (Call)

This is the chimpanzee's greeting before going to sleep.

From one end of the valley to the other, I can hear it from the herd

Well, let's start tonight's story with the continuation of yesterday's Zarai.

Australopithecus, 3-year-old girl, we were told about Serum.

I was able to hear about human history, genealogy and DNA genetic analysis I was able to hear about human history and genealogy and DNA genetic analysis.

It was the late paleontologist Louis Leakey who opened the way for me to learn about chimpanzees.

At the time, what he said was quite extraordinary, but it's now common knowledge.

What he said at the time was quite extraordinary, and now common knowledge, what he said was based on research into early human fossils in Africa.

I learned a lot about what they looked like.

But how did they act? Lewis wanted to know

Behavior is of course not fossilized

Now it's a popular theory, but the fact that the behavioral patterns of the closest species, such as great apes and humans, are similar or the same, means that the behavioral patterns of the closest species, such as great apes and humans, are similar or the same, Lewis argued that perhaps the ancestors of apes and humans 7 million years ago behaved in the same way. I did

So maybe the traits we have are from the distant past, so maybe the traits we have are from the distant past.

If you look at today's textbooks that describe human evolution, you'll often find content that makes inferences about what our ancestors did based on chimpanzee habits.

They're more like us than any other creature, and you've probably heard a lot of them here at TED.

So what I'm going to add is the aspects of chimpanzee behavior that are similar to us.

All chimpanzees have personalities

Of course, we gave them names, and they have an estimated lifespan of over 60 years, although 60 years would be rare in the wild.

Wurtzel and her mother Females give birth to their first offspring at the age of 11 or 12.

After that, they give birth to one chimpanzee every five to six years. Chimpanzee cubs grow up depending on their mothers for a long time. They sleep with their mothers at night, sometimes on their backs.

Long childhoods are important for learning in chimpanzees, just as they are in humans.Long childhoods are important in learning for chimpanzees, as they are in humans.

Over the course of the evolution of different animals, the brain has become more and more complex, and over the course of the evolution of the different animals, the brain has become more and more complex, and learning plays an important role in their life histories. Learning plays an important role in their life histories.

Young chimpanzees observe the behavior of their elders for long periods of time.

We know they have the ability to imitate behavior.

So I think that the multi-tool habits that we see in all the different chimpanzee populations that we've studied in Africa, that we see in all the different chimpanzee populations that we've studied in Africa, have been passed down from generation to generation through observation, imitation, and practice.

I've already told you that chimpanzees don't speak.

Chimpanzees have a huge number of postures and gestures, many of which are similar to, or identical to, or used in the same contexts as we humans. Chimpanzees hug and greet each other.

We kiss, hold hands, and tap each other's shoulders

I'll boast and throw stones at you.

In chimpanzee society, there are many examples of real altruism, acts that develop into compassion and love.

Unfortunately, like us, they have a dark nature.

It can also involve brutal acts, such as primitive warfare.

Aggressive behavior is often directed at chimpanzees in neighboring groups Aggressive behavior is often directed at chimpanzees in neighboring groups

they are very territorial

What chimpanzees have taught me more clearly than any other animal is that, after all, there is no sharp boundary between the human and animal kingdoms.

Boundaries are very blurry, and the more you observe them, the less you know them Boundaries are very blurry, and the more you observe them, the less they become clear.

The research I started in 1960 continues today.

The wild, complex social lives of chimpanzees have taught me more than anything else the wild, complex social lives of chimpanzees have taught me more than anything else that humans are part of the great animal kingdom that we share the earth with, but never in isolation.

That's why it's so sad that chimpanzees and other animals around the world are losing their habitat.

This single photo is an aerial view of the deforested Gombe Highlands This single photo is an aerial view of the deforested Gombe Highlands

Sixteen years ago, when I was flying over this area, I noticed that Gombe National Park itself is a small area of ​​less than 80 square kilometers, but is adjacent to Lake Tanganyika. I had one question

“Is it possible to protect chimpanzees when the people living around national parks face difficulties in their daily lives?”

Surrounding population had already exceeded environmental tolerances

Refugees from Congo and Burundi across the lake have increased the population Refugees from Congo and Burundi across the lake have increased the population

People are so poor that they can't buy food from other areas.

This inspired me to start the Take Care Program.

Comprehensive program aiming to improve the living environment for people living around national parks Comprehensive program aiming to improve the living environment for people living around national parks

It started with 12 villages and now has 24 villages.

Due to time constraints, I won't go into the details, but this program teaches you how to grow seedlings and how to farm for this degraded, almost deserted, mountainous land.

Soil erosion control or prevention

Regenerate abused agricultural land and develop it so that it can be reproduced within two years

Help villagers get fresh water from wells

Sometimes I make school classrooms

And the most important thing is to provide small, low-interest loans to small groups of women.

The repayment rate remains at about 95%, the same level as other countries The repayment rate remains at the same level as other countries, about 95%

Empowering women through education and providing scholarships to girls to help them graduate from secondary school. It's well known around the world that more educated women lead to smaller families.

Also provides information on family planning and HIV/AIDS

The results of this program influenced conservation efforts. The results of this program influenced conservation efforts.

Farmers in these 24 villages don't see us as a group of white people who have come to study monkeys -- they don't see us as a group of white people who have come to study monkeys -- in fact many of our staff are Tanzanians -- but when we started our Take Care program, a team of Tanzanians went to the villages.

I went around talking to villagers and asking what they were interested in. I went around talking to villagers and asking what they were interested in.

Of course, I had no interest in conservation work at all.

Their concerns were health and education.

And as time went on and things got better, I started to understand the importance of conservation efforts.

I began to understand that stripping the trees near the top of the mountain caused horrendous erosion and landslides.

We're currently trying to improve the Great Gombe Ecosystem.

It includes a lot of degraded land far away from national parks It includes a lot of degraded land far away from national parks.

As living standards rise in these villages, they agree to set aside 10 to 20 percent of the highlands for conservation. a corridor is created

Take care is a success story

We're rolling out this program in other parts of Africa, in wilderness areas that face similarly severe demographic challenges.

But the problem in Africa, as we've been discussing for days at the TED conference, is that Africa's problem, as we've been discussing for days at the TED conference, is very serious.

Poverty is a particularly big problem

So many people live on land that isn't very fertile, and especially when trees are cut, the soil is exposed to the elements and erodes. Especially when trees are cut, the soil is exposed to the elements and erodes. masu

There are other problems, not just in Africa, but in all developing countries, and all over the world.There are other problems, not just in Africa, but all developing countries, and all over the world.

According to the famous scientist Edward Osborne Wilson, if all the people on this planet had average Western living standards, we would need three more planets.

Now they say there are four, but there is only one Earth.

What have I done? We humans are probably the smartest beings on the planet, and as you'll see at the TED conference, we have extraordinary brains that can harness all kinds of technology, yet we're destroying our only home.

Indigenous peoples around the world sat down before big decisions and asked themselves, "What will be the impact of this decision on our descendants seven generations from now?"

Today, big decisions -- especially in developed countries, not in Africa -- big decisions involve a lot of money, a lot of people, and most of the time the focus is, "What are the implications of this for the next shareholder meeting?"

Those decisions affect Africa

As I traveled through Africa and talked about the problems facing chimpanzees and the declining forests, I realized that a lot of Africa's problems can be traced back to colonial exploitation.

So I traveled outside of Africa, spoke in Europe, spoke in America, and traveled to Asia.

I had terrible problems all around.

You know what I'm talking about, which is pollution.

the air we breathe is polluted

the earth is polluting our food

And water -- water is perhaps the most critical problem we will face this century. Water everywhere is polluted with agricultural, industrial and domestic chemicals. Water everywhere is polluted with agricultural, industrial and domestic chemicals.

The mangroves are being cut down, which makes the tsunami more severe.

I talked about soil erosion.

We recklessly burn fossil fuels, and with them we emit greenhouse gases and cause climate change.

Finally, people around the world are starting to notice the recent climate anomalies At last, people around the world are starting to notice the recent climate anomalies

Extreme weather is happening around the world

And it's the poor who suffer the most.

Africa is already feeling the impact

Drought is getting very bad in many parts of sub-Saharan Africa.

When it rains, it often floods, which increases misery and sets in motion the cycle of poverty, hunger and disease.

People in densely populated areas are too poor to buy food, and the whole land is in such terrible condition that they can't even move.

The last remaining trees are cut down and the land gradually desertifies. The last remaining trees are cut down and the land gradually desertifies.

It's not just Africa, it's all over the world.

So it's no surprise that as I traveled the world, I met so many hopeless young people.

We seem to have lost our indigenous reason

I asked, "Why?"

The technology at TED is a good example. Have we become disconnected from our incredibly good brains and our human hearts? Have we been cut off from our incredibly good brains and our human hearts?

So basically when I talk to young people, they're either depressed or apathetic or bitter or angry. They've generally said the same thing: "We feel this way because adults have sold us our future. We can't do anything."

We sold the future of our descendants by the piece.

I have three little grandchildren, and every time I look at them, I feel like I've been damaging this beautiful planet for so many years.

I started a program called Roots & Shoots, which started in Tanzania and has now spread to 97 countries around the world.

The name is symbolic Roots create a solid foundation

Shoots, though small, can penetrate brick walls to reach the sun.

Think of the brick wall as all the socio-environmental problems we have inflicted on the earth This is a message of hope Think of the brick wall as all the socio-environmental problems we have inflicted on the earth This is a message of hope

Thousands of young people around the world can rise to the challenge and create a better world for all living things Thousands of young people around the world can rise to the challenge and create a better world for all living things

The most important message of Roots & Shoots is that each of us can make a difference every day.

We have a choice. Each and every one of us here has a choice to make the difference we want.

The very poor don't have a choice, so it's up to us, so that the poor can have a choice.

Roots & Shoots group chooses 3 projects

Projects vary by age and country and whether you live in the city or in the countryside.

But basically, there are programs from preschool through college, and many adults have started their own Roots and Shoots groups.

And every group chooses three projects to build a better world, and every group chooses three projects to build a better world.

One of our projects is helping our community.

And when we can, we also raise money for the global community, and when we can, we also raise money for the global community.

One of my projects is to help animals, not only wild animals, but domestic animals as well.

And there are projects that help us all with the environment.

The common message of these projects is that we ourselves, our families, our communities, between nations, between cultures, between religions, between us humans and the natural world, are places of learning to live together in peace and harmony.

We need the natural world, we can't keep destroying it at the rate we are now.

we only have one earth

Here are some examples of Roots & Shoots projects in Africa: Tanzania Uganda Kenya South Africa Congo Sierra Leone Cameroon Tanzania Uganda Kenya South Africa Congo Sierra Leone Cameroon There are projects in 97 countries around the world.

Of course, we also plant trees and grow organic vegetables.

If you raise chickens in a refugee camp, and you sell your eggs and get some cash or use it to support your family, you sell your eggs and get some cash or use it to support your family.

Uganda providing psychological care to former child soldiers Uganda providing psychological care to former child soldiers

Projects like this get them out of their shells.

Once again, they are meaningful members of society.

We're rolling out this program in prisons, too.

No more time to talk about Roots & Shoots

Oh yeah, we're also working on HIV and AIDS.

It's a very important theme for Roots & Shoots, and it's the older kids telling the younger ones.

Issues such as unwanted pregnancies young people prefer to hear their peers talk about issues such as unwanted pregnancies young people prefer to hear their peers talk about issues such as unwanted pregnancies more than adults

Hope, a question that people ask me when I travel the world is, "You've seen a lot of devastation. The number of chimpanzees that used to be close to one million has dropped to fewer than 150,000 this century. The number of chimpanzees that used to be close to one million has dropped to fewer than 150,000 this century. Many other animals have met the same fate. Forests are disappearing, forests have turned to desert.

Many other animals have met the same fate, forests are disappearing, and forests that used to be are turning into deserts.

Is there really hope?” Yes, there is!

You can't come to a meeting like the TED conference without hope, can you?

Of course there is hope, and one of them is the wonderful human brain.

Think Technology

I'm excited to be able to talk about composting toilets.

this is one of my specialties

Our flush toilets are terrible.

And it's really, really important renewable energy.

Are you worried about the planet you entrust to your children?

How many of you here have children, grandchildren, nephews and nieces?

Are you concerned about their future?

If we care, as elites around the world, we can do something, we can choose how we live each day.

what to buy what to wear

Consider and decide how it will affect your surroundings Consider and decide how it will affect your surroundings

Think about how it will affect the generations of your children and grandchildren.

Think about how it will affect the generations of your children and grandchildren.

Together human brains and hearts unite the world Together human brains and hearts unite the world

TED plays an important role. Google's help is appreciated. Ezri is helping map Gombe National Park.

We can use these different technologies

Let's tie them together Something's about to start

Something happened when I heard your speech today.

This is change If we care about the future, we see that we need change This is change If we care about the future, we decide that we need change

Second Reason for Hope Nature is surprisingly resilient

A completely destroyed area can be rebuilt with time and a little help A completely destroyed area can be rebuilt with time and a little help

The Take Care program is an example

If you use a plantation to collect wood chips to burn and stop cutting down the stumps you cut earlier to collect wood chips to burn.

Giving endangered animals a chance to make up. That's the topic of my next book. Giving endangered animals a chance to make up. That's the topic of my next book.

It's moving and it brings me to my last hope. Over the past two days, I've heard about so many human souls, people's determination, people's strong human souls, people who feel overwhelmed by poverty, disease, and so on, but who, with the help of others, are able to get out of that situation by making a difference in society and taking action to change the world.

Think of a few people from Africa who inspire you.

I could name many people, but Nelson Mandela is one of them. He has risen from 17 years of manual labour, 23 years of imprisonment.

Ken Saro-Wiwa of Nigeria fought a giant oil company and was executed despite the best efforts of people around the world.

People like this inspire me

People like this are the role models we need for young people in Africa.

We also need role models for the environment. I heard some of those people today. We also need role models for the environment. I heard some of those people today.

I am so grateful to be sharing my story with you again today at TED. I am so grateful to be sharing my story with you again today at TED.

Let's get together later with some people and discuss these topics and roots & shoots Let's get together later with some people and discuss these topics and roots & shoots

Finally, I want to tell you about the young woman I met today who runs this conference center, and I want to tell you about the young woman who runs this conference center.

She is a Roots & Shoots participant She was very happy with her certificate

She learned leadership in Dar es Salaam.

He says the Roots & Shoots program has been a big help.

I was very, very excited to meet her.To see young people confidently standing up to make the world a better place.To see young people confidently standing up to make the world a better place.It's really hope for tomorrow.It's really hope for tomorrow.

thank you

(applause)

Traveling to Italy with two American friends

I went to see Michelangelo's "David".

The first, Adam, was simply stunned by the beauty of human perfection.

The second Bill is just confused by the thing in the middle

Now the question is, who will vote for George Bush? And which one is Al Gore?

Raising your hand is fine, because political stereotypes are very similar.

It goes without saying that Bill

In this case stereotypes and reality match

Liberals are far more likely to have one of their personality traits: openness.

If you are open, you want things like: novelty, change, expansion, new ideas, travel.

Low prefers familiar, safe and reliable

Keeping this in mind solves a lot of the mysteries of human behavior -- why artists and accountants are so different...

You can predict their favorite books, their favorite travel destinations, their food preferences, and then you'll know what's going on around you.

Reason not to go to popular family restaurant "Applebee's"

(Laughter) This trait also affects politics.

As research guru Robert McRae puts it, “Open-minded people prefer liberals, progressives, leftists.”

It's an open and changing society.

This characteristic affects participating groups as well.

I found this community online.

Who are the participants? "Those who want to understand the world more deeply for the better future of mankind are welcome regardless of field or culture!"

(smile)

Now that openness is liberal

If it's a decisive factor to become a TED person, are most TED people liberal?

Let's look into the social problem I mentioned earlier.

Liberal/Center Left or Conservative?

I'll ask if you're a libertarian, which is common in the hall.

Would you like to go to the broadcasting room?

let's go

Are you a liberal/center-left?

please raise

Are you a libertarian?

Yes...about 25 people

Conservative/center-right?

1 2 3 4 5... about 8 or 10

Hmmm this is a bit awkward...

If TED's goal is to "understand the world more deeply," then moral diversity is bad.

When people with the same values ​​and morals get together, a team is born When a team spirit emerges-

hinders flexible thinking

Liberal teams comfort each other when they lose, like in 2004, and most likely in 2000.

(Laughter) Half of America justify voting for the wrong team.

I'm going to talk about whether it's a god or notalin... (laughs)

(Applause) If you really think that's why you support the Republican Party, excuse me, but you're stuck in the moral matrix.

It's exactly the "Matrix" in the movie "The Matrix"

But today, I'm going to give you a choice.

If you drink this blue, sweet delusions will continue If you drink this red, what is moral psychology?

Let's look outside the moral matrix. (Applause) … a majority vote.

I don't even need to

Everyone is very open! And you're a gourmet. Red looks delicious.

Anyway, let's drink red. An introduction to moral psychology. Let's start here.

What is morality? where does it come from

The worst psychological view is that "at birth the mind is blank."

Developmental psychology tells us that people are born with a lot of physical and social knowledge, so some things are easy to learn, and vice versa.

Brain scientist Gary Marcus has a very convincing definition of "innate."

“The early structure of the brain is not very rooted in experience.

Innate writes the first draft, experience revises

By nature it is different from universal – it is knitted with experience.”

So what's in the first draft of Morale?

My colleague Craig Joseph and I read the anthropological literature, looking at differences in moral thought patterns, and poring over the evolutionary psychology literature. What are the universal themes that transcend religion? What do they have in common across cultures and species?

And I came across five things, five sources of morality.

1. Hazardous/kind

Nervous and hormonal functions also help humans form bonds and adore, and sympathize with the weak.

I have strong feelings for the perpetrator.

70% of the moral statements you hear at TED are rooted in this.

2. Fairness/reciprocity

It's ambiguous whether reciprocity can be accepted in other animals, but in humans it's a certainty.

This painting is Norman Rockwell's "Golden Rule," and inside the painting are Karen Armstrong's words that describe the foundation of religion.

This is the remaining 30% of TED's moral statements.

3. Groupity/loyalty

Herds do exist in the animal kingdom, but they're all small groups or related groups.

Humans are the only people who can form huge groups and stick together.

There is a long history behind

Tribalism feels good - we gleefully form tribes every chance we get.

(Laughter) Sports and war are what pornography and sex are to each other.

Satisfies ancient desires

4. Authority/Respect

Although primates show obedience

Authority for man is not in power or brutality

It's based on voluntary respect, sometimes with an element of love.

5. Purity/Nobleness

This painting is called "The Allegory Of Chastity." Purity here is not just female chastity.

The control of what you do to your body -- the control of what you ingest is a virtue -- a value system or an idea.

The left sticks to food morals like the right sticks to sexual morals.

The moralization of food that stands out recently

This purity is related

I think those five things were written in the first draft of Moral.

You should be born with at least these five

How will my son's first draft, living in a liberal college town, be revised?

What difference does it make to grow up in Lynchburg, Virginia, 100 kilometers away?

think of it like this

If there are five sources of intuition and emotion in the psyche, then Moral is a five-channel equalizer, where each channel can be individually set, me and my colleagues Brian Nosek and Jesse Graham.

A survey was created and published here www.YourMorals.org.

30,000 people have already answered

Here are the results, data for 23,000 Americans.

From left to right: liberals, moderates, conservatives

I'm going to start with the blue, and the blue is the average score for the harm system.

everyone is interested

All three groups show strong support, and by comparison, liberal interest is stronger.

So does green fairness

Please pay attention to the remaining three

liberals score low

Liberals believe that “Groupness, authority, and purity are

Not moral! ” says

The more conservative, the higher the score. The liberal has two channels.

have two sources of morality

Conservative people have five sources of morality, five channels.

It's the same across countries, data from 1,100 Canadians.

Let me show you some slides England…

Australia and New Zealand Western Europe Eastern Europe Latin America Middle East East Asia South Asia

Did you notice that the same three lines are steep in every country, and conversely, there is no disagreement about harm or fairness?

Everyone agrees that these two things are important.

The three main themes of the moral debate are groupness, authority and purity.

No matter what you ask, the difference is noticeable.

Let's say you get a dog. You've chosen a breed you like.

It turns out that they are very independent and treat their owners as equals.

If you're a liberal, "Well, nice!" Even with dogs

Fairly “Fetch me!”

(Laughter) If you're a conservative, you can't have a dog like this.

Conservatives prefer dogs that are loyal to their owners and families, and wary of others.

But for liberals, such a dog is terrifying as it may run for the Republican Party.

(laughs) You think so? "I see... I understand that liberals and conservatives are different." "But the other three are different, aren't they?"

“It’s just xenophobia, authoritarianism, and asceticism, right?”

“Where are the morals?”

As an answer, I'm going to show you three panels by Hieronymus Bosch, "The Garden of Earthly Delights," the first one being Creation.

It's a beautiful, harmonious world where people and animals are doing what they're supposed to be doing where they should be.

But the conventions of the world change things.

Everyone becomes selfish. Animal and human are all in pursuit of pleasure.

You could say it's like the 60's

(Laughter) But inevitably, the '70s come, and the pursuit of pleasure comes at a cost.

Boss titled "Hell"

These three pictures represent the eternal truth of the collapse of order.

The truth about social decline

But lest you think this is a Christian allegory that doesn't mix pleasure with pleasure, let me tell you another story that appeared in Nature a few years ago, Ernst Fehr and Simon Gutcher's "The Commons Dilemma."

It's kind of like environmental tackling.

I encourage others to sacrifice, but I like to take a free ride.

Right after the game starts, everyone is relatively cooperative.

By the way, I am participating anonymously.

Everyone will deposit about half of the maximum amount

But I think, "I'm the only one doing...

Stop it before you look like a fool

As a result, coordination declines

Then this trick appears in round 7. "New rule.

It is also possible to penalize uncooperative players with their money.”

As soon as an element of penalties is added, cooperativeness rises

the jar is moist

research shows that to move a population

Good motives are not enough

Some element of punishment—

For example, embarrassment, embarrassment, and gossiping increase agreeableness.

A recent study found that just thinking about God can lead to prosocial behavior.

Some believe that religion has developed through trial and error, in an effort to build trust and strengthen group cohesion -- and to outperform other groups.

I think so too, though it's a controversial issue.

I'm very interested in the origins, influences and effects of religion, and I don't think the Grand Canyon is a wonder of the world.

The Grand Canyon is pretty simple, lots of rocks, water, wind, and time, and you've got yourself a Grand Canyon.

it's simple

What's strange is that there were communities in the Grand Canyon, in the savannahs of Africa, on the icy shores of Alaska.

the emergence of cities like Babylon and Rome

How on earth?

It's like a miracle!

probably in all aspects

You made full use of moral psychology to create a community, didn't you?

In addition to concerns about harm and fairness, moral psychology

It would have helped to organize groups into subgroups, establish value systems, control carnal desires, and increase productivity.

And that's how it's come to, and now it's a clash between the two factions, because the liberals reject it.

“Celebrate diversity and open the gates to outsiders!” “Doubt authority!” “Give individuals the right to choose their lives!”

There is a noble motive for this

Traditional authority and morality are sometimes oppressive and restrictive for underclasses, women and misfits.

liberals stand for it

Seek change and justice even in chaos

It's on the T-shirt, "Before you complain, it's a revolution."

When openness is high, revolution is welcome, because it's fun when things change.

Conservatives, on the other hand, are advocates for institutions and traditions.

Seek order, even at the expense of lower-level groups.

I know order is hard to come by

valuable and easy to lose

Edmund Burke said, "Restrictions should be recognized as rights as well as freedoms."

After the French Revolution, it was chaos.

Both factions are balancing change and stability, so get out of the moral matrix.

This is what Asian religions say

Think “yin and yang”

Yin and Yang are not enemies

Both are necessary for the creation of the world, like night and day.

Same in Hinduism

Vishnu, the god who maintains the world

There is Shiva, the god of destruction

This is shared by both gods

Vishnu is a conservative god, so to speak.

Shiva is a liberal god and the two gods work together.

Same with Buddhism

The wisdom of moral psychology is condensed into these two lines.

The words of the Zen master Sōshō, "If you want to grasp the truth, neither agree nor disagree. Arguments for and against erode the spirit."

That's right, it undermined a lot of leaders, but before they felt superior to George Bush.

let's ask ourselves

Can you step out of the battle of good and evil?

Can you swear that you neither agree nor disagree?

so what should i do

Combine the ancient teachings of Asian philosophy and religion with the wisdom of moral psychology and you'll find that the human tendency to think "I'm right" developed out of a need to outperform other groups.

What should I do? Do you mean don't do your best?

Accept the monk - stop arguing?

no it's not

You are an incredible group of people doing great things, using their talents, their brilliance, their energy, their wealth to make the world a better place, to fight evil, to solve problems.

As Samantha Power's Sergio Vieira de Mello said, you can't say, "You're wrong and I'm right." Everyone thinks they're right.

Many of our problems can only be solved by changing people.

If you want to change a person, first of all, you must know yourself and know your own moral psychology.

Get out of the moral matrix, and you'll see everyone in the middle of it claiming they're right, and whether you agree or not, they all have their reasons.

let's step

That's the best way to be morally humble. That's the key to not being complacent. Think of the Dalai Lama.

great moral authority

it comes from his humility

And what I want to tell you is this: I think TED's value lies in this group of people who are passionate about making the world a better place.

everyone is very enthusiastic

Passionate about the pursuit of truth

So seek the truth with your passion and use it to make the world a better place

Thank you for your attention

(applause)

Before I get into it, I'd like to tell you two things about myself.

One is that I've been a writer and magazine columnist for over 20 years and have written about etiquette and propriety.

Second, my friends are very cautious about inviting me to dinner parties, because any misbehavior that happens at the dinner table is likely to be made fun of.

(Laughter) I'm keeping an eye out for you in the back seats and outside the venue.

(Laughter) Now, in connection with the dinner, I'm going to go back in time to 2015 and tell you about a dinner I attended.

This is the time when Caitlyn Jenner came out as a woman for the first time, abandoned her Kardashian identity, and started living as a transgender activist.

At the time, I was writing a People magazine column discussing the importance of names, and how names represent a person's identity.

If you misuse it or don't use it, your ego will disappear in a way.

For Caitlyn Jenner, we also talked about her choice of personal pronouns.

synonymous with female

Well, the food was good, and it was a nice, fun dinner, and the hostess started complaining about Caitlin.

"Why do I have to call Caitlyn Jenner by a new name and a new pronoun, that's disrespectful.

I don't approve," I listened intently. I also enjoy meditation, so I paused solemnly before speaking.

(Laughter) "But when you got married, you changed your name and took your husband's last name.

now everyone calls you by that name

It's not just because it's a registered name, it's because it's polite.

Same goes for Jenner."

Women don't listen and we haven't spoken for years

(laughs) Well

I go by "The Civilist" in the world.

I don't think many of you are familiar with this term.

It's not a generic expression. It's derived from Latin and French. It refers to someone who strives to live by a moral code, who strives to be a good citizen.

That's where the word "civility" comes from. Civility originally meant being a citizen and willing to serve the interests of the city, the interests of the nation, the public interest.

Today, I'm going to show you three new ways to be civil.

But there's a problem. First, "civility" is an obsolete word.

Moreover, it's an abomination in this country.

The way they are hated also differs depending on whether they are right-wing or left-wing.

Part of the reason is that the term is now used interchangeably with decorum, formal politeness and behavior.

We've moved away from the idea of ​​being a citizen.

Now, I'd like to talk a little bit about some of my right-wing friends who confuse so-called "political correctness" with civility.

I almost equate the call to civility with the "neologism" in George Orwell's 1984.

"New Phrases" was an attempt to change the way we speak by forcing us to change the words we use.

By changing the meaning of words, we are trying to change the way we think.

The host of that dinner may have been annoyed by that view.

But the first time I really felt the dissatisfaction of right-wingers about civility was when I wrote an article about then-candidate Trump.

Trump said, "I don't have time for political correctness, and neither do I, nor the country."

It was quite a shock, and it really was — you know, the internet was in a frenzy.

There was a tremendous amount of response, and one statement caught my eye, because it was a representative voice (of the right): "Political correctness is a morbid mechanism that controls speech, labels those who dissent, and gives liberals the power to demonize and silence them."

For those on the right, civility seems to be synonymous with reprimand.

This is right-wing thinking

But my left-leaning friends also hate civility.

For example, those who harassed administration officials who supported President Trump's "border wall"

I was accused of being rude, despicable, and even more slanderous.

After a similar incident last year, the Washington Post wrote an editorial about the importance of good manners, despite being left-leaning.

I think the officials should be allowed to take their meals calmly.

hmm

"But isn't it the border wall that lacks civility?

Tear gas the children and divide the family."

protesters will say

But what if this country has, since the beginning of its history, valued good manners and politeness?

It reminds me of women's suffragists

We marched and made crowds,

She was criticized, arrested, and treated for her advocacy for women's suffrage in the 1920s.

The Reverend Martin Luther King Jr. comes to mind, too, the father of non-violent civil disobedience in America.

I was called a "disrespectful" because I tried to promote racial equality and economic equality.

Now you can see why civility has become such a problem and frowned upon in this country.

That's why you shouldn't express your objections or speak your mind?

definitely not

I recently spoke with Dr. Carolyn Lukensmeyer.

He's an authority on civility in America, and he's president of the National Institute for Civil Discourse.

As he puts it, "civility isn't about compromise, it's not about avoiding disagreements when it matters.

It's about listening and discussing your differences with respect."

necessary for a healthy democracy

I call this respectful dialogue.

But civil discourse also needs rules and boundaries.

For example, remarks that incite hatred and exclusivity should be distinguished from mere rudeness and insults.

The point of the spear is

racial and ethnic groups, the LGBTQ community, and people with disabilities.

It's what the angry leftists call hate speech.

Hate speech can lead to violence

For example, in the fall of 2018, I wrote a column about Dr. Christine Blasey Ford.

As you may know, I'm one of the women who accused Supreme Court nominee Brett Kavanaugh of sexual assault.

The column got a lot of response, and I got this message directly, you can see it on the slide.

is filled here and there

(Laughter) In that message, 10 out of 50 words were banned words.

You taunted the Democrats, you taunted President Obama, and I was slandered with obscenities and vulgar language.

It contained blatant threats, so much so that the editor in charge called the police.

It happened just before the pipe bomb was sent to other news outlets, and it put everyone on high alert.

To add to the context of that time, just a few months earlier, five employees of a newspaper company in Maryland had been murdered.

He was shot dead by a reader who had a grudge against the company.

It means, "Shut up or else—"

Around the same time that message was sent to me, another reader started stalking me online.

at first

It was just a small prank

This time last year, my house was still decorated with Christmas decorations, and I got a text message saying, "Why don't you remove the Christmas decorations?"

Sometimes, "Your dog won't be tied up right now," and "He's out shopping right now."

And he also said, "If you were shot dead, no one would miss you."

I wish this was the end

A few months later, this person got so frustrated that he barged into the front door and tried to break down the door.

Now, we have clubs, we have security systems, we even have professional baseball bats.

(sighs) "Shut up or else—"

So how do we protect civility from violence and muddy water?

My own rule is to not be harsh in the first place.

I've learned to avoid provocative words in my writing.

"homophobia", "racist", "xenophobic", "sexist"

and other words

People tend to click on these words.

It's a word that rubs against emotions, compromises, and destroys the opportunity to understand each other.

For example, when Senator John McCain died in 2018, supporters said he was someone who never made personal attacks.

Non-advocates agreed with this, and I thought this was great.

He was certainly someone who would oppose policies and voice no confidence, but not personal attacks.

this is the second rule

The problem with civility isn't just America.

There are now voices in the Netherlands calling for "strike back with civility." According to one Dutch philosopher, "verhuftering" is now rampant in the Netherlands.

I had never heard that word before, so I looked it up very carefully.

Roughly speaking, it means "bullying" or "disappearance of politeness."

It actually means worse, but that's the point.

The fact that there is a single word for such a problem means it's that serious.

In the UK, the referendum to leave the EU in 2016

The country became more divided

One person who discussed the phenomenon called the Leavers, aptly described, "the timid, narrow-minded British primordial brain."

"The timid, narrow-minded British Primitive Brain."

It's a personal attack

It makes me want to reminisce about the Downton Abbey era and the old-fashioned civility of those times.

But that's where the third rule comes in. Don't confuse politeness with civility.

Even before a countess as virtuous as Ms. Maggie Smith.

(Laughter) [No defeatism, middle-class mindset.] I'll leave you with one last thing.

I went to the bakery a while ago, where they sell scones that are very good.

There's a long line and lots of scones

And the scones disappeared one by one until a woman stood between the last one and me.

(Laughter) By God's grace, the woman ordered a croissant.

(Laughter) When it was my turn, I ordered a scone.

And then the man behind me -- who didn't even look at me because he didn't turn around -- shouted, "That's mine.

I've been in line for 20 minutes," he said.

I thought, "Huh?"

"I've been in line for 20 minutes, so I'm probably ahead of you."

I grew up here in New York and went to high school not far from here.

In this place, I'm being polite like this, but if it's a taxi fight, I'll put myself out there, whoever you are.

So I was surprised by what I said then.

"Would you like to cut it in half?"

I said so

Those were the words that came out of my mouth

The man was puzzled, but his expression changed, and he said, "Well, I'm going to buy another loaf of bread, so let's eat half of each."

and I really did

We sat together and talked

The two have nothing in common

(Laughter) We had nothing in common, no nationality, no sexual orientation, no job.

But it was this kindness and heartfelt connection that led to a friendship that we still keep in touch with today.

(Laughter) When I found out I was known as "The Civilist," I was frozen.

(Laughter) But for me, that's the beauty of civility.

It also made me wonder, what is it that people who go out of their way to be rude aren't avoiding trouble, they're avoiding the good?

"Goodness" means friendship, heart-to-heart communication,

sharing and eating 1000 calories

It's the same thing in a broad sense.

As a community As a country As a world

what opportunities are you missing

Modern man is in the midst of a civil war over ideas and identities.

There are no rules in this battle

There are rules in war

For example, the Geneva Convention

We guarantee the right of every soldier to be treated humanely, both on and off the battlefield.

And frankly, I think civility needs a similar treaty, to set the rules and boundaries of dialogue.

To help improve the behavior of citizens and local residents

And I would make this rule more consistent with the original definition of the word civility, which comes from Latin and French.

"City" is for the benefit of the city and the public interest

Citizens willing to serve

It's not an abomination in this sense

I hope the "civilist" doesn't become obsolete or stay obsolete.

thank you

(applause)

(Applause) David: He's Bill Lang, I'm Dave Gallo.

I'm going to show you a video and talk about the ocean.

We've got some really cool footage of the Titanic, and we're not going to show it today.

(Laughter) Titanic actually set box office records, but it's not the most exciting story in the ocean.

The problem is that the sea is taken for granted

If you think about it, the ocean covers 75% of the earth.

most of the earth is ocean

Its depth is about 4 km on average.

Part of the problem, I think, is standing on the shore, or imagining the ocean, looking out into the vast blue, and the surface is sparkling and moving, waves come and go, there's currents, but you don't know what's under there.

The ocean floor has the longest mountain range on earth

most of life is in the sea

So are earthquakes and volcanoes, which means they're on the ocean floor.

Diversity and biodiversity in the ocean exceed those in the rainforest.

There are beautiful places that are largely unexplored but that fascinate us and even make us feel closer to them.

So don't forget that the beach is the gateway to this unknown world.

We need very special skills to enter this world.

We use the submarine Alvin and the camera, which Bill developed in conjunction with Sony.

Marcel said, "Real exploration is more about exploring new landscapes and having new perspectives."

The people we've partnered with have also given us new perspectives, ways to think about life on Earth, not just new landscapes that lie beneath the existing seafloor.

there's a jellyfish

I like it because the whole body is movable

This is actually the longest creature in the water.

Extends up to about 46m

Can you see it moving around?

i love this stuff

It has a lure on the bottom that moves up and down.

Tentacles move like this

this is a herd animal

These are all separate individuals, but they come together to form a collective.

It's got a jet engine in front, and it's got a little light.

If you catch all the large fish, school-swimming fish, and line them up with the jellyfish from earlier, they'll win a landslide victory.

Most of the marine biomass is structured like this.

X-wing death jelly

(Laughter) Luminescence is used to attract mates, to lure prey -- to communicate.

I couldn't show you the jellyfish archive first

because they are all different sizes and shapes

Bill: We all know that the ocean is tens of thousands of kilometers deep on average, and we tend to forget that the only animals that live in the ocean are those that live about 60-90 meters above the surface, and the deep-sea life beyond that is unknown.

And these creatures are a race that still lives in an unexplored microgravity environment.

You've probably heard of giant squid, some of which can grow up to 45 meters.

very little information about them

David: I also like this one. It's a kind of small octopus.

You can actually see through the head

They swim very gracefully by padding their ears with their ears.

can be seen at any depth, including the deepest

Some are several centimeters to several meters

They quickly swarm the submarine - pressing their eyes against the windows and peering inside.

This is a real world, and I'll show you two more.

If you cross the middle of the ocean, you can see creatures like this.

this is like undersea thugs

This guy looks pretty frightening in a way

I also like this What a face!

This is the scientific data we're looking at right now.

This video was taken for scientific purposes.

So one of Bill's tasks has been to provide scientists with the unknown distribution of these animals.

I'm not catching you with a net

I actually go to the deep sea and shoot

Hold the control stick, sit in front of the computer on the ground, push the joystick forward and fly around the earth.

I'm going to look for ridges in the sea.It's a long mountain range of about 64,000km.

The depth to the summit is about 800m.

We're on the Atlantic - that's the ridge - across the Caribbean, Central America, and here we're 9 degrees north of the Pacific.

We use sound and sonar to map these mountains, and this is one of the mountains.

Cliff approaching on the right

On either side of this valley, the mountains are taller than the Alps at most points.

There are tens of thousands of mountains that are not yet marked on the map.

this is a volcanic ridge

As you dive deeper and deeper

Finally we arrive at this place

Our mascot, we call him Jason.

So you can sit like this and use the joystick and the headset to control the robot and actually go to the bottom of the ocean.

One of our joint goals with Woods Hole is to bring this virtual world, the unexplored world, back to the lab.

All you see now is just data.

We've captured it in sound, captured it in video and photographed it, detected it with scientific sensors, but we've never put it together in a compelling whole.

This is the highlight of Bill's camera

This is what we call a hydrothermal vent.

And what you're seeing right now is a cloud of densely compressed hydrogen sulfide-laden water erupting from the shaft of an undersea volcano.

Rise to 600-700 degrees Fahrenheit

This is the world that sleeps under the sea, just a few kilometers under the sea.

Confirmed to have been a volcano in the 60's and 70's

There is evidence that this plume exists along the Earth's axis. When volcanic activity occurs, ocean water flows into fissures, where it touches magma and erupts in a heated state.

I didn't know it contained so much hydrogen oxide.

I've never seen anything like this before, and I call it a chimney.

This is a type of hydrothermal vent

600 degrees Fahrenheit water is gushing out of the earth

The mountains on either side are taller than the Alps, and this landscape is very dramatic.

Bill: This white object is a type of bacteria that lives at 180 degrees Celsius.

Dave: I think this is one of the great stories we see on the ocean floor, and the first thing that emerges from the ocean floor after a volcanic eruption is bacteria.

And then I thought for a long time, how did the seafloor come about?

I think it probably came from inside the Earth.

Not only did it come from within the earth, but the theory of volcanic biogenesis, bacteria also support the habitats of life.

The water pressure here is about 1800kg per inch

A few kilometers below sea level, no sunlight reaches here.

All of the energy that sustains life here comes from within the Earth, that is, chemosynthesis.

You can see that there are many creatures

this is called a tubeworm

Bill: This worm has no digestive system or mouth.

but it has two types of gills

One is to take oxygen from the deep sea, and the other is to house the chemosynthetic bacteria, which take in the hydrothermal fluid, the hot water that I showed you earlier, that boils up from the bottom of the sea, and turns it into pure sugars that the worms can digest.

David: You can see the crabs living there.

he can grab worms

Well, usually when the crab touches it, it reacts

Oops! It moved

The moment the crab touches it, it twitches back into the shell.

What I'm showing you now is something that we've only recently begun to understand, and it's all thanks to the latest camera technology.

Bill: This worm lives in extreme temperature fluctuations

It's about 200 degrees Celsius under your feet, but it's about 3 degrees Celsius near your head, which is like having your hands in boiling water and your feet in freezing water.

I like this way of life

(Laughter) David: This is a female worm.

this is male

Look, it won't take long -- this guy and that guy -- start fighting.

This all happened in the darkest depths of the sea.

Only the light we bring in can reach us

started

During one recent dive, I saw 200 species in this area, 198 of which were new.

Bill: One of the problems is that we have biologists working around here, and it's difficult to retrieve.

And it will decompose on its way back home, so science needs the real thing, right?

David: There are two octopuses about four kilometers away.

The water pressure is also amazing. They live under enough pressure to crush the Titanic like an empty Pepsi can.

I climbed here from the Pacific Ocean

It's the Atlantic Ocean Let's go deeper

This shrimp is messing with the little one I'll drive it away with my claws Bang!

(Laughter) The same thing is happening here.

These guys forage on the backs of crabs.

And this shrimp is trying to grow bacteria from the animal's back.

crabs hate this

This long filament you see on the back of the crab is made by the products of that bacteria.

So the bacteria grow the crab's hair.

look at your back again

The red dot is the laser light emitted by the submarine Alvin to determine the distance from the fumarole.

it's all shrimp

You can see that the hot water is blowing out

They stick to the rock face, but they're actually scraping the bacteria off the rock face.

There is a small vent on the side of the stanchion

This pillar is many meters long

This valley is full of bizarre sights: boiling water spewing out of pillars, volcanic activity, earthquakes, and strange creatures that feed on the chemical energy produced within the earth.

they don't need the sun

Bill: Can you see the white V-shaped mark on the back of the shrimp?

It's actually a light sensor organ.

This is how we find hydrothermal vents

Blackbody radiation -- a type of infrared radiation -- is emitted from here, so they can spot vents from great distances.

David: What I've shown you is about 40,000 miles of mountain range, which we call the Ribbon of Life, because even as we speak, volcanic activity is creating life.

this is our first attempt

I will show you a high-resolution image of the Pacific Ocean.

I'm taking home a pillar

This pillar is several meters long

You can see that various animals live inside.

Hot water is leaking from the strange hot plate

These are all homes for worms.

I'll show you more close-up footage

here's a crab and a worm

Small ones are crawling around

It has a tower-like structure.

I think this looks the best

You can't miss this place, the little chimney is carrying smoke

this is horribly toxic

I don't think you'll get permission to dump this in the ocean, but it's all coming out of the ocean.

(Laughter) It's hard to believe, but this is sulfuric acid.

It's the home of animals, and probably the birthplace of mankind.

Maybe it evolved from here.

Bill: This bacterium, which I was just talking about, is the simplest form of life we ​​know.

There are a number of groups that claim that life originated from these vents.

The vents themselves are short-lived, but one site only lasts about 10 years, even though the ecosystem here has been around for millions -- no, billions -- of years.

David: It's going too well. There's a fish here.

a fish is sitting

There are crabs that point their claws at tubeworms, waiting for them to attach their heads.

(Laughter) Bill: Biologists today are not good at explaining the vitality of these organisms.

This worm grows several centimeters per week!

David: Like I said earlier, this place is hell for humans.

Not only that -- it's vitality -- the vents are also dying out.

I have to move to another vent

Then there are the earthquakes, and the volcanic eruptions that happen every five years or so that wash everything away.

But life will come back in a year

This exceeds the diversity and density of the freshly revived rainforest.

sensitivity? It is high

Are you fragile? no it's not that fragile

I will say one last thing

The sea, sea water, sediments, stories lie hidden in the rocks on the seabed.

It's a startling story

If you look at sediments and rocks and go back in time, what you see is the history of the Earth.

Everything on earth works in cycles and rhythms.

The continent divides and meets again

Seas, mountains, and icebergs come and go

Occurrence of El Niño is periodic, not sudden

What we learn is like a concerto

It's like music -- or rather, music itself.

And to this day, I can't say, ``Stop!

it's ridiculous really

So we need to know where the Earth is going and how it's going to fit on this very different scale.

Know to Lead

The concept of conservation is vain

Conservation is difficult, but perhaps achievable.

thank you

thank you

(applause)

Over the course of the 1960s, the FBI collected some 2,000 documents in an investigation into one of America's most prominent intellectuals.

The person under investigation is author James Baldwin.

At the time, the FBI was investigating a number of artists and thinkers, but their material was sparse compared to Baldwin's.

In the years that the FBI hounded him, he became one of the best-selling black authors in the world.

As the public and power envisioned who James Baldwin was, what came to weigh on him?

Born in Harlem in 1924, he was the oldest of nine siblings.

I started working as a preacher at the age of 14

By preaching in church, I honed my communication skills necessary for a writer, but at the same time I came into conflict with the church's position on racism and homosexuality.

After high school, I started writing novels and essays while working odd jobs.

But the problems that caused me to leave the church were also part of my daily life.

Often faced with racism and homophobia, he was angry and disillusioned, and longed for a life of freedom.

In 1948, at the age of 24, I moved to Paris as a writer's fellowship.

From France, he published his first novel, Tell Me on the Mountain, in 1953.

Set in Harlem, I explored the church as a source of oppression and hope.

The book was popular with both blacks and whites.

Acclaimed for his creative work, Baldwin compiled his reflections on race, class, culture and exile in 1955 in a detailed collection of essays called "How Negroes Think."

Meanwhile, in America, the civil rights movement was gaining momentum.

Black Americans gradually had the opportunity to register to vote and vote, but their basic rights were still denied in schools, on buses, in the workplace, and in the military.

Though he spent the rest of his life primarily in Paris, Baldwin was deeply involved in the civil rights movement and deeply concerned about the unfulfilled promises of his home country.

I watched my family, friends and neighbors fall into addiction, imprisonment and suicide.

They believed their misfortune was caused by the oppression of a segregated society.

In 1963, he published "Next is Fire," a striking portrayal of racial conflict that blamed white Americans, but went a step further by claiming that racism hurts whites too.

From his point of view, everyone was closely intertwined in the same social fabric.

For years he believed that people are trapped in history, and history is trapped in people. Baldwin's role in the civil rights movement was more than just observing and reporting.

He traveled all over the South, attending meetings and giving talks.

He argued with both white politicians and black activists, including Malcolm X. He became a mediator between black activists and intellectuals and leaders of the white establishment like Robert Kennedy.

Baldwin had a remarkable ability to articulate the causes of social turmoil in a way that white people would listen, and the Kennedys came to see him as the representative of black Americans, a label Baldwin denied.

At the same time, the FBI became intimidated by his keen linguistic abilities.

Even in the civil rights circles, Baldwin sometimes felt like an outsider, not only because of his choice to live abroad, but also because he was outspoken about his sexual orientation in his work at a time when homophobia was rampant.

All his life, Baldwin saw his role as a witness.

Unlike many of his peers, he witnessed several civil rights victories, but continued American racism weighed heavily on him.

He may have felt trapped in that moment in history, but his words touched the hearts of generations, and they also helped them understand the nuances of society's most complex issues.

Some time ago, some members of my family underwent a total of three minor surgeries, each lasting about 30 minutes, and I received three bills.

The first surgery was $2,000 just for the anesthesia bill, the second was $2,000, and the third was a whopping $6,000.

What's going on with me as a journalist? I thought

The third surgery, the most expensive, charged me $1,419 for a generic anti-nausea drug, which I could buy online for $2.49.

I had long and unsatisfying arguments with hospitals, insurance companies, and my employer.

Everyone was of the opinion that nothing was wrong.

But then, when I started talking to people, I started to realize that no one knew the details of their medical bills.

We don't know how much it will cost before, during and after the procedure or test.

A few months later, when I finally received the statement from the insurance company, it didn't even detail the costs at all.

After a while I started thinking about this again

After working as a journalist for over 20 years, I took early retirement from The New York Times.

I was wondering what to do next

So I wanted to create a company that could give people the details of their medical bills.

I won a contest similar to "Money Tiger" and got funding.

Health care accounted for nearly 18 percent of gross domestic product last year, and nobody knows what it costs and how much it costs.

What if you knew?

So I started small

I called doctors and hospitals and asked what easy steps they could take to accept cash.

Some people were cooperative

many people hung up

Some people are clearly rude

They said, 'I don't know,' or 'I've been shut down by my lawyer,' but I still got a lot of information.

Here in New York, for example, a $200 echocardiogram in Brooklyn costs $2,150 in Manhattan, just a few miles away.

A simple blood test in New Orleans costs $19 in some places, but $522 in a few blocks away.

In San Francisco, where there's an MRI, it's $475, but 40 kilometers away it's $6,221.

This price difference existed for every treatment and in every city we studied.

After that, I decided to ask citizens how much their medical bills were.

We worked with a public radio station in New York called WNYC to ask women about the cost of a mammogram.

I was once told that no one would answer such a personal question.

Over the course of three weeks, 400 women gave us their bills.

And then we created an online searchable database to make it easier for people to share their data.

This is a medical cost site that combines a travel comparison site and a car navigation app.

(Laughter) I call it a "community-made medical cost guide."

Our research and crowdsourcing has grown and we've partnered with some of the nation's best news outlets in New Orleans, Philadelphia, San Francisco, Los Angeles, Miami, and more.

We used data to tell the stories of people who were suffering and how to avoid suffering from being "finished" by those big bills.

This data saved a woman in New Orleans nearly $4,000.

One contributor in San Francisco also saved nearly $1,300 by paying in cash instead of using his insurance card.

Many people get exorbitant bills for using hospitals that their insurance company pays for.

Some hospitals continued to send bills to the deceased.

We realized that thousands of people wanted to share information.

People want to learn about health care costs, know how to protest bills, and help solve this problem that hurts them, their families, their friends.

Some of the people we spoke to sold their cars, went bankrupt, and were forced to wait out medical appointments to pay their medical bills.

Imagine being able to pay for a diagnosis but not for treatment.

We've started a big debate about health care costs -- doctors, hospitals, and "patients," as we like to call them, "citizens."

(Laughter) We changed our policy.

The Louisiana legislature passed a consumer protection bill that had been dormant for 10 years after we started our business.

Let's face it, this huge, growing public health crisis is a national emergency.

I don't think the government will help us any time soon.

But what if the solution was so simple, always keep all your medical bills public?

Will my bills and medical insurance premiums go down?

Let me be clear, this is a problem in the United States.

In most other developed countries, sick people don't have to worry about money.

It's also true that price transparency doesn't solve all problems.

Neither the expensive treatments nor the major conflicts caused by the insurance system will be resolved anytime soon.

Big problems like fraud, overtreatment and overdiagnosis won't go away anytime soon.

Also, not all medical costs should be cheap.

Not everyone wants the cheapest appendectomy or cancer treatment.

But when we talk about the glaring effect of publicizing health care costs, we're really looking at the essence of a very simple problem.

When we started asking for medical bills, we felt like we were going to get arrested.

It felt sinful to talk about medical treatment and health care services together. But that fear was relieved when we collected the data and found that there are good, honest people in the health care system who want to help people get health care at an affordable price.

So it's easier to ask about medical expenses

Lastly, I would like to ask you a question

What if every citizen knew in advance what medical expenses would be incurred?

What if you could use a "list of medical institutions" to find out the cost and location when searching the internet for an MRI scan? Just like when you search for laser printers.

What if all the time, effort and money spent hiding the actual cost of healthcare was removed from the healthcare system?

What if every citizen could choose a $19 test instead of a $522 test?

Billing amount and medical insurance premium

Will it go down?

I don't know, but if I didn't ask, I wouldn't know

you may save a lot of money

And many of us believe that the healthcare system itself should be healthier.

thank you

(applause)

We have been facing a big problem for many years We have been facing a big problem for many years and that is the possibility of a nuclear attack.

And maybe even more important, and maybe even more important, can we permanently eliminate the nuclear threat? Can we permanently eliminate the nuclear threat?

Ever since the United States developed the world's first atomic bomb Ever since the United States developed the world's first atomic bomb Ever since the United States developed the world's first atomic bomb People have lived under the threat of nuclear weapons People have lived under the threat of nuclear weapons I'm going to divide it into two periods.

Nuclear age begins in 1945

The United States has developed two atomic bombs through the Manhattan Project The United States has developed two atomic bombs through the Manhattan Project The idea is very simple. With atomic bombs, the idea is very simple.

The United States, the only nuclear power, dropped two atomic bombs on Japan The United States, the only nuclear power, dropped two atomic bombs on Japan

The United States, the only nuclear power, dropped two atomic bombs on Japan, one on Hiroshima in August 1945 and one on Nagasaki a few days later.

The United States was the only nuclear power for several years.The United States was the only nuclear power for several years.

However, in 1949, the Soviet Union declared, "It is unacceptable for the United States to possess nuclear weapons alone," and began a nuclear arms race with the United States.

The years 1949 to 1985 were a strange time to build up nuclear weapons.The years 1949 to 1985 were a strange time to build up nuclear weapons.

This red mark indicates 1000 nuclear warheads per unit. This red mark shows 1,000 nuclear warheads per hit. Until 1985, there were 65,000 nuclear warheads in the world until 1985, and there were 65,000 nuclear warheads around the world until 1985, and the seven countries with nuclear weapons are known as "nuclear club". The seven countries that have nuclear weapons are now known as "nuclear clubs".

It's an extraordinary era What kind of mental state did people in those days spend in this era? What kind of mental state did people in those days spend in this era?

Now it's important to note that since 1985, 95 percent of the nuclear weapons, here, since 1985, 95 percent of the nuclear weapons belonged to the United States and the Soviet Union. They belonged to the United States and the Soviet Union.

Between 1985 and the collapse of the USSR Nuclear disarmament will begin Between 1985 and the collapse of the USSR Nuclear disarmament will begin Between 1985 and the collapse of the USSR Nuclear disarmament will begin

The number of nuclear warheads in the world has been reduced to about 21,000 The number of nuclear warheads in the world has been reduced to about 21,000 The number of nuclear warheads in the world has been reduced to about 21,000

This number is very troubling because we just "retired" the nukes, and this number is very troubling because we just "retired" the nukes, and if we "reinstate" them, we can use them again.

Because if you "revert" it, you can use it again. By this method, you've reduced your kernels by a factor of three. By this method, you've reduced your kernels by a factor of three.

But now we have two new countries joining the nuclear club, but here we have two new countries joining the nuclear club: Pakistan and North Korea.

This is why the United States is still nuclear-armed This is why the United States is still nuclear-armed This is why the United States is still nuclear-armed

I'm going to talk about the nuclear threat in the next two chapters.I'm going to talk about the nuclear threat in the next two chapters.

Chapter 1 is from 1949 to 1991 until the collapse of the USSR Chapter 1 is from 1949 to 1991 until the collapse of the USSR, the period of the nuclear arms race between the superpowers.

A very dangerous state-to-state stare A very dangerous state-to-state stare A very dangerous state-to-state stare

Some say it still is, some say it still is, but at the time we were on the brink of a global catastrophe.

It's amazing that humans survived these conditions.

Mankind depended on something called Mutually Assured Destruction (MAD) Mankind depended on something called Mutually Assured Destruction (MAD)

Humanity relied on something called Mutually Assured Destruction (MAD).

It means, "If the other party attacks, we will attack." It means, "If the other party attacks, we will also attack." It means, "If the other party attacks, we will also attack."

A nuclear attack on another country is deterred because it threatens to destroy us A nuclear attack on another country is deterred because it threatens to destroy us This is how we survived

The danger here is radar misreads The danger here is radar misreads Counterattacks can happen even if your opponent isn't firing Counterattacks can happen even if your opponent isn't firing

The idea that a nuclear catastrophe was possible, then the idea that a nuclear catastrophe was possible, then the idea that a nuclear catastrophe was possible was deeply planted in the collective consciousness.

Chapter 1 ends here

Strangely enough, we knew that civilization would disappear Strangely enough, we knew that civilization would disappear Strangely enough, we knew civilization would disappear The United States and the Soviet Union were discussing a series of retaliatory plans Both the United States and the Soviet Union were discussing a series of retaliatory plans

it's totally unbelievable

If the world could be destroyed, shouldn't we take measures? If the world could be destroyed, shouldn't we take measures?

I would like to awaken your memories here I would like to awaken your memories here I would like to awaken your memories here I would like to awaken your memories here

People born before 1950 will probably miss it People born before 1950 will probably miss it

This is Bert the Turtle. (Video) This is made for kids. This is made for kids. When there's a nuclear war.

If there's a nuclear explosion, if there's a nuclear explosion, if you hide under your desk, you'll be fine.If you hide under your desk, you'll be fine.

(Laughter) I didn't excel in psychiatry in medical school, but I was interested. I didn't excel in psychiatry in medical school, but I was interested.

(Laughter) It was also recommended to build nuclear shelters underground.It was also recommended to build nuclear shelters underground.It was also recommended to build nuclear shelters underground.

Watching TV when there's no nuclear war, or watching TV when there's no nuclear war, or maybe just meeting her secretly.

It may only be used to meet her secretly.

But there are also prefabricated shelters that you just bury underground, but there are also prefabricated shelters that you just bury underground.

If you buy it, the most expensive one is about $500. If you buy it, the most expensive one is about $500. If you buy it, the most expensive one is about $500.

What percentage of Americans have ever owned a nuclear shelter? What percentage of Americans have ever owned a nuclear shelter?

What percentage of Americans have ever owned a nuclear shelter?

Less than 2%. Only 1.4% of people have space for or are actually building underground nuclear shelters. Only 1.4% of people have space for or are actually building underground nuclear shelters.

Many buildings in the United States have civil defense signs on them. Many buildings in the United States have civil defense signs on them.

Here's a big government lie.This is a big government lie.This involved the FEMA.This involved the FEMA.You know what kind of organization it is in response to Hurricane Katrina?

In the first official announcement made by FEMA In the first official announcement made by FEMA

An emergency migration plan was proposed An emergency migration plan was proposed An emergency migration plan was proposed This was based on the premise that the warning would be raised 3-4 days before the Soviet Union attacked.

The goal is to evacuate people from the targeted city.

The goal is to evacuate people from the targeted city The goal is to evacuate people from the targeted city

I said to the Senate, "Why don't we actually evacuate and warn?" I said, "Why don't we actually evacuate and warn?"

It was considered out of place. They had other ideas.

It was seen as an out-of-place remark. They had a different idea.

To force the Soviet Union to use super-expensive nuclear weapons To force the Soviet Union to use super-expensive nuclear weapons To force the Soviet Union to use super-expensive nuclear weapons, I intended to have them target not only their original targets, but also their evacuation destinations.

I'm really scared that something like this is happening behind my back

I'm really scared that something like this is happening behind my back

The point is that the measures we have taken so far have been unrealistic The point is that the measures we have taken so far have been unrealistic

Civil defense programs fail to face the reality of nuclear war Civil defense programs fail to face the reality of nuclear war

Organizations such as the Physicians for Social Responsibility have publicly stated many times since about 1979:

When you find out that a city is going to be bombed, all you have to do is say, "Here's a map of what would happen if you were hit with a nuclear attack."

All you have to do is say, "This map shows what would happen if there was a nuclear attack."

There is no medical preparation or proper preparation for nuclear war There is no medical preparation or proper preparation for nuclear war There is no medical preparation or proper preparation for nuclear war

So the only way to survive is to prevent a nuclear war, so the only way to survive is to prevent a nuclear war.

This detachment was never really resolved.

This disillusionment never really went away. So what happened is what I want to tell you about in Chapter 2. So what happened is what happened in Chapter 2. The nuclear threat began in 1945.

Chapter 2 begins in 1991, as the Soviet Union collapsed.

Chapter two begins in 1991, when the Soviet Union collapsed, temporarily leaving no enemy willing to attack the United States.

It means that the enemy who wants to attack the United States is temporarily gone.

But after 1991, but after 1991, especially with the terrorist attacks in 2001, the interest in nuclear war faded away, especially with the terrorist attacks in 2001, the interest in nuclear war faded away, and only nuclear terrorism was talked about.

Even though the scenario has fundamentally changed Even though the scenario has fundamentally changed, we have not changed the way we think about nuclear war.We have not changed the way we think about nuclear war.

So what is the threat of nuclear terrorism?

So what is the threat of nuclear terrorism?

there are four key points

The first is the security of nuclear weapons around the world The first is the security of nuclear weapons around the world The first is the security of nuclear weapons around the world

Not particularly safe is the former Soviet Union Today's Russia Not particularly safe is the former Soviet Union today's Russia

Russia has a lot of facilities that handle fissile materials like uranium and plutonium, including nuclear warheads.

No security at all Anything can happen, buy or sell

you can get the nucleus right away

Between 1993 and 2006, the International Atomic Energy Agency has documented 175 nuclear theft incidents, and the International Atomic Energy Agency has documented 175 nuclear theft incidents, 18 of which were highly enriched uranium or plutonium needed to make nuclear weapons.

Global stocks of highly enriched uranium range from 1,300 to 2,100 tons Global stocks of highly enriched uranium range from 1,300 to 2,100 tons Global stocks of highly enriched uranium range from 1,300 to 2,100 tons

of which [about 100 tons] are carelessly stored at Russian facilities of which [about 100 tons] are carelessly stored at Russian facilities of which [about 100 tons] are carelessly stored at Russian facilities

How much uranium do you think it takes to make a 10 kiloton nuclear bomb? How much uranium do you think it takes to make a 10 kiloton nuclear bomb?

Approximately 34 kg is required

I'll show you how much 34 kg of highly enriched uranium is.I'll show you how much 34 kg of highly enriched uranium is.I'll show you how much 34 kg of highly enriched uranium is.

This is not an advertisement. If I was a Coca-Cola person, I would be in big trouble. (Laughter) If I was a Coca-Cola person, I would be in big trouble.

If you steal or buy this much from a 100-ton stockpile, if you steal or buy this much from a 100-ton stockpile, you can make a Hiroshima-style atomic bomb You can make a Hiroshima-style atomic bomb You can make a Hiroshima-style atomic bomb

What about another fissile material, plutonium What about another fissile material, plutonium

4.5kg to 6kg of plutonium

4.5kg to 6kg of plutonium can be used to make a Nagasaki-type atomic bomb We can make a Nagasaki-type atomic bomb

I don't want to think about this kind of situation too much, but I don't want to think about this kind of situation very much, but I can't do it that way because of my job.

The second key point is about know-how.

The second key point is about know-how. There is debate about whether terrorist organizations have the know-how to actually build nuclear weapons.There is debate about whether terrorist organizations have the know-how to actually build nuclear weapons.

There's an incredible amount of know-how out there.

There's an incredible amount of know-how out there.

This is a detailed method for assembling a nuclear weapon from parts This is a detailed method for assembling a nuclear weapon from parts

A book that introduces how to make a nuclear bomb

There are plans for a terrorist factory that manufactures and assembles parts There are plans for a terrorist factory that manufactures and assembles parts There are plans for a terrorist factory that manufactures and assembles parts

This information is easily available

If you're a physics major in college, if you're a physics major in college, you can actually build a nuclear weapon using the information that's available today, using the information that's available today.

The third key point is who actually does that.The third key point is who actually does that.

Today we face organized human terrorism Today we face organized human terrorism

They are very dedicated and have no nationality.

They are very dedicated and have no nationality.

They say, "Al Qaeda has no return address." They say, "Al Qaeda doesn't have a return address." If Al Qaeda nukes you, who and how do you retaliate? If Al Qaeda nukes you, who and how do you retaliate?

They don't fear retaliation, retaliation makes no sense.

They don't fear retribution Retribution makes no sense They don't fear retribution Retribution makes no sense

He was an aide to Suleiman Abgais Osama bin Laden He was an aide to Suleiman Abgais Osama bin Laden

"We have the right to kill four million Americans, half of whom should be children," it said. "We have the right to kill four million Americans, half of whom should be children." "We have the right to kill four million Americans, half of whom should be children."

These people aren't just overseas These people aren't just overseas

The McVeigh and Nichols Oklahoma City bombings of the 1990s were a case in point for domestically-born terrorists.

What if they had nuclear weapons?

The fourth key point is that high-value domestic targets are high-value targets.

The level of preparedness the United States has achieved since 9/11 2001 The level of preparedness the United States has achieved since 9/11 2001 has been incredibly inadequate.It has been incredibly inadequate.

If you look at the post-Katrina response, if you look at the post-Katrina response, you can see how ill-prepared the United States is for any attack.

Seven million container freight ships come to the United States each year Seven million container freight ships come to the United States each year

Only 5-7% are tested Only 5-7% are tested

He was a general in the government of Alexander Lebezh Yeltsin. He was a general in the government of Alexander Lebezh Yeltsin. "Russia has developed a suitcase bomb," he said to Congress. Enough to cause serious damage Enough to cause serious damage

When Lebezi visited the United States, he said, "More than 80 suitcase bombs are missing." "More than 80 suitcase bombs are missing."

It has this simple structure, and it's convenient to carry.

It has this simple structure, and it's convenient to carry.

It has this simple structure, and it's convenient to carry.

Carry it in the trunk of your car and you can detonate it anywhere You can detonate it anywhere you can carry it in the trunk of your car

You can put it in the trunk of your car and detonate it anywhere.

A nuke could be stolen instead of making a suitcase bomb A nuke could be stolen instead of making a suitcase bomb A nuke could be stolen instead of making a suitcase bomb

This is the same size as the Hiroshima-type atomic bomb Little Boy This is the same size as the Hiroshima-type Atomic Bomb Little Boy

It's three meters long, it weighs four tons. It's three meters long, it weighs four tons. For fifty dollars in a rental car, for fifty dollars in a rental car, you can get a truck that can hold a nuclear bomb.

What if this actually happened

I don't know the exact probability, but there are all the ingredients that this will happen.I don't know the exact probability, but there are all the ingredients that this will happen.

It is very possible that terrorists will use nuclear weapons It is very possible that terrorists will use nuclear weapons It is very possible that terrorists will use nuclear weapons

A lot of people, a lot of people, a lot of people say that if we don't do something, the danger is inevitable.

There are many things you can do to ensure your safety

One day there may be a real nuclear explosion in an American city One day there may be a real nuclear explosion in an American city One day there may be a real nuclear explosion in an American city

I don't think there will be a nuclear war, but it's not far-fetched.I don't think there will be a nuclear war, but it's not too far-fetched.

There are enough nuclear weapons in the world to destroy the planet There are enough nuclear weapons in the world to destroy the planet There are enough nuclear weapons in the world to destroy the planet

India and Pakistan, the Middle East, North Korea, etc. There are flashpoints in India and Pakistan, the Middle East, North Korea, etc. If you use nuclear weapons, they will stay in the region at first.

it's a very unstable situation

Let's go back to the truck story, just across the Brooklyn Bridge.

Let's go back to the truck story, just across the Brooklyn Bridge.

And I got into Manhattan And I got into Manhattan And I got into Manhattan And I got into Manhattan

A 10-kiloton bomb, slightly smaller than the Hiroshima type. A 10-kiloton bomb, slightly smaller than the Hiroshima-type bomb. A 10-kiloton bomb, slightly smaller than the Hiroshima type.

This will be terrifying beyond imagination This will be terrifying beyond imagination

this is going to be terrifying beyond imagination

If a human is within a radius of 800m from the hypocenter If a human is within a radius of 800m from the hypocenter, the probability of dying is 90%.

If you're in the hypocenter, you'll be vaporized If you're in the hypocenter, you'll be vaporized This isn't good, is it? (laughs)

This is not good, isn't it?

3km radius, 50% chance of dying 50% chance of dying, 13km radius, 10-20% chance of dying 13km radius, 10-20% chance of dying 13km radius, 10-20% chance of dying Considering instant death

A nuclear explosion has a core temperature of tens of millions of degrees Fahrenheit A nuclear explosion has a core temperature of tens of millions of degrees Fahrenheit A nuclear explosion has a core temperature of tens of millions of degrees Fahrenheit A nuclear explosion has a core temperature of tens of millions of degrees Fahrenheit A huge amount of energy is released as heat, radiation and shock waves A huge amount of energy is released as heat and radiation shock waves A huge amount of energy is released as heat and radiation shock waves

In the area of ​​the yellow circle, the building will be destroyed by heavy wind In the area of ​​the yellow circle, the building will be destroyed by heavy wind In the area of ​​the yellow circle, the building will be destroyed by heavy wind

What I want to focus on here is what would happen if I were there. What I want to focus on here is what would happen if I were there. What I want to focus on here is what would happen if I were there.

If there is an old-fashioned all-out nuclear war, everyone will die wherever they are. If there is an old-fashioned all-out nuclear war, they will all die wherever they are.

If I were here, there are many things I could do to save my life. If I were here, there would be many things I could do to save my life.

Suppose you survive the first explosion.

By the way, don't look at the explosion, it will blind you temporarily or permanently.

You should look away so that it doesn't happen You should look away so that it doesn't

If you survived the blast, if you were near the blast If you survived the blast, if you were near the blast If you survived the blast, if you were near the blast If you survived the blast, if you were near the blast You have only 10 to 20 minutes, depending on the size and location of the blast, from 10 minutes to 20 minutes, depending on the size and location of the blast. 10 to 20 minutes depending on location

Within 10 to 15 minutes, you should be about 2 kilometers away from the explosion Within 10 to 15 minutes, you should be about 2 kilometers away from the explosion Within 10 to 15 minutes, you should be about 2 kilometers away from the explosion Within 10 to 15 minutes, you should be about 2 kilometers away from the explosion

Within 20 minutes, the ashes of death will fall Within 20 minutes, the ashes of death will fall In 24 hours, lethal doses of radiation will be carried by the monsoons In 24 hours, lethal doses of radiation will be carried by the monsoons Most of it will flow northeast Most of it will flow northeast

If you're near here, you must flee.

If the wind is blowing If the wind is blowing Go perpendicular to the wind or face downwind Go perpendicular to the wind or face downwind Go perpendicular to the wind or face downwind

If you see an explosion in front of you, you need to get out of there.

If you see an explosion in front of you, you need to get out of there.

If you don't escape, you will be exposed to a lethal dose of radioactivity in a short time If you don't escape, you will be exposed to a lethal dose of radioactivity in a short time

If you can't escape, go to the shelter If you can't escape, go to the shelter

If you enter an urban shelter, stay as deep underground as possible If you enter an urban shelter, stay as deep underground as possible Also, if the explosion occurs on the ground, stay on the 10th floor or higher of the building If the explosion occurs on the ground, stay on the 10th floor or higher of the building If the explosion occurs on the ground, stay on the 10th floor or higher of the building If the explosion occurs on the ground, stay on the 10th floor or higher of the building

But basically, we need to get out of town as quickly as possible.

But basically, you need to get out of town as quickly as possible so you can actually survive a nuclear detonation.

A week after the explosion, a radioactive cloud forms A week after the explosion, a radioactive cloud forms This will get on the wind and spread about 30 km beyond Long Island This will get on the wind and spread about 30 km and beyond Long Island This will get on the wind and spread about 30 km beyond Long Island

If you're in a fallout zone, you can actually survive if you just go into a shelter or run away.

500,000-700,000 deaths could be reduced to 150,000-200,000 500,000-700,000 deaths could be reduced to 150,000-200,000 500,000-700,000 deaths could be reduced to 150,000-200,000 500,000-700,000 We can reduce human deaths to 150,000 to 200,000.

So response planning is possible and essential in the 21st century. So response planning is possible and essential in the 21st century.

But as of 2008, no city in the United States has an effective plan for a nuclear detonation.No city in the United States has an effective plan.

One of the problems with the emergency planners themselves is that the emergency planners themselves are psychologically overwhelmed by the idea of ​​a nuclear catastrophe.

The psychological overwhelm of the idea of ​​a nuclear catastrophe.

When I say the word nuclear, they go, "Oh my God, mankind will be wiped out."

That's not true

Doing the right things can change survival rates Doing the right things can change survival rates

The goal is to minimize the number of deaths.

Just remember this Just remember this

The key to surviving a nuclear explosion is to escape The key to surviving a nuclear explosion is to escape.Go to safety.

go to a safe place

The farther you are from the blast, the easier you will be saved. The farther you are from the blast, the easier you will be saved.

It is desirable to create a partition with soil or concrete, or be able to move underground It is desirable to create a partition with soil or concrete, or be able to move underground It is desirable to create a partition with soil or concrete, or be able to move underground

Like I said, don't stare at the flash as much as you can. Like I said, don't stare at the flash as much as you can.

You may not see it, but people are tempted to see it.

Open your mouth so the pressure doesn't rupture your eardrums Open your mouth so the pressure doesn't rupture your eardrums

If you were near the explosion, hide under something If you were near the explosion, hide under something

Like Bert the Turtle, you can protect yourself from falling objects Like Bert the Turtle, you can protect you from falling objects

Get out of the mushroom cloud within minutes Get out of the mushroom cloud within minutes

Move downwind or vertical about 2km Move downwind or vertical about 2km

The building is collapsing in this direction The building is collapsing in this direction There is little damage here.

Once you evacuate, cover your skin, mouth, and nose to the extent that it does not interfere with evacuation.

And finally, decontaminate as soon as possible.

Remove your clothes and take a shower to remove harmful radioactive substances Remove your clothes and take a shower to remove harmful radioactive substances Remove your clothes and take a shower to remove harmful radioactive substances Remove your clothes and take a shower to remove harmful radioactive substances

Then wait in your shelter for at least 48 to 72 hours with hope in your heart Then wait in your shelter for at least 48 to 72 hours with hope in your heart If you have a battery-free handheld radio, wait for an announcement that it's safe to leave If you have a battery-free handheld radio, wait for an announcement that it's safe to leave This is what we should do

In conclusion, nuclear war is less likely than it used to be, but don't underestimate it.

Nuclear terrorism can happen, but you can probably survive Nuclear terrorism can happen, but you can probably survive

He's a Jack Geiger American public health hero He's a Jack Geiger American public health hero

According to him, the only way to deal with nuclear war or nuclear terrorism is to abolish nuclear weapons.

Once global warming is over, there's something I want you to do.

This is my favorite civil defense poster. (Laughter) This is my favorite civil defense poster. (Laughter) I won't say more, but he's retired.

This was sent to me by a fan of civil defense law This was sent to me by a fan of civil defense law As a matter of fact America has been through very difficult times As a matter of fact America has been through very difficult times

We haven't done what we should, and now we're facing the possibility of seeing hell, and now we're facing the possibility of seeing hell.

thank you

Poop This is definitely the final design of the animal

(Laughter) And here's why I wrote this: Last year, my wife and I took a road trip through Africa with a wonderful guide.

Around 1880, missionaries came to Africa and taught Christianity and English to the natives.

they brought blackboards and chalk

For example, if this is a blackboard, write something with chalk like this

they brought a lot

A few years later, the chalkboard is fine, but the chalk is gone.

it's important to them

Here comes the hyena

The hyena is probably the most perfectly engineered carrion-eating animal in the world.

They have strong teeth that pick up carcasses. They eat bones with these teeth.

The result of eating is used on the blackboard

Missionaries would walk around and collect hyena poop.

Because hyena poop makes good chalk.

(Laughter) It's not about this, it's about fascinating animal shapes.

Today we will talk about camels

I consulted with Richard about the topic of my speech, and I recently went to Jordan, where I had an amazing experience with camels.

(Laughter) I was in the desert...

(Richard) That's the end of the story (Keith) I know.

I was driving in a jeep through the desert of Wadi Rum

With 2 nomadic drivers and a total of 4 people

Imagine running across a vast ocean of sand, temperature 40 degrees, one bottle of water

they said while driving

This jeep didn't look sturdy to me.

When I started driving through the desert, my jeep broke down.

The guide got out, opened the hood, fixed it and fixed it.

However, it broke down again after running 90 meters.

I repeated this six or seven times, and as I became more and more anxious, I proceeded into the depths of the desert.

And finally, the worst happened: overflow.

They say "I can walk without problems"

I was surprised

Only one bottle of water for four people

They said, "Okay, I'll find a camel."

We got out of the car and walked, we walked 800 meters, and when we got to the top of the hill, there were a lot of nomads and camels.

A guide made a deal with them and got four camels for $10.

I rode a camel that stooped like an elevator

Each of the four nomads whipped behind a camel.

A whip on the back sets the camel off, and the camel starts running at full speed.

Have you ever ridden on the back of a camel? It's very uncomfortable

This camel has a characteristic

Every 10 steps, it looks back and tries to bite the rider's leg.

(Laughter) The further I go, the more I try to bite my leg.

After five kilometers, we'd reach our destination, and there was going to be a jeep.

The camel stooped like an elevator and we got off awkwardly and tried to bite my leg again.

I had a wonderful relationship with my camel by this time, and I realized that this creature was a jerk.

Much more rude than the nomads who welcomed me and tried to force me to take one of their 26 daughters to America.

I said to Richard, "Let's bring the camels.

It's an animal with outstanding characteristics in the world."

He said, "What is it like to bring a camel?"

I think it's really good that you didn't bring me

as a compromise

I went to the Washington Zoo

Richard said, "Go near the camels and make friends.

Observe the mouth and teeth

Climb down, climb up, look at the whole camel

Lift your tail and look over there

I want you to go as close to the camels as possible."

Take the staff of National Geographic

went to the zoo

It is a camel in estrus that weighs 900 kg.

(laughs) Have you ever seen a 900kg camel in heat? It's scary just to look at it

Richard thought I was going inside the camel fence, but you're insane.

(Laughter) I just got as close as I could. Let's watch the video together.

Chris, can you pass me by?

After that, I'll tell you more about the characteristics of camels.

Are you ready?

(music) (video) This is Keith Bellows, TED's National Geographic Camel Research Division.

Investigate the ultimate desert animals

(music) I'm chewing gum because I've been around camels all day.

(Video) All right no

(Keeper) I'm so excited

Be careful not to be attacked

You can see a lot of saliva

Call me Unstable Stable Boy

Your nose is wide now, isn't it?

During the estrus period, the nose becomes like a fur seal, and when it breathes, it opens.

It is a mechanism to consciously open your nose and breathe

(Keith) Ears?

(Keeper) I have small ears, but I have good hearing.

For example, a zebra's ears are large and mobile, so they can be turned backwards.

Works like binoculars

Accurately grasp the direction of sound

The desert is not only windy but also very cold.

Not only do I have long eyelashes, but I also have something like a second eyelash...

have long hairs above and below the eyes

There is a tendency to think that bumps contain water.

it's actually fat

I'm not a chemist, but to explain, breathing oxidizes fat.

It becomes water that is useful for the body.

Walks on its toes like many predators

You have a big pad of fat to crush.

I'm playing the role of sandals

It doesn't have typical hooves, but it does have what looks like large claws.

(Laughter) You can't see very well with all the hair.

I often use the tail during the estrous period

They urinate while rotating their tails.The urine scatters.It is said to look attractive.

I don't know why, but it's a camel's habit

what is it

(Laughter) And then you have to defecate in a specific place.

Normally they do it anywhere, but during the mating season they have a place to defecate.

Have you ever heard an elephant's subaudible voice? It's a buzzing sound

Camels also make loud rumbling noises

enough to vibrate

weigh the animal

This camel was very aggressive and broke several scales.

I've weighed big animals like bison.

A bison would be at least 720 kilos

But I think this camel weighs 900 kilos

A camel is basically a walking "sawdust pile"

we're both friends and we're both men

(Keith) Are you seen as a rival? (Keeper) That's right.

this time is dangerous

Be quiet, be quiet!

Another camel... come on!

Get out! Get out!

Hey

Get out!

(music) (applause) We cut some parts out of the video.

Maybe I shouldn't have shown you

An interesting feature of camels is that their penis is facing backwards.

When urinating, it drips urine down its tail and spreads it over a wide area.

This is how you spread your territory

And I didn't show you another one, but there was another camel next to me.

Jasmine was next to me.

Jasmine is Suki's partner from time to time

But this time, apparently, Jasmine didn't comply with Suki's request.

we thought

Poor Suki wondered how she would find a perfect match

i will show you another video

But before that, I want to say that camels are like SUVs in the dunes, like ships in the desert.

It's important to people living in camel communities, mostly in Mongolia and the Sahara, and there are 160 Arabic words for camels.

If camels were designed by humans, that would be respectable.

Let's look at Suki's partner search

Are you ready?

A camel looking for a lover A hardy animal seeks an attractive and loyal mate

2 meters tall, weighs 900 kilograms, has brown hair and eyes, long legs, and looks great

I'm Ted Camel

perfect desert machine

excellent features

The third eyelash acts as a wiper to keep sand out of the eye.

Larger Nostrils Keeps sand and dust out of the nostrils and retains moisture

I can eat anything that grows on my thick lips

Knee bumps provide a cushion when bending over

Chest pad protects against heat

Short hair avoids hot skin

Escape heat with long legs

Cobb?

Poet Ogden Nash said One camel hump Two dromedaries Or maybe vice versa I've never been so sure Are you?

Hint Bactrian camel is B

Dromedaries are D

My hump stores 36kg of fat but no water

have endurance

I'm reliable when the oasis is dry

Do not sweat until your body temperature reaches 40.5 degrees 40% of your body weight

drop without dying

(Most animals die at 20%) drink 19-26 liters of water per day

But you can live without water for a month

powerful

carry 180 kilograms of luggage

faster than a horse travels 42 kilometers a day

in the Kennedy era

Jacqueline Kennedy said elephants travel like jet planes compared to camels.

But my big soft legs are perfect for walking in the sand

(This is why nomads say I can dance?) I'm very useful

Nomads regard the camel as a "gift from God"

That's right

Tents and carpets are made of my hair

Dried bones are as valuable as ivory

Feces for fuel, milk for cheese

A nomad said, "The camel is an angel"

(Applause) Thank you. One last thing, let me say something important to close.

They're constantly adapting to their environment, and if you look at the animal world, in general, the human animal is very blessed, because

Because you don't have to adapt, and you can see how wonderful it is.

We adapt the environment, rather than they have an environment to adapt to.

We've learned that through Ted, they have to adapt.

Thank you for calling me Richard over the years.

This animal I introduced

it was great thank you

We must put the best within reach of our children

Otherwise the next generation will pay

Children will learn from whatever is around them

We are all challenged, whether we are elites, parents, librarians, professionals, to pass on our knowledge and abilities to the widest possible reach of the children around us.

I'm going to start and end this story with words carved in stone.

One is in the Boston Public Library.

Engraved on the door is "free for all"

That's an inspiring quote. I'll talk about that later.

I'm a librarian, and what I'm trying to do is give as much knowledge as possible to as many people as possible who want to read it.

Using the latest technology is perfect for this purpose.

I think it's a good opportunity to get ahead of the ancient Greeks.

The Greeks were not easy to beat.The Greeks were able to use the industriousness of the Egyptians to build the Library of Alexandria with the ideal of collecting all the books in the world.

The problem is that I actually had to go all the way to Alexandria.

If you go, there is a wonderful discovery

I think we can do something ahead of the Greeks.

One thing I want to make today is that all knowledge is accessible to everyone.

If this speech succeeds, you'll come to believe that the wonderful vision of making everything ever published and distributed accessible to everyone in the world is actually achievable.

Of course, there are issues that need to be resolved, starting with how the money should be distributed.

But I think there's enough money and enough demand that we can do it.

I would like to summarize where we are technically, socially and collectively in achieving this vision.

So, following the example of Amazon's website, I'm going to break it down into genres like books, music, and videos, and tell you what we're doing right now.

Let's start with the books. What is the situation now?

First, as an engineer, let's measure the problem: how big is it?

How big would it be if you put all your published works on the Internet for everyone to access?

We don't know, but the largest library in the world is the Library of Congress, which holds 26 million volumes.

It's much bigger than any other library in the world

One book is about 1MB In the case of Microsoft Word

26 million megabytes is 26 terabytes memory goes from mega to giga to tera

Twenty-six terabytes fits into a computer like this, and with Linux it's about $60,000.

It's about as expensive as buying a house. Well, maybe a garage around here, where you can store all the books in the Library of Congress.

it must be amazing

The question is what do you get with this

Is it worth trying?

Should it be digitized?

One of the things that we actually started with was allowing readers to search inside the book, and that's pretty fun.

Downloading them gives you a new and different way to read the book.

If you have a laptop, you can read books even when you are away from the Internet.

There's an interface where you can turn the pages just like a book, and you can search the contents of the book, add bookmarks, and do all sorts of interesting things.

Well, reading works on a laptop is a little... because using a laptop feels like work.

That's why I think the Kindle (e-book reader) is amazing.

Read on your Kindle without feeling like you're working

Because you are limited to reading more

But I personally prefer old technology.

I prefer real books

So I digitize my work, put it on the Internet, and then I download the books I like, print them, bind them, and make them into books again.

How difficult is that?

It wasn't that hard after all

we made a mobile bookstore

Mobile bookstores are the size of vans with satellite dishes, printers, binders and cutters so kids can make their own books.

For three dollars, you can download it, print it, and bind it into one normal book.

can actually look pretty good

You can make a really nice book with a material cost of about a penny per page.

EnglishThe idea of ​​this technology may actually be putting books back into people's hands.

Some mobile bookstores are already in operation.

He's Eric Eldred, at Walden Pond, and he's making a book about Thoreau's work.

This is a picture of me before I got into a fight with the park bookstore and was kicked out by the park manager.

There are several mobile bookstores operating in India.

This is the opening day at the new Library of Alexandria in Egypt.

was very popular

Children making their own books Children happy with their first book

The idea of ​​using this technology to create a paper book that you can actually hold in your hand might sound a little retro, but I think it's still useful.

We're from Silicon Valley, the Utopia of the world, so to speak, but I think it would be amazing if this technology could be used in rural Uganda.

We were able to get funding from the World Bank to try it out.

And within 30 days, they sent two people from Silicon Valley to Uganda, bought a car, connected the internet for the first time in Uganda's National Library, searched for books that Ugandans wanted, and implemented a plan to make books in rural Uganda.

technically it worked

So what we've learned is that the right books haven't been digitized yet.

Books are in libraries, and if they're digitized, they can reach people, but I didn't know how to digitize them.

Everyone thought, send them to India or China.

we tried it, we'll talk about it later

An exciting new technology for binding books has also recently emerged.

One of them is a machine that prints custom books, similar to the Rube Goldberg machine.

we have one it's really cool

The machine is a conveyor belt that can make books.

Say, "Espresso book machine," just press a button and you'll have a book in less than 10 minutes.

Aside from kiosks where you can make a book on demand, the other thing that I find interesting in this area is the new little screens that have come out recently.

My favorite is the $100 laptop

We're not trying to steal your stock, but we turned one of them into an e-book reader.

It's just a prototype... but it turned out to be a pretty cool e-book reader

If you take our simple method of importing a book into a PC, 200 dots per inch on the screen, 200 dots per inch,

Equivalent to 300 dots on a laser printer

enough to read

You can actually read digitized books easily

The e-book dream is about to come true

But how do you digitize a book?

So we thought, yes, let's send the book to India.

This project was supposed to get funding from the National Science Foundation and send a bunch of scanners to India, and the American libraries were supposed to send books.

I didn't get it. They didn't want to send me the book.

So we bought 100,000 books and sent them to India.

And now I know why they didn't want to send the book to India.

What this experience has taught me is that we should digitize books ourselves.

People who love books scan them cleanly, especially valuable books.

If it's a new book, it doesn't matter if you take it apart to facilitate high-quality scans, you can buy it again.

All you have to do is scan a book you like

Indians are scanning a lot of their books, now about 300,000. It's working.

The Chinese have more than a million books, and the Egyptians have about 30,000.

So I figured if I was going to do it anyway, I'd do it in the library.

what should i do How can we bring the cost down to an affordable price?

And we set the price at 10 cents a page.

I thought it would be a big deal if we could digitize the book, do the optical character reading, put it together, and let the customer download it, print it, bind it, and do it all for the same price as a convenience store copier.

So I started figuring out how to do it for 10 cents.

So we tried the robot, and the automatic page-turning robot did a decent job.

Mars Rovers are active on Mars, so I thought it would be easy to turn the page.

It's surprisingly difficult to turn the page, and we don't have enough robots.

Anyway, we decided to build our own book scanner, using two high-end professional digital cameras and museum lighting, so that even black-and-white books would look great.

Anyway, I did a clean and polite job

This isn't a fax machine, so it's important to take good pictures of these collections.

We could actually do it in bulk at 10 cents a page.

This is what it looks like at the University of Toronto

You can actually make a living out of this

some people love this job

Yes, it's kind of boring, but some people go into zen mode.

(Laughter) It's fun, especially when it's an interesting book you like, written in your own language.

We could actually make a great book for 10 cents a page

At 10 cents a page, the average book is about 300 pages, and a book is $30.

The entire library of Congress has 26 million volumes, so that's $750 million, right?

But let's say you aim for 100,000 books. . . I think that's a good start, but it costs $30 million, which isn't very expensive.

and we were able to get permission from the library

We have eight scanning centers in three countries, and libraries let us scan our books.

This Getty library is moving books to UCLA, where they have one of our scanning centers that let us scan out-of-copyright books, which is great.

It has come to be entrusted with the benefits of public facilities

Only 10 cents left

For that dime, everything else works fine.

We have scanned about 200,000 books so far.

Right now, we're scanning about 15,000 books a month, and now we're going to be able to scan twice that amount.

it's working well overall

And our focus has shifted from out-of-print books to out-of-print books.

We are from the world of expired books Amazon is from the world of published books

I think we can get closer to each other, meet somewhere in the middle, and have the traditional publishing system and the library system work together.

We decided to work on an out-of-print work, but we decided to rent it out.

I don't know exactly what you mean by lending out digitized books.

But anyway, I've been lending out-of-print works from the Boston Public Library, the Woods Hole Oceanographic Institute, and several other libraries that are participating in this program, and using them as a model for figuring out where the library ends and where the bookstore begins.

In general it is possible to scale

We're also finding microfilms and putting them online.

So we're scanning 15,000 books a month at 10 cents a page, and we're currently putting 250,000 books online, including new projects.

My point is that all books are within our reach.

It's not that hard of a challenge to access all the books.

Yes, tens of millions of dollars, maybe hundreds of millions of dollars, but once scanned, we basically have the entire history of the literature online.

So there's the business model problem of how to effectively reach people.

But we believe that it's in our hands, at least for out-of-print and out-of-copyright books, to technically and legally put all the literature online.

Now let's talk about audio.

How much audio will there be?

As far as we know, two to three million discs have been published, including 78 rpm discs and records and CDs, and at least the largest published archive we've found is about that size.

At a high volume, it costs about $10 to put one disc on the Internet.

But I found the copyright issue to be very difficult.

It's a hotly contested field in the courts, but it turns out that there are subcultures within the music world that aren't satisfied with the traditional commercial publishing system.

By providing a home on the Internet, we expose our subcultures.

Donating is free in America, right?

If you donate to a charity or a community, you'll get compliments and tax deductions, but in the Internet world, you could be bankrupt.

You put your band's video on the Internet, and it gets a lot of viewers, and it's very expensive to maintain the site, and you risk losing your guitar and your house.

it doesn't make sense

That's why we're offering unlimited storage, unlimited capacity, free of charge, to everyone, forever, for all the music worth having in the library.

has many users, especially rock and roll musicians

In rock'n'roll, there's a tradition of giving away music for free, unless it's for the sake of making money. It's a concert recording, not a recording for sale. It's a practice started by a band called The Great Fool Dead.

There are 2-3 band registrations per day

The band gives us permission, and we get about 40 to 50 concert recordings a day.

There are about 40,000 concerts on our site, including all the Great Fool Dead productions, for anyone to watch.

Audio is put on the Internet, but copyright issues are difficult.

We've collected a lot of works, hundreds of thousands, more to come.

What about the video? When it comes to movies shown in theaters, there aren't that many.

As far as I know, there are only 150,000 to 200,000 films made for big box distribution, not that many.

and half of them are indian movies

Anyway, we can do a video, but only 1,000 have passed the copyright deadline.

We digitized and published 1,000 of them.

But we discovered that there are many video genres that never saw the light of day.

Documentary films, political records, amateur films, etc., all of which need a place to be stored permanently.

We started releasing films like that, and they became very popular.

not like youtube

We're focused on archival films and films that people can reuse to make new films, and that's a lot of fun.

On the other hand, the volume of television programs is very large.

We started recording 20 channels for 24 hours.

It's like the world's largest recorder.

A large volume of TV news from around the world, as large as a pedobyte Russia China Japan Iraq Al Jazeera BBC CNN ABC CBS NBC 24 hours a day

For cost reasons, only one week of videos has been released. That's one week from September 11, 2001. What has the world seen in the last week?

CNN reported Palestinians dancing in the streets

Is it true? Watch Palestinian TV

How can we think critically without citing and comparing past events?

Television is virtually unrecorded, so I can't cite it, except for John Stewart, who does a great job.

Online storage for TV is possible anyway

Video is about 15 dollars an hour, celluloid film is about 100, 150 dollars an hour, and we can put this material on the internet very cheaply.

And now I've got a lot of material like this

And I was able to put about 100,000 works

In other words, a book, music, video, software with only 50,000 is likely to be possible.

The big problem is copyright issue and removal of copy protection

We've overcome a lot of those problems, but we still have big problems in Washington.

We are best known on the World Wide Web

Recording the World Wide Web since 1996

We make copies of all websites every two months

In fact, it was pioneered by Alexa Internet, who donates a copy of it to the Internet Archive.

It's grown over the last 11 years and is a great resource.

We also built a "way back machine" that allows you to view old websites from back then.

Let's do a search, here are some versions from Google, this is an alpha (prototype), and here's what it looked like in Stanford.

anyway you know the history of the website

Most people want to see their old website

The lesson we learned from the notoriously burned down library of Alexandria is that one copy isn't enough.

We made a second copy and kept it in the Library of Alexandria.

Here's a photo from the Internet Archive of the Library of Alexandria.

We are making another copy in Amsterdam

And let's put three copies in San Francisco's San Andreas Fault, Amsterdam's Flood Zone, and the Middle East.

Well, I'm avoiding danger anyway.

A few more copies and that should be enough.

This program has political and social problems.

Will they become public or private as digitization progresses?

The big companies that have seen this vision are also going digital at scale, but they are monopolizing public property.

The question is, is this the world we really want?

What will be the role of public and private facilities?

How do we create a world where both libraries and publishers co-exist, as we have benefited from it?

Universal access to all knowledge could be one of humanity's greatest achievements, like going to the moon or Gutenberg's Bible or the Library of Alexandria.

It could be an achievement that people will remember for thousands of years.

As I said earlier, I'll end this story with the words carved on the door of the Carnegie Library.

Carnegie, one of America's great capitalists, carved this into his legacy: "Free for all."

thank you

The first thing I thought when I found out I was going to talk here

My mother is Cuban and this size

120cm The sculptural part is bigger

Are you talking? (Laughter) I called my mother.

"How are you doing?"

"Mama, do you have something to talk about?"

"I'm talking to you right now, what happened?"

"Speaking in front of good people"

"It's always been that way, except for the White House."

(smile)

So when I said I was going to TED, I said, "What's wrong?"

"I don't know."

"I'm talking about stories, and TED is—

It's technology, entertainment, and design." And my mother said, "Design tells stories, entertainment tells them, and mics are technology."

(Laughs) "Mommy, don't you have a daddy?"

"What's overflowing from my lips—you're not satisfied with the good knowledge?"

(Laughter) So I took over for my dad.

My dad's a smart man, he's Cuban from Camaguey

Camaguey is a province of Cuba

My father is from the city of Florida in that state.

Father was born in 1924

I grew up on the dirt floors of Bohio, built like the Taino people, the ancestors of the Arawak, used.

My father was quick-witted and mischievous, but suddenly turned sharp and made people nervous.

"Daddy help me"

"I heard your mother is right."

(laughs) "That's all the advice?"

my father knows me well

After we talked a little bit, my father said, "Why don't you tell me what you believe?"

That would be nice, but I don't have enough time

A good storytelling is making up a story that someone wants to hear

A great story is about the art of letting go

So today I'm going to talk a little

The tradition of storytelling began long before the age of the mists of Avalon, before the days of carving tales on papyrus, before the days of hieroglyphs on damp cave walls.

Back then, I had the urge and desire to tell stories

Lexus will talk to you when they want to sell you a car.

did you see the commercial?

That's because everyone has a desire to tell and hear something just once, just once

There is also a story to tell from the stage

Over a glass of wine with some people - some stories are told

There are stories I tell my friends late at night Maybe only once in my life

And there are stories whispered in pitch darkness

I'm not going to talk about that today.

what i talk about

"You'll miss me without me"

It's about connecting with people.

About my Cuban mother, which I mentioned briefly earlier, she came to America a long time ago.

I was born...19--what year was it? My family came to this country right after the Cuban Revolution.

From Havana, Cuba to Decatur, Georgia

Decatur is a small southern town in Georgia.

I grew up in that town, listening to stories

But I'm going to tell you a story that happened a few years ago.

I called my mother

that was saturday morning

I want to know how to make the Cuban dish ajiaco

This is delicious and smells good

You're drooling, you know? I feel like my armpits are sweating

that kind of food

Ladies and gentlemen, this is the emotional part.

My mother answered the phone and said, "Come on, Carmen.

I'm going to the mall and my dad is taking a nap

But I have to go shopping."

I'm just going to give you an explanation. My mom, Esther, stopped driving a few years ago, and everyone in Atlanta was relieved.

For a long time, when I went out in the car with my mother, the police car lights were always there.

But over time, my mom learned how to dodge the cops, and when we ran into them, we had a great relationship.

"Did you notice the signal?"

(Spanish) "Do you speak English?"

"No"

(Laughter) Sometimes it worked, but in the end -- it ended up in the traffic court, and my mom negotiated a discount with the judge.

has become a historic event

My mother is in her 70s and stopped driving.

That means that from now on, someone in the family will be picking her up from dyeing her hair. That blue color that matches her polyester pantsuit, you know, that color of a Buick.

Anyone know?

Pants with scars here and there from the needle when embroidering

Lockport shoes for this move

That's why it's called

(Laughter) That's what my mom looks like.

My mother says to come on a busy Saturday morning, but Cubans have a heavy sense of guilt, not in a political sense...

anyway i went to my mom

I went and my mother was in the carport-

the family carport

It's the one with the corrugated roof.

There was a Buick, and my mother was jangling her keys.

"Surprising news!"

"Are we going in Mommy's car?"

"Me, not us"

And my mother reached into her pocket and pulled out a "catastrophe"

what do you mean?

I took out a perfectly valid driver's license

Issued by the Gwinnett County Department of Motor Vehicles

stupid bastard

(laughs) "Is that real?"

"Is it real?" "Yes."

"Can you see it, Mom?"

"OMG"

My mother got in the car and sat on top of two telephone books.

Mother is really that small

My mother cleverly used an umbrella and slammed the door shut.

I put a cone of popsicles in the middle of my forehead - I stood with my mouth wide open like an idiot

"Are you coming? Are you not coming?"

“What should I do…does dad know how to drive?”

"No way." "So what happened?"

"No way." "So what happened?"

“Even he sleeps sometimes.”

And we left my father, who was sleeping soundly, and got into the car.

Put it in reverse gear and hit the road at 90km

I fastened my seat belt in the front seat—

Pull from the back seat and fix with double

The inside of my mouth is like the Kalahari desert

The hand that grips the door is in a cold sweat, right?

My mom is whistling and I'm just trying to -- how to breathe in childbirth... you know?

Some women's faces saying "I know, I know"

"Mama, can you slow down?" Now my mother is driving on Highway 285.

"Mama, can you slow down?" Now she's driving on Highway 285 There's seven lanes around Atlanta now--She's on all lanes

"Mom, choose your lane!"

"There are seven lanes, so you can use them all."

so you're using it all

It can't have been stopped by this driving

So I thought, let's have a chat

maybe my shortness of breath and heart palpitations will subside

"Mom, you must have stopped me."

"What are you talking about?" "How long has it been since you got your license?"

"What are you talking about?" "How long has it been since you got your license?"

"Four or five days."

"So you haven't been stopped yet?"

"So you haven't been stopped yet?"

"Yeah, yeah... but what's really going on?"

"I stopped at a traffic light and there was a man standing behind me."

"Could it be that person in the blue uniform—had a frightened look on his face?"

"I didn't see it"

"Hey, you got a ticket, right?"

"That's not true." "That man..." I'm going to say exactly what my mother said... "A man comes to the window and does this. It's a signal for older people, isn't it?"

"So I thought he might still think I'm cute" "So I thought he might still think I'm cute"

"Are you still doing that?"

"It's time to go

So when I tried to speak in Spanish- I heard that he used to live in Honduras and he is fluent in Spanish! ”

(Laughter) So I think I talked to my mom, "But that's it."

"Is that so?

Were you ticketed? didn't you get cut? ”

"No, I looked up and the signal changed."

(Laughter) It would be horrifying.

Was my mother teasing me?

Have you ever been to a mall on holiday?

do you have? yes say yes

Audience: Jesus

So you know that parking hell, praying to find a space - joining a line of cars as long as a snake Just before you go, a parked car next to you - trying to get out

But that doesn't happen very often, does it?

"Mommy why are we here?"

"You mean in the car?"

"No... why are you here today?

Saturday will be my day off."

"I'm here to change your father's underwear."

The way of thinking that does not stop at any means for the purpose - I'm sure it's in her head - It's like a labyrinth.

If it weren't for Ariadne's Guiding Threads—is that a good analogy? ...it's a place you can't leave

But look

(Laughter) "Why do we have to change Daddy's underwear today?

And why? Any problem with your underwear? ”

"If I tell you, you'll get angry."

"I won't get angry, so tell me why? Papa's problem?"

"No no no my dad is just stupid

I made the mistake of letting him go to the store, I bought some briefs—I should have bought trunks.” I bought some briefs—I should have bought trunks.”

"Why?"

"I read on the Internet that you can't have children."

"What's that!"

(laughs) Olivia? don't you

About a meter forward, my mother said, "Okay, okay.

Immigrants create vacancies, look here."

I looked in the direction my mother was pointing, and it was three rows ahead. "Look at that Chevrolet."

You don't know what's funny - you're right

I will explain

"That Chevrolet is coming"

"Mom wait, the Chevrolet isn't even three rows ahead."

My mother looked at me and told me to be a fool, slowly and clearly.

"I know, so get out of the car - and stand in the parking space until I go."

Now I want to make a decision

Have you ever stood in a parking space for someone else in your life?

A secret club was formed.

(Laughter) After a few years of therapy-

we're fine

so i rebelled against my mother

I'm already... I'm old enough

"I don't want to feel embarrassed because of my mom."

The answer, of course, was, "When did you embarrass me?"

(Spanish) My mother stopped the car while she was talking and she pulled the parking brake and opened the door.

Mother walks fast for her age

Before I knew it, my mother was skipping through the parking lot, and from the car behind me was the holiday horn of charity.

I hand signal "I'm leaving now"

I left the phone book alone and hurriedly closed the door.

I wonder if it's a little early... Are you following the story?

wait for someone who is late

When I start the car, my child says -- I'm sorry to start with this, but this is my quiet daughter.

everything is a simple girl

I eat very little—

Even words are made up of tiny phonemes, like this... hum hum hum...

she carries a notebook and pen

exercise great power

And listen like a storyteller does first

But sometimes I stop like this, "What's the spelling? What year? Alright."

If this kid writes a tell-all book in 20 years - don't believe anything.

This is my daughter Lauren she's a wonderful girl she has borderline Asperger's

Thank you Dr Watson

"Mom look!"

This kid says so I have to see

But I've seen scenes like this before

I grew up with that woman

"Lauren, then broadcast live."

"No Mama Look"

I have to see

would you like to see

there was my mother

I saw it with puzzlement and terror.

Clutching a cheap handbag and wielding power

My mother keeps tons of steel in check with just the power of her personality The voice that comes from there goes something like, "Stay back! It's reserved!"

(laughs) Okay, are you ready?

"My daughter is coming in a Buick.

Sit up straight so I can see you."

oh god help me

Finally arrived... and this is a southern town

I don't know where you are from-

I think everyone really loves stories.

In my heart, I'm curious like a child

"So? So? Hey, tell me," I just don't want to say

"So? So? Hey, tell me," I just don't want to say

It's always a blast in the South

People park their cars, get out, get out of the parking lot lines, get chairs and drinks out of the trunk

It's my first time to bet

"I'm sure that little aunt will win!"

(Laughter) My mother greeted me with a salsa move.

I'm Cuban

I say "accelerator brake accelerator brake"

Have you ever thought about it?

I parked my car in the parking lot

Even if the car stops, my engine keeps running

When I told my daughter, "Don't move here!"

"Never move"

I'm watching the tragedy from the front row

When I get off the car, there's Esther

I said with my handbag

"Ke?" This has various meanings besides "what"

(Laughter) "Mom, aren't you ashamed?

Everyone is watching."

Well, sometimes you need a made-up story, too.

that's the secret

I've added a few touches to this story, but-

Some parts are exactly what happened

my mother actually said

After I... said, "Mom, aren't you ashamed?"

"Shame I threw away with my pantyhose, both are cramped"

(Laughter) (Applause) You can clap, but it's over in 30 seconds.

At that time, someone tapped my disheartened shoulder

you are a brave man

"Oh, I told my daughter no

I got out of the car," I thought.

It's okay my mother tells me I yell at my daughter

This is a hierarchy that works beautifully

(Laughter) When I turned around, there was a young woman taller than me with happy pale green eyes.

I was with a young man. Husband, brother, girlfriend, it doesn't matter to me.

In a southern way he said, "Excuse me ma'am - is that your mother?"

"No, I just followed the old lady in the parking lot—yes, my mother!"

Then a young boy said, "What the sister meant was, and as it turned out they were looking at each other... 'That lady is crazy!'

(Spanish) I said to my mother, and the two young men said, "No, I just want to ask you one more thing."

I said, "Excuse me. I'll do something about it. She's like a little nuclear weapon. You have to be very careful."

Then the woman said, "Well, she's just-- she really looks like our mother."

I almost missed hearing

When the man also turns to his sister

I said in a half whisper, "Oh I miss you mama"

Then they walked off shoulder to shoulder - dreaming

It must be the memory of a maddening woman created by a DNA match

Looking back, Esther rocking in Lockport's shoes, "Do you understand?"

"What is it, Mama?"

"If you're lucky, I'll take care of you for another 15 years—but after that, you'll miss me."

(applause)

School lunches are a matter of social justice

I'm the Director of Food and Nutrition at Berklee Unified School District.

I make 7,100 meals a day, and I've been doing this for two years now to change the eating habits of American children.

This is what I want to talk to you about today.

Look at these kids and the salad bar

When I took charge of this precinct, the first thing I did was set up a salad bar.

Fail Small children don't use salad bars

I was told that big kids spit, but that wasn't the case at all.

When I took the job, I had to think hard about what my vision should be.

How to change the relationship between children and food

I'm going to tell you why we need to change.

What I am keenly aware of is that we should teach our children a symbiotic relationship between a healthy planet, healthy food, and healthy children.

And if we don't, it's the other end of the spectrum, and as others have said, it's going to lead to the extinction of the human race, because we're feeding our children the kind of food that kills them.

this is my theory

Children are getting sicker and sicker

The main reasons for this are the modern food system, the government's treatment of food as a commodity, and the way the government monitors food, and the USDA feeds children unhealthy food and puts unhealthy food in schools.

And we all implicitly tell our children, our grandchildren, our nieces and nephews, to go to school and learn what we can give them.

If you give them unhealthy food, they will learn that, and that's the problem.

It's because of the agricultural industry that this happened.

Most people in this country no longer make their own decisions about what they eat, because big companies like Monsanto and DuPont, who developed defoliants and stain-free carpets.

Controlling 90% of seedlings on the market in the country

These 10 companies control most of the food in the supermarket, control most of the food, and that's the big problem.

After thinking about how to change the diet of children, including this issue, I started to focus on the education of children.

The first thing I taught them was the idea of ​​eating locally grown food.

Fossil fuels -- you know, a lot of things are happening -- we're in a period of decline, and now that oil has peaked, the real question is, should we ship food, 1,500 miles to the table?

I've told my kids about it, and they've started serving local produce to their meals.

I'm also telling you about organic vegetables.

In most school districts, organic vegetables are too expensive to afford, but as a country we have to think about consuming, producing and feeding chemical-free food to our children.

Don't keep feeding your children pesticides, herbicides, antibiotics or hormones

i have to stop

It only has bad effects.

As a result, children are sick.

My emphasis now is on antibiotics.

70% of antibiotics in America are consumed in the livestock industry.

We give these antibiotics to our children every day through beef and animal protein.

70% that's an unbelievable number.

As a result, disease is spreading.

Even if children are infected with E. coli, which is resistant to antibiotics, there is no cure.

Antibiotics have been overused for a long time and are a problem in our food supply.

Look at this fact: U.S. agriculture uses 1.2 billion pounds of pesticides each year.

That's the equivalent of five pounds of pesticides per person, a typical five-pound bag, and if you break it open, you'll end up with this pile of stuff. We consume this amount every year and feed our children in America.

The USDA has approved the use of these antibiotics, hormones and pesticides in food production, and this was also advertised in Time magazine.

There's a lot of debate about Rachel Carson and DDT, but DDT was certainly harmful.

This is what the USDA is doing

this is something that should change

The USDA should abandon the notion of absolutes, whether it's what we feed our children or what we're allowed to do.

I don't think they are doing their best for the people.

At the other end of the spectrum is sustainable food.

I want people to understand this

Efforts to teach this to children are most important

By consuming these foods, we can keep our planet safe, our children healthy, and help mitigate the negative impacts we're seeing today.

This idea of ​​sustainability is new

People often talk about it, but we should be clear about what sustainability is.

In less than 200 years, in just a few generations, we went from 100%, 95%, to less than 2% of farmers.

There are now more prisoners than farmers in this country, 2.1 million prisoners and 1.9 million farmers.

And an average of $35,000 is spent on each prison inmate each year, while school districts spend $500 a year on food for each child.

I wouldn't be surprised if there were so many criminals.

(Laughter) People are getting sick as a result.

Both adults and children are sick

it's because of the food

We are the result of what we eat

we are what we eat

If we let it go, if we keep feeding our children unhealthy foods, what will happen if we don't teach them what healthy foods are? What do you think?

What impact will it have on the health care system in this country?

The answer is this: children's lives will be shorter than ours.

According to the CDC, among children born in the year 2000, children aged 7 and 8 today, 1 in 3 white children and 1 in 2 African American and Hispanic children will develop diabetes in their lifetime.

He continues by saying that most children do this before they graduate from high school.

This means that 40 to 45 percent of school-age children will become insulin-dependent, and within the next decade.

What will happen?

And according to the CDC, children born in the year 2000 may be the first generation in our nation's history to live shorter lives than their parents.

it's because of the food

Eight-year-olds can't choose what to eat, and if they do, it's the parents who have a problem.

We have to take responsibility for our children's diet.

But hey, maybe it's those people who are to blame.

Big corporations spend $20 billion a year advertising unnutritious food for children $20 billion a year

Most kids end up seeing 10,000 ads

The ratio of $500 to $1 spent on advertising: $500 spent on foods that children shouldn't eat $1 spent on healthy and nutritious foods

As a result, children believe that if they don't eat chicken nuggets, they will die.

I think I have to eat as much as possible

That's the USDA's per capita amount, that lowest amount.

The amount over there that looks bigger than my head is the amount that big companies like McDonald's and Burger King do.

How is it possible to produce that much?

Why can you buy an oversized drink for 29 cents and a double burger for 99 cents?

The problem is that governments treat food as a commodity, pushing cheap corn and soybeans into the food industry, which creates nutrient-poor food at a very low price.

So this is a question of social justice.

Now that we're doing this in the Berkeley area, some of you might be thinking, "Oh, Berkeley, we could do it there."

24 months ago this kind of food was served

this is not food

I used to give my kids these things: Extreme burritos, corn dogs, pizza, pockets, grilled cheese sandwiches.

All of this came individually wrapped in cardboard.

The only utensil you need is a box cutter

The only working equipment in the kitchen was the can crusher, which either came in cans or it came frozen.

The Department of Agriculture allows this.

everything in here

do you know anything? Things like pink danishes and cupcakes

Chicken nuggets Tater tots Chocolate milk full of fructose Canned fruit cocktails -- all returnable food

The government says it's okay to use this kind of food for children's school lunches.

It's not good, you know, it's no good

What we all need to understand is that it's up to us to make a difference.

I don't know if anyone invented chicken nuggets here, but if they did, they'd make a ton of money.

But who made chicken like this Heart-shaped Giraffe-shaped Star-shaped?

It's Tyson, because it's not chicken inside.

I figured this would be a good way to sell it to a child.

But what's wrong with telling kids that chicken looks like chicken?

Most schools issue such

In fact, there may be many parents who make them eat this.

We have to change the old relationship between children and food.

I have to tell you chicken is not giraffe

Vegetables are very colorful and tasty, carrots grow on the ground, and strawberries grow on the ground.

There are no strawberry trees or carrot trees

We have to change food education for children.

There are so many things that can be done, there are farm-to-school programs, schools that incorporate fresh ingredients, and so on.

In the Berkeley area, everything is replaced with fresh ingredients.

No high fructose corn syrup, no trans fats, no processed foods

I make meals from scratch every day.

Twenty-five percent --- (Applause) Thank you --- twenty-five percent of the ingredients are organic and locally sourced, and I'm cooking this.

this is my hand i wake up at 4 every morning

I make lunch because I should

We can't keep feeding our kids processed waste full of chemicals to raise a healthy nation.

In the next generation, or the next, we may not be able to think like this because of malnutrition.

If you eat chemicals all the time, you won't be able to think.

I will not grow up to be a child who can use my head

What will happen? I get sick instead.

When I first came to Berklee, I realized that to the people here, this idea was outlandish and foreign, and that it needed publicity.

So I made a calendar like this and sent it to the parents.

This is how my program started to be understood

Now, I teach all the cooking classes and gardening classes on the district.

this is a typical menu

This week's school lunch menu

Can you see the recipe on the side?

It's a recipe I learned in cooking class.

Tasting of raw materials is done in vegetable gardening class

Depending on the ingredients, we grow them and serve them in the dining room.

If you change the relationship between children and food, serve delicious and nutritious food in the cafeteria. Combine hands-on activities like cooking and gardening with classroom lessons.

Now you know how much I hate the USDA, but I also don't understand the pyramid they built, this upside-down pyramid with a rainbow over it.

What would happen if I ran up to the end of this rainbow? I can't use it, so I made my own

You can find this on my site in English and Spanish This is a child's visual guide to food

A very small hamburger and a very large vegetable

change is needed

You have to make your child understand the importance of choosing food.

I have a classroom for a cooking class.

And this is also important. The children of this generation, maybe the second generation, grew up eating one out of four meals at fast food, one out of four meals in the car, and one out of four meals while watching TV or watching a computer.

What are children learning? How do you spend time with your family?

What about social studies? What about talking to people?

Where did you study to speak?

I need reform

A lot of activities with children This is the children of Harlem

Smart eating habits for educated and aware teens (EATWISE)

We have to teach our kids that coke and pop tarts aren't breakfast.

If you're in the habit of eating foods with white sugar, your mood swings will get worse, just like you're doing drugs.

We should have a lot of activities, the school has a composting system.

We also recycle

Schools have to teach that it's important to do and think at home.

It's something that children really need to understand and learn.

Many adults are approaching retirement in some way, so we have to teach our children, the next generation of young people, how to save themselves, and how to save the planet.

I do a lot of public-private partnerships.

We work with enthusiastic private companies, companies that are passionate about research and development, companies that can arrange logistics, companies that want to get into schools.

school is underfunded

Most American schools spend less than $7,500 a year on educating a child.

This works out to less than $5 an hour

$10-$15 an hour is the market price for a babysitter

We're only spending $5 an hour on the education system.

If you want to change this, if you want to change your child's diet, you have to rethink this.

That's why we build public-private partnerships and reach out to advocacy groups, foundations.

Here in our district, schools allocate 0.03 percent of their general funds to the cost of food and nutrition. Each school district can allocate between 0.5 percent and 1 percent of the funds to keep the program in place.

we need reform

i need to spend more money

Of course, it's not just about food, it's also about getting kids to exercise.

The simplest thing we can do is put in a break before lunch.

It may be "natural".

What children do after lunch is that when it comes time to rest, they throw their lunch away because they want to go out and play.

By one o'clock in the afternoon, I'm already exhausted

The reason your children and grandchildren are exhausted when you pick them up is because they haven't eaten lunch.

If they're just going to class after lunch, the kids will sit down and eat their lunch.

I need to educate

I need to educate my children

Staff education is also necessary.

We had 90 employees, two of them

I was supposed to be a cook, but I couldn't cook at all

The situation is still the same

really need education

Educational institutions need to start rethinking culinary education, and right now they're not thinking about it, because they've been using processed foods like this in school all their lives.

Sometimes it takes 40 minutes for lunch, most of the time it takes only 20 minutes, you also need the right time for lunch.

Extensive research suggests that in many schools, lunch starts at 9 or 10 in the morning.

it's not lunch time

I'm crazy about what I'm doing anyway

And remember, at least implicitly, we're teaching our children to do it this way.

The first solution to this problem is to change the management of the national school feeding program.

National school feeding program should be under CDC, not USDA

If you think about food, and what your child eats, if you think health first, if you think food is about health, you probably won't have a corn dog for lunch.

So here's an introductory course in accounting, and I'd like to wrap it up by talking about money.

The national school feeding program spends $8 billion to feed 30 million children a year.

This amount should probably be doubled

"Where are we going to get the other $8 billion from?"

This country spends $110 billion a year on fast food.

$100 billion a year is spent on diet aids