You know Siri

Siri understands your intentions, helps you carry them out, and helps you get things done.

What you may not know is that Siri was designed to be a human AI, using a conversational interface to augment people's capabilities and make mobile computing accessible to everyone regardless of their ability.

For most of us, the impact of this technology is to make things just a little bit easier to use.

But to my friend Daniel, the impact of AI in these systems was life-changing.

Daniel is a very gregarious guy, although he's blind and quadriplegic, which makes it difficult for him to use the devices we use so casually.

I went to his house the other day and his brother said, "Wait, Daniel's still busy.

I'm talking on the phone with a woman I met online."

"That's amazing. How did you do it?"

Daniel uses Siri to manage his social life — email, messaging, phone — without relying on a caregiver.

Isn't this kind of funny?

The irony is also great.

His relationship with AI is helping him to have a relationship with a real human being.

This is Human AI

Another life-changing example is a cancer diagnosis.

When a doctor suspects cancer, a sample is taken from the patient and examined under a microscope by a pathologist.

Pathologists look at hundreds of slides and millions of cells every day.

To help with this task, researchers built an AI-powered classifier.

The classifier looks at the image and asks, "Is this cancer or is it not?"

Classifiers were good, but not as good as humans getting most of them right.

But when we combined the capabilities of machines and humans, we got an accuracy of 99.5 percent.

Using an AI as a companion eliminated 85 percent of the errors that human pathologists make when working alone.

We found a lot of cancers that would otherwise have been overlooked.

For those of you who are interested, humans are better at identifying false positives, and machines are better at spotting the hard-to-find cases.

But the lesson here isn't which one is better at the image identification task.

Those things change day by day

The lesson is that by combining the capabilities of humans and machines, we have created partnerships that have superhuman capabilities.

That's Human AI

Let's look at another example, in an example that dramatically improves performance.

it's about design

Let's say you are an engineer

Let's say I want to create a new frame for a drone.

Use your favorite CAD tool to enter shapes and materials and analyze performance

and one design is completed

If you give AI the same tools, it can generate thousands of designs.

This video by Autodesk

it's really amazing

This will change the way you design

A human engineer enters design requirements, and the machine responds, "These are possible designs."

The engineer's job, then, is to pick the one that best serves the purpose of the design, and that human judgment and expertise allow him to make the best decision.

In this example, the chosen ones look as if they were shaped by nature, just without millions of years of evolutionary time and unnecessary fur.

So let's think about the possibilities of this human-like AI.

What kind of abilities would you like to expand?

An increase in perception?

Instead of asking, "How smart can we make machines?"

We ask, "How smart can machines make us?"

Take memory for example

Memory is the foundation of human intelligence

But it's well known that human memory is imperfect.

We are good at telling stories, but we can't remember the exact details.

and our memory deteriorates over time

It's like, "Where did the '60s go? Can I go there too?"

(Laughter) What if you could have a computer-like memory about your life?

What if you could remember everyone you met? How to pronounce your name, your family structure, your favorite sports, and the content of the last conversation you had

If you had memory for your whole life, AI could go through all your conversations and help you reflect on your relationship trajectory.

What if you could make an AI read everything it read and listen to all the songs it heard?

With just a few hints, you'll be able to extract whatever you see and hear.

Imagine how it can help you find new connections and generate new ideas.

what about our bodies

What if you could remember the effects of every food you ate, every drug you took, every night you stayed up all night?

You can use your own data to do your own research on what's good for your mood and your body.

Imagine how this could change the way we manage our allergies and chronic diseases.

AI will make personal memory augmentation a reality

I don't know when or in what form, but I think it will happen, because what's driving AI's current success is the availability of comprehensive data, the ability of machines to decipher it, and it can be applied to the data of our lives.

That data is in our hands today, because we live our lives digitally, on our phones and online.

personal memory is private memory

You decide what to keep in your memory and what to erase.

It's very important that this is secured

For most people, the impact of an extended personal memory is likely to be increased intelligence and hopefully greater social sophistication.

But for the millions of people who suffer from Alzheimer's and dementia, augmented memory will make the difference between a life of solitude and a life of dignity and connection.

We are in the midst of a renaissance in artificial intelligence.

In the past few years alone, we are starting to solve many AI problems that have remained unsolved for decades: speech recognition, text understanding, image recognition.

We have choices about how we use this powerful technology.

We can choose to let AI automate and compete with humans, or we can choose to let AI extend our capabilities and cooperate with us, pushing the limits of our intellect to help us do the things we want to do better.

If we find new ways to give machines intelligence, we can deploy that intelligence to AI assistants around the world to the benefit of everyone, regardless of their circumstances.

In this way, every time machines get smarter, we get smarter.

That is "AI worth spreading"

thank you

(applause)

Imagine you're at an art exhibition with a friend, and a painting catches your eye.

You saw the bright red color as a symbol of love, but your friend insists it's a symbol of war.

What you see as stars in a romantic sky has been interpreted by your friend as a pollutant that causes global warming.

To settle the debate, I searched on the Internet and found that the painting was a replica of the artist's art work when he was in first grade, red being his favorite color, and the silver dots being fairies.

I know the true intention behind the creation of this work,

Is it wrong to enjoy a work in a way other than what the author intended?

After knowing the truth, will you enjoy the work less than before?

How much should an artist's intentions influence the interpretation of a painting?

This question has been pondered by philosophers and art critics for decades, but it's unlikely that there will be an answer that everyone will agree with.

In the mid-twentieth century, literary critic W.K. Wimsat and philosopher Monroe Beardsley argued that the creator's intentions were irrelevant.

They called it the "fallacy of intentions," the idea that taking into account the author's intentions interferes with the evaluation of the work.

There were two issues in their argument: first, the artists they were studying may no longer exist, and there may be no record of their intentions, or the authors may simply be in a situation where they cannot answer questions about their work.

Secondly, even if there is enough information related to the work, that information may prevent a genuine evaluation of the work itself.

They compared a work of art to a dessert, and when you eat pudding, it doesn't matter what the chef's intentions are, whether you like the taste or the texture of the pudding.

The important thing, they said, is whether the pudding "fits".

Of course, what "fits" one person may not "fit" another.

Interpretation is different for everyone, so it's perfectly fine to interpret the silver dots in the painting you just saw as fairies, stars, or pollutants.

According to Wimsatt and Beardsley's logic, the author's own interpretation of his work is only one of many other plausible interpretations.

If you're unconvinced by this idea, you might agree with literary theorists Stephen Knapp and W.B. Michaels, who deny the "fallacy of intentions."

He argued that the author's intent in the work was not just one possible interpretation, but the only possible interpretation.

For example, let's say you're walking along the beach and you find a series of letters on the sand that spell out a line of poetry.

Knapp and Michaels argued that the poem would be meaningless if we thought that it was not something left behind by humans, but something that was accidentally created by waves.

He argued that poetry can be understood as an object to be understood because it was intentionally produced.

And then there's the middle-of-the-road opinion, arguing that intentions are just one piece in a larger puzzle.

The modern philosopher Noel Carroll took this position, arguing that the author's intentions are as relevant to the viewer as the speaker's intentions are to the person with whom he is conversing.

To understand how a speaker's intention works in a conversation, Carroll used the example of a person with a cigarette asking if there's a match.

When asked, you deduce that the motive for the action was to light a cigarette, and hand you the lighter.

Depends on what language you use to ask, but in the end, your question is asking for your understanding, your response.

Which idea do you support?

Do you think, like Wimsatt and Beardsley, that in art, the pudding itself should be the basis for judgment?

Or do you think that the author's purpose or motive for creating the work influences the meaning of the work?

The interpretation of a work of art is like a labyrinth with no exit in sight.

there is an interesting fact

Across the developed world, women live an average of six to eight years longer than men.

6 to 8 years old

It's a big opening

A 2015 study published in The Lancet found that men in wealthy countries are twice as likely to die at any age as women.

But there is only one place in the world where men have the same life expectancy as women.

It's a remote, mountainous area where many people, both men and women, live very long lives -- one of the so-called "blue zones."

This is the Blue Zone, Italy's Sardinia, an island in the Mediterranean Sea between Corsica and Tunisia, less than 300 kilometers from mainland Italy, but with six times as many people over the age of 100.

That's 10 times higher than in North America.

This is the only place where there is no difference in life expectancy between men and women.

But why?

I was intrigued

So I decided to look at the landscape and customs of this land, and started with genetic profiles.

I soon learned that genes only account for 25 percent of longevity—

75 percent is a lifestyle

What does it take to live beyond 100?

What habits are good for longevity?

This is a photo of Villa Grande from the air.

In a village in the middle of the Blue Zone, when I went to investigate, I realized that the good thing about this village is not the beauty of the city, but the closeness of the houses, the tight spaces between the houses, the intricate streets and alleyways.

In other words, the residents live a life where they are always face to face with someone.

As I walked through the village, I felt hundreds of eyes staring at me from doorways, behind curtains, behind shutters.

Like any ancient village, Vilagrande would not survive without these structures -- without the village walls, the cathedral, the square -- defenses and social cohesion define what a village should be.

At the dawn of the Industrial Revolution, concerns about infectious diseases shifted priorities in cities.

But what about now?

Social isolation is a modern public health risk.

1 in 3 say they have no more than 2 people they can rely on

But when you go to Villa Grande and meet people who are over 100 years old, things are completely different.

Giuseppe Murino, aged 102, has lived in the village of Villagrande all his life.

i am a sociable person

He loved to talk, and he told me about not one but two world wars, how he lived like a bird in the woods looking for food to survive, and how he raised six children with his wife, who also lived to be over 100 years old, in his cozy little kitchen.

Pictured here are two sons, Angelo and Domenico, both in their 70s, who are caring for their father, but they didn't try to hide their suspicions about my daughter and I, who accompanied me on a research trip.

But Giuseppe wasn't alarmed at all.

I'm an optimist at heart, and I'm the type that likes to socialize.

So I thought, is the secret to living longer than 100 years old a positive mindset?

actually not

(Laughter) Giovanni Collias is 101 years old -- the most grumpy person I've ever met.

(Laughter) To the notion that a positive way of life is essential for longevity, this man's example says no.

there is evidence for this

When I asked him how he lived so long, he looked at me from under his droopy eyelids and said sullenly, "Nobody should know my secrets."

(Laughter) But even though he's such a pervert, his niece, who lives with him and takes care of him, called him "Il Tesoro," or "My Treasure."

She respects Giovanni, loves him, cares for him and doesn't have freedom? I answered the question, "You don't understand, do you?

It's a pleasure to take care of this person.

it's my great privilege

It's the property I inherited."

It's true, when I go to interview long-lived people, they often have kitchen parties.

This is Giovanni and his nieces -- Maria in the back and my granddaughter Sarah on the right -- Sarah just delivered some fresh fruit and vegetables.

As soon as I got there, I realized that Blue Zone residents are surrounded by people for the rest of their lives. They're always surrounded by extended family and friends, neighbors and clerics, and bar and grocery store owners.

Someone is always by your side or stopping by

No one lives alone and lonely

Life in the developed world is not like this, and George Burns said, "Happiness is having lots of loving, caring family in another city."

(Laughter) Now, I've only talked about long-lived men, but I've also met women, and this is Zia Teresa.

Tzia, who is over 100 years old, showed me a local dish called cululgiones -- a ravioli-like pasta wrap about this size -- this size stuffed with fatty ricotta and mint and dipped in tomato sauce.

We were also taught how to fold the parcels properly to keep them from opening. Every Sunday, Zia and her daughters make kurruljones and distribute dozens of them to neighbors and friends.

This made me realize that the secret to living to 100 in the Blue Zone is not low-fat, gluten-free food.

(Applause) Now, after combining these stories of longevity with scientific research, I've been asking myself a few questions: When will I die? Is there a way to delay that date?

the answer is a bit surprising

Julian Holt-Randstad, a researcher at Brigham Young University, explored this very question in a series of studies of tens of thousands of middle-aged people like you.

She looked at all aspects of her lifestyle: diet, exercise, whether she was married, how often she went to the doctor, whether she smoked or drank.

She recorded all of this, and was later joined by her fellow researchers, and waited patiently for seven years to find out who was still alive.

And for those who are doing well -- what factors reduce the odds of dying the most?

this was her question

So let's take a quick look at that data, looking at the longevity factors from least likely to most likely.

May I?

Clean air - it's great, but I can't say that it helps us live longer.

It's good to get treatment for high blood pressure

Again not a strong factor

You don't have to worry about whether you're heavy or light, you're finally third from the bottom.

The next thing is how much exercise you do, but that's also not a big factor.

I had a heart problem, so I'm doing rehab and exercising, and I've climbed a lot in the rankings.

Have you had a flu vaccination

Did you know that the flu vaccine is more life-saving than exercise?

Did you quit your drinking habit? Did you drink moderately? Did you never smoke? Did you quit smoking before?

First of all, do you have close friends?

Someone you can borrow money from when you need it urgently, someone who will call you a doctor or take you to the hospital when you feel sick, someone who will stand by you when you're desperate and about to lose the will to live.

If you have a few people like that, your chances of living a long life go way up.

And what struck me was something called social integration.

This refers to how much interaction we have in our day-to-day activities.

How many people are you talking to?

This is a story about both strong and weak ties, and it's about people who mean a lot to you -- not just people you're particularly close to, like the clerk who serves you coffee every day.

Would you like to speak to the postman?

Do you talk to the woman who walks past your house with her dog every day?

Do you play bridge, poker, or join a book club?

It's one of the strongest clues to predicting how long you'll live with or without these interactions.

And that raises the question: What happens when you spend more time online, and less time doing other things, like sleep? We spend up to nearly 11 hours a day looking at screens, one hour more than last year. Will this have any impact?

Why distinguish between in-person interactions and social media interactions?

For example, is being close to your child the same as being connected by text all the time?

The short answer is no. It's not the same.

Face-to-face releases a flurry of neurotransmitters that, like a vaccine, can protect you now and in the future.

Simply making eye contact, shaking hands, or giving someone a high five is enough to release oxytocin, which increases trust levels and lowers cortisol levels.

reduce stress

It also produces dopamine, which gives you some mood lift and less pain.

It's like nature's morphine

But all these things fall off the radar of our consciousness, and that's why we confuse our online activities with real interactions.

But now there's new evidence that it's certainly not the real thing.

Let me give you a little insight into neuroscience.

Elizabeth Ledkay, a neuroscientist at the University of Maryland, was trying to figure out what happens in the brain when it interacts directly with people and when it sees things that don't change.

She compared the brain activity of two groups of people, those who interacted directly with herself or one of her collaborators in open-ended conversations, and those who watched her talk about the same content but indirectly through packaged videos like YouTube.

And if you want to know how we put two people through the MRI scanner at the same time, let me know later.

So what was the difference?

This is a brain image during social interaction.

It shows that there is a difference in brain activity between when you're meeting people face-to-face and when you're watching static content.

Associated with the orange brain regions are attention and social intelligence -- anticipating other people's thoughts, emotions and plans -- and emotional reward.

These areas are much more active when you're interacting directly with the other person.

These apparent differences in brain activity may influence the decisions of recruiters at Fortune 500 companies, who rated candidates as smarter when they heard their voice rather than when they read an e-mail or written text.

Our voice and body language contain a wealth of signals.

This shows that we are not just algorithms, we are conscious humans who think and feel.

And a study by Nicholas Epley at the University of Chicago Business School tells us a surprisingly simple fact.

People think you're smarter when you can hear them

it's pretty simple

So let's go back to the first question: Why do women live longer than men?

One big reason is that women are more likely to cherish and maintain lifelong face-to-face relationships.

New evidence shows that these direct friendships create a biological barrier against disease and debilitation.

This is true not only for humans, but also for other primates.

Anthropologist Joan Silk's study of female baboons found that when they had a core female mate, they had lower levels of stress from cortisol levels, lived longer and had more offspring.

At least three stable relationships—

3 is the magic number

please think about it

I hope you all have three

The power of this direct interaction is reflected in the lower rates of dementia among those who maintain social relationships.

That's why women with breast cancer are four times more likely to survive than lonely people.

If a man who has had a stroke sees his peers regularly and plays poker or drinks coffee or plays senior hockey -- I'm Canadian -- (Laughter) social contact does more good for the body than drugs.

Seeing people regularly is an effective and affordable way for stroke survivors.

Even though face-to-face socializing can be surprisingly effective, there are now a quarter of the population who have no one to talk to.

I have to do something about this problem

Like a villager in Sardinia, a sense of belonging is essential, not just for women, but for biology.

When you integrate face-to-face interactions into your cities, workplaces, and behavioral goals, you strengthen your immune system, increase happy hormones in your bloodstream and brain, and increase your chances of longevity.

I call this "building a village." It's a matter of life and death to build and maintain your own village.

thank you

(Applause) (Helen Walters) Please, I have one question.

Is there no middle way?

What about the neurotransmitters that interact with people face-to-face, but what about digital technology?

This is a leap forward, right? FaceTime (video call) etc.

Is it effective?

For example my nephew

Screaming at your friends who play against each other in Minecraft

seems to be very connected

How about something like this? can you help?

(Pinker) The data are just beginning to gather.

The digital revolution is leading the way, and health data collection is lagging behind.

So research is still to come, but there are things that can be improved in technology as well.

For example, a laptop's camera is at the top of the screen, so when you're looking at the screen, you can't really make eye contact.

So even something as simple as looking into a camera might increase neurotransmitters, or you could change the position of the camera.

Even if it's not the same as face-to-face, I think there are aspects that can be compensated for by technology.

(Walters) Thank you very much.

thank you

(applause)

I'm a meteorologist. I have a bachelor's degree, a master's degree and even a Ph.D. in physical meteorology.

So there are four questions that are always asked.

This prediction comes true

(Laughter) The question was- "Marshall, what channel are you on?"

(Laughter) "Dr. Shepherd, what will the weather be like tomorrow?"

(Laughter) And one of my favorites is, "My daughter is getting married in September, and it's going to be an outdoor ceremony.

Will it rain? ”

(Laughter) I'm not joking, I'm being asked this question, and I can't answer it.

But a lot of people ask me these days, "Dr. Shepherd, do you believe in climate change?"

"Do you believe global warming is happening?"

This question always frightens me

Because it's the wrong way to ask the question. Science is not a belief system.

My 10 year old believes in the Tooth Fairy

If I don't graduate, I'm afraid they're going to take my money every time I lose a tooth—

(Laughter) I believe in the Tooth Fairy.

please think about it

The Bank of America building is in Atlanta.

No one would ever say, "Do you believe that if you threw a ball from the top of that building, it would fall?"

You don't have to ask that question because gravity is a fact.

So why don't we ever hear the question, "Do you believe in gravity?"

You hear the question, "Do you believe in global warming?"

I want you to think about something

The American Association for the Advancement of Science (AAAS), one of the leading organizations in science, asked scientists and the general public about various scientific topics.

It's all about genetically modified foods, the pros and cons of animal testing, and whether humans evolved.

Look at the reactions of the scientists. The red graph shows the answers of researchers on these topics, while the gray shows the answers of the general public.

How did this happen?

Why is there such a difference?

There is such a big difference between the opinions of scientists and the general public.

What about my field, for example, "climate change"?

87% of scientists believe humans contribute to climate change.

But only 50% of the general public?

Why?

I can't help but ask, "What shapes our perception of science?"

Interesting question, I've been thinking about this a lot.

I think there are belief systems and biases that shape the general public's perception of science.

"Belief System" and "Bias"

please stay with me for a while

I'd like to talk about three of them: confirmation bias, the Dunning-Kruger effect, and cognitive dissonance.

It seems very academic and difficult, but that's right.

When you hear the explanation, everyone says, "Oh, I understand!

I know someone like that."

“Confirmation bias” is

Finding only evidence to support what you already believe

This is what we all tend to do

Look at this

i'm on twitter

When it snows, I often get a tweet like this

(Laughter) "Dr. Shepherd, there's 50 centimeters of global warming in my yard. What are you talking about climate change?"

I really come here often

Well that's a funny tweet I'm on drugs too

But there's a fundamental scientific misconception about this.

Because the person writing this tweet clearly doesn't know the difference between "weather" and "climate."

I often compare the weather to my "mood" and the climate to my "personality."

let's think

Weather is your mood, climate is your personality

You can't necessarily judge your personality by how you're feeling today, and you can't judge anything about climate change by a cold day, or even a hot day.

"The Dunning-Kruger Effect"

It was reported by two scholars at Cornell University,

If you read the papers on this, you'll find all sorts of difficult technical terms, complexes that give you the illusion of superiority that you know something.

So people tend to think they know more than they actually do.

It's also easy to underestimate your own ignorance.

Then there's "cognitive dissonance."

Cognitive dissonance is interesting

Wasn't it Groundhog Day the other day?

It's a perfect way to explain cognitive dissonance, where an intelligent person asks if the marmot's weather forecast is correct.

(Laughter) But I get asked this all the time.

(Laughter) There's also the Farmer's Almanac.

The agricultural calendar has been around for a long time, and everyone is familiar with it.

But according to a Pennsylvania State University study, it's only 37 percent accurate.

We're in the age of science, and we can predict the weather.

I know some of you are skeptical, but today's weather forecast is over 90% accurate.

It's just that I've been off occasionally, and it's only left in the impression

(Laughter) Confirmation bias, Dunning-Kruger effect, cognitive dissonance.

I think these things shape people's perceptions and biases towards science.

But lack of literacy and false information also keep us from the truth.

During the 2017 hurricane season, the media had to force reporters to point out fake news about weather forecasts.

we are in that era

I deal with this all the time on social media.

Someone tweeted the forecast -- it was about Hurricane Irma, but the problem was it wasn't from the Hurricane Center.

People retweeted it and it went viral.

That information didn't come from the National Hurricane Center.

Before I came to the University of Georgia, I worked for NASA for 12 years, and now I'm chairman of the Earth Sciences Advisory Board, and I was in Washington last week.

i found something very interesting

Here's satellite-based NASA models and scientific data showing the behavior of hurricanes in 2017.

Do you know Hurricane Harvey?

Look at the dust flying in from Africa

Wildfires in the northwestern United States and western Canada

And then comes Hurricane Irma

it's really interesting

I'm a weather geek

What's important is that there are technologies like this that can not only observe, but also predict the weather and the climate system.

There's this scientific finding that we don't need the misconceptions and biases that I was just talking about.

because I have knowledge

But let's consider this example

This is Houston, Texas after Hurricane Harvey.

I'm a regular contributor to Forbes magazine, and I wrote an article a week before Hurricane Harvey made landfall that said, "There will be 1,000 to 1,300 mm of rainfall."

I wrote that a week ago

And yet, when I talk to people in Houston, they say, "I never thought it would get this bad."

I really...

(sighs) (laughter) I said that a week ago.

But... well, it's funny, isn't it? But the reality is that we all have trouble understanding things outside of our experience.

Houstonians are no strangers to rain, and floods are common.

But I've never experienced anything that bad.

Houston gets about 860mm of rain per year.

But at that time, it rained 1,300 mm in three days.

it was an exceptional event

Belief Systems and Bias Literacy, Misinformation

How can we free ourselves from these things that limit our perception?

You don't have to go all the way to Houston to see a familiar example.

(laughs) Remember "Snowpocalypse"?

(laughs) "Snowmageddon"?

What is "Snow Godzilla"?

I don't care what you call me

After all, it was a snowfall of 5 centimeters

(Laughter) Atlanta was paralyzed by just five centimeters of snow.

(Laughter) Actually, we had a winter storm warning at the time, so we turned it into a winter weather warning.

The actual alert level was an increase, not a relaxation.

Every time a predictive model was sent in, things got worse.

Here's an example of a misidentification that put us in a corner.

So the question is, how do you expand your horizons?

The area of ​​a circle is "π X r squared"

Extending the radius (range) also increases the area (region)

How can we broaden our understanding of science?

my thoughts are like this

Take a look at your bias first

I want you to do that

Look back at your own biases

I'm thinking about where I came from

Your background, your political views, your beliefs—what are your biases made of?

And review the sources of information Where do we get our scientific information from?

What do you read and what do you listen to for scientific knowledge?

It's also important to let others know

Tell me how you reassessed your biases and reassessed your sources.

Let's listen to this 40-second video from a famous American TV weather forecaster named Greg Fischel in the Raleigh-Durham area.

A well-respected forecaster in the area

was a climate change skeptic

But listen to what he said

Greg Fischel: What I was doing wrong, I didn't realize until recently, was that I was only looking for information that supported what I believed, and I didn't listen to information to the contrary.

One day I woke up and a question came to my mind, "Greg, are you suffering from confirmation bias?

Are you only looking at information that supports what you think you are? ”

If you're going to be honest with yourself -- that's what I'm trying to do, I had to admit it was.

So after talking to scientists, reading peer-reviewed papers, and taking the stance that was instilled in me as a student at Penn State University, it's become much harder to argue that humans aren't contributing to climate change.

Even if we could argue about the degree, it would have been very irresponsible, as a scientist and as a person, to say, "There is no such phenomenon at all."

(Shepherd) Greg Fischel told how he broadened his understanding of science.

When we extend our reach, it's not about "creating a better future," it's about protecting the world as we know it.

Expanding the radius of our understanding of science is so important here in Athens, Georgia, in Atlanta, in Georgia, and in the world.

So widen your radius

thank you

(applause)

What do all of you here take?

I'm old

Most of us shudder at such a future.

How do you feel when you hear the word "old"?

— I used to feel the same way

What worried me the most?

It's the end of me drooling in the hallway of some gloomy facility.

And then I learned that only four percent of the aging population in America lives in nursing homes, and that number is declining.

What else did I fear?

dementia

But most people are steadfast until the end.

Decreased rate of dementia

The real epidemic is forgetfulness anxiety.

(Laughter) I used to think that old people were depressed because they were going to get old again and die soon.

(Laughter) But the truth is that the longer you live, the less you fear death, and people are happiest when they are born and when they die.

This is the "U-Curve of Happiness," and dozens of studies around the world support it.

You don't have to be a Buddhist or a millionaire

Aging affects the brain into this curve.

So it made me feel a lot brighter about getting older, and I started to wonder why people didn't know this.

The reason is "ageism," age discrimination and stereotyping.

Ageism is when someone decides we're too old or too young to do something, rather than our experience and ability.

Ageism is a double-edged sword

"ism" is a socially constructed concept -- racist, sexist, homophobic -- we make up those concepts, but they change over time.

These prejudices make us compete with each other to "maintain the status quo," like American car workers competing for productivity against Mexican workers instead of cooperating to demand higher wages.

(Applause) We all know that discriminating resource allocation based on race or gender is bad.

So why is it okay to weigh the needs of the young and the old?

Prejudice happens by seeing certain groups of people as something they're not - "othering" - people of other races, people of other religions, people of foreign nationality -

The strange thing about ageism is that the "other" is ourselves [Ageism discriminates against future selves]

Ageism is an unwillingness to accept the fact that we will eventually become old, and it exploits reality denial.

When we look younger, when we turn to anti-aging products, when we feel betrayed by our aging bodies, we deny reality.

Why do we become less appreciative of the ability to adapt and grow as we age?

Why does "aging well" mean struggling to look and act like you did when you were younger?

I'm embarrassed to be called old because I can't stop thinking about it.It's unhealthy to live your life in fear of the future.

The sooner you get out of the dead end of the rejection of old age, the healthier you are.

Of course, stereotyping is always wrong, but especially when it comes to age, because the longer we live, the more different we become.

don't you think about it

And yet, we tend to think of people who enter nursing homes as being the same old people -- (Laughter) -- when that period can last 40 years --

Can you imagine thinking about people in their 20s to 60s as a blanket?

Do you look for people your age first at parties?

Have you ever complained that millennials are yours?

Have you ever given up on hairstyles, relationships, or going out because it doesn't look right for your age?

There is no such rule for adults.

All these things are age discrimination

We're all ageist, but prejudices can't be overcome until we're aware of them.

No one is born ageist, but it starts in childhood, and it's around this time that attitudes toward race and gender begin to shape, because the media and pop culture continue to bombard us with negative messages about the later years of life.

right? "Wrinkles are ugly"

"Old people are miserable"

"It's sad to get old"

look at hollywood

A recent survey of Best Picture Academy Award nominees found that only 12 percent of characters over the age of 60 had dialogue or a name, and many were portrayed as disabled.

Older people can be the most ageist because they've spent a lifetime internalizing these messages and never questioning them.

I realized that and thought I had to stop being complicit.

For example, I stopped calling "forgetfulness" a "moment of old age," because I realized that when I lost my car keys in high school, I didn't say "moment of youth."

(Laughter) I stopped blaming my knee pain on being 64.

The other knee was the same age and had no pain.

(Laughter) (Applause) We're all afraid of something about growing old: being poor, being sick, being alone. Those fears are natural and real.

But what most of us don't realize is that the experience of aging can be made better or worse by the cultural context around us.

Having a vagina doesn't make a woman's life harder.

sexism makes it

(Applause) It's not because I love men that life is hard for gay men.

homophobia makes it

It's not the passing of time that makes aging unnecessarily hard

It's ageism

When it's hard to read the label, or there's no railing, or we can't open the bottle, we blame ourselves for not aging well, instead of blaming ageism, which shames the natural process of aging, and the discrimination that makes us accept these things.

Contentment cannot be exploited, but feelings of shame and fear create markets, and capitalism always needs new markets.

Who is the person who says that wrinkles are ugly?

It's a multi-billion dollar skin care industry.

Who says menopause, male hormone decline, mild cognitive decline is a medical symptom?

It's a trillion dollar pharmaceutical industry.

(Cheers) The more clearly you can see these forces at work, the easier it is to envision a more positive and accurate narrative.

Aging is not a problem to be fixed or a disease to be cured.

It's a natural, powerful, lifelong process that we all share.

I know that changing culture is an unfulfilled wish, but culture is in flux.

Look at how much the status of women has changed in my lifetime, or how homosexual rights have improved so much in the last few decades, right?

(Applause) Gender too.

In the past, it was thought that there were only two things, male or female, but now it's seen as a range.

It's time to let go of the "young or old" dichotomy.

You can't draw a clear line between youth and old age, saying that everything else is "downhill".

The longer we wait to confront this dichotomy, the worse it's going to be for us and where we are, for example, in workplaces where ageism is prevalent.

In Silicon Valley, engineers have Botox injections and hair transplants to get to the big job interviews, white men in their 30s with technical skills — what if this were a weaker person?

(Laughter) The personal and financial impact is devastating.

There's no real stereotype about older workers.

Companies are not so adaptable and creative because they are young. They are young and they are adaptable and creative.

Companies -- (Laughter) (Applause) Diverse companies aren't just better places to work, they're also better performers.

Age, like race and gender, is a measure of diversity.

A growing body of fascinating research is showing how our attitudes toward aging affect how our minds and bodies function at the cellular level.

When we talk to the elderly like this [loudly], when we call them "grandma" or "young lady" or in elderspeak -- we all get really old and weak in the way we walk and talk.

People with a more positive outlook on aging walk faster, perform better on memory tests, heal faster from injuries and illnesses, and live longer.

There are people whose brains were filled with senile plaques and neurofibrillary tangles, but who remained sane to the end.

What do they have in common?

a sense of purpose

And what prevents people from having a sense of purpose in later life?

It's a culture that teaches you that when you grow old, you step off the stage of life.

That's why the World Health Organization (WHO) is launching a global anti-ageing initiative to extend not just lifespans, but healthy lifespans.

Women suffer the double whammy of ageism and sexism, and experience aging differently than men.

It's a double standard Odoroki! (Laughter) The idea is that old age makes men more valuable and women less valuable.

As women compete to stay young, they reinforce this double standard, which is also the behavior of blaming yourself for losing something.

Are there any women here who really believe that they're less than they used to be -- they're uninteresting, they're so devalued in bed?

Ageism affects our health, happiness and income, and its effects accumulate over time.

It's compounded by race and social class, which is why older women of color are the poorest people in the world.

this map street

By 2050, one in five of us, roughly two billion people, will be over the age of 60.

Longevity is a fundamental mark of human progress

The aging population is also a vast unexplored market that never existed before.

And capitalism and urbanization have spread the age bias to every country in the world, from Switzerland, where the elderly are most comfortable, to Afghanistan, which is at the bottom of the ranking for the ease of living for the elderly.

Half the countries in the world aren't even on that list, because they don't bother collecting data on millions of elderly people.

Nearly two-thirds of people over the age of 60 worldwide report lack of access to medical care.

About three-quarters of people say their income is not enough to pay for basic services like food, water, electricity and decent housing.

Is this the world we want to leave to our children who will live to be 100 years old [ageism is a global human rights issue]? [Ageism is a global human rights issue]

All people of all ages, genders and nationalities will eventually become old, and unless we stop ageism, it will continue to oppress us.

And ageism is a perfect subject for advocacy.

So, with so many forms of discrimination, including racism, that need to be defended, why add one more?

That's it, you don't have to choose

When we make this world a safe place to grow old, it will be a place where people who migrate from other places, people with disabilities, people who are gay, people who are rich and people who are not white, will feel comfortable here.

If people of all ages take action on the things that matter most to us, like saving whales or saving democracy, we can not only make the movement more effective, but we can end ageism in the process.

Longevity is a matter of course

There is a movement to end ageism [Age Pride! ]

i am one of them please join me

(Applause, cheers) Thank you! Let's do it!

(applause)

Even though I don't like it, I pile used plates in the sink and leave them alone for hours.

Even my boyfriend admits this

If you ask him, it's not hours, it's days, but it doesn't matter which.

The problem is that sometimes the stack of dishes is about to overflow the sink and I don't put it away until I can't do it anymore.

I developed this wonderful habit in college, when I had a lot of excuses.

"I'm not in time for class!"

"What do you mean by adding one more dirty plate?"

My favorite was, "I'll save you time and water if you put it all together later."

(Laughter) But I didn't have to make excuses, because no one was there to warn me.

I wish I had someone like that

Looking back now, every time I left the dishes in the dishwasher uncleaned, it became the norm, and I didn't even question doing it.

Now that I'm in my 30s, I'm the undisputed dishwashing freak, and I'm having a hard time breaking this habit.

Now, outside of staying at home and avoiding the sink, I work with large, complex organizations to transform leadership for times of change.

My job is to work with senior leaders to examine how organizations lead today and establish better habits for the future.

But I'm more concerned with the state of the leaders below than at the top right now.

I wish we could call them something else for what they call "middle managers," because they're the future top executives, and they're starting to leave dishes in the sink.

Organizations are hiring people like me to reinvent their senior leaders for the future, but before our very eyes, outdated leadership habits are taking root in the senior, middle management ranks of the future.

Middle management and senior leaders have to work together, and that's how important it is.

Organizations are evolving rapidly, and tomorrow's leaders will have to lead their organizations with greater speed, flexibility, trust and collaboration than today's leaders.

There should be time to lay the groundwork for this kind of leadership during the middle management development phase, but it's not being used.

Why?

It's not too early for seniors who future leaders look up to as role models, and they're in no position to change the systems that made them successful.

Middle management and senior leaders must work together to define new ways to lead their organizations, lift each other up, and rise above the storm.

My favorite upper-level person, let's say Jane, is a great example of leadership that is now outdated.

Jane has an extraordinary track record and has climbed to the top of the ranks.

Despite all the difficulties, Jane got the job done, and still leads that way.

She is fastidious, spends little time on anything but the essentials of her mission, and has little faith in judgments other than those she makes.

Needless to say, Jane rules her actions as strictly as the military.

These deeply ingrained habits strayed far from where the organization was headed.

The command-and-control behavior she once admired no longer works, because today's organizations are faster, less hierarchical and more digitally connected.

Her old ways don't work

Now this is where John comes in. He's a very talented, up-and-coming manager who works for Jane, and is heavily influenced by Jane's habits.

Recently, John and I were strategizing to get the approval at a meeting attended by Jane's boss, the CEO, and other executives.

John said to me, "I know you don't like it, but here things are decided by pre-meeting groundwork."

i counted

To lay the groundwork, we have eight one-on-one meetings with each of our executives.

John affirms, "Someday we'll change our ways, but for now, we have to do it this way."

John is not wrong on either count.

Sure, the pre-meeting groundwork that's going on in the company is now a necessary evil, but it didn't make sense to me.

It's inefficient and cumbersome, of course, but what I didn't like the most was John's self-confidence, and he vows to do things differently.

How can you be sure?

If he doesn't change now, who will change when?

And what triggered it?

Given the impetus, does he know how to effectively run a meeting without rooting?

He confidently hinted that if he got promoted, he would change the rules and do things differently.

On the contrary, he thought he might lose his job, because it might be too late to learn how to lead the organization of tomorrow.

This is really frustrating, because high-potential managers like John, who are on their way up the ladder, probably have the greatest ability to make waves and redefine leadership from within their organizations.

And what they're doing best right now is not making waves, not fighting the existing way of doing things, because they're doing well by impressing the higher-level leaders who are key to getting promoted.

As a fellow aspiring professional, I can't say anything bad about John.

I'm stuck in a dilemma

But on the other hand, they're so confident that if they had the power to do things differently, they could change their behavior, but there's a catch.

From what I've learned from working with Jane, on the day that John gets his wish fulfilled, John will find it hard to think of anything else, because he's becoming a high-risk, high-pressure executive that puts his own success and the success of the organization at risk.

As a leadership development professional, it makes me wonder: How do we intervene in the development of these soon-to-be senior leaders?

How can we take advantage of the fact that Johns want to manage their professional fortunes so that they can lead the future of the organization? If we succumb to this dilemma, we will be completely prepared to lead an outdated organization.

First, we have to reconcile a very real contradiction: the best place to learn is in the workplace, not in a classroom or e-learning.

For on-the-job learning, two things are important: role models and the work environment.

But, as I said, our role models are now acting like military drills, and the world of work is in a state of unprecedented turmoil.

We're changing everything mechanically about how we operate, but by and large, we're still using the old standards to measure and reward behavior, because it takes time to change this system.

With no role models or structures to rely on, it's up to John whether or not he misses important growth opportunities.

Of course, we need Jane's help, but it's John who takes the risk in the first place, and he has to do it.

Either you take over an organization that's in decline and rife with outdated leadership, or you let yourself get away with it and never develop the ability to lead a transformed organization.

So what should John start with?

If I were John, the first thing I would do is let him fly the plane.

As a gift for my 13th birthday, my grandfather, a former Navy pilot, gave me the opportunity to fly a very small plane.

Once we were in stable flight, the pilot handed over the steering wheel and let me fly with his hands folded.

It was a very scary experience, but it was also a refreshing experience.

At the same time, it was hands-on learning with a safety net.

It was a real flight, so I really learned how to fly on my own.

In the same way, in the workplace, if you lead meetings and make decisions yourself, that can be a practice flight.

So rather than obediently follow the lead, John should go to Jane, suggest a creative strategy for holding a plenary session without eight pre-meetings, and show that he's thought through the pros and cons of doing so, and ask for help in changing the way things work.

It won't be easy for Jane either.

Not only do you have to trust John, but you also have to accept his attempts to lead with a bit of leeway.

It's never an accusation against Jane

Rather, it is due to individual differences.

it's progress

Maybe Jane can learn a thing or two to elevate her leadership.

Another high-ranking client articulated this dilemma beautifully, in the midst of a discussion about why he or his peers didn't give more decision-making power to their subordinates and not delegate power.

He said, "The reason I don't do it is because I don't think they're making the right decisions.

'Cause I can't judge

I've never even had him practice like that."

I'm not telling Jane to put everything in John's hands and get out of the way. What I'm saying is that if she doesn't give John a chance to learn and practice now, John will never learn how to do it, and he won't be able to do things differently.

And finally, because we're trying to get these two out of the tepid waters, we need to make sure that we don't have outside coaches leading amateurs to amateurs.

But what if we had a coach for each of us, and instead of coaching individuals to behave better, we started coaching interactions between two people?

If I could wield a magic wand, I would ask the coaches to sit in on the team meetings that Jane and her guys have from time to time, and give feedback focused on how well they worked together that day.

A coach is also present at regular evaluation meetings between Jane and John, just as a couple's therapist guides communication between the two, providing advice and insight on how to improve future conversations during those evaluation meetings.

Was Jane just trying to force her way?

Or did you help John think through what to do for the organization?

It's really hard to do this kind of coaching, and every great leader needs help, and that's why we need more coaches coaching more leaders more quickly, not one leader in a closed room.

As Warren Buffett said in a school speech about 20 years ago, "The chains of habit are so light that you can't feel them at first, but they're so heavy that you can't get out of them."

Exactly, and that's what's happening with future leaders in training right now.

Why don't we work together more to create the leadership competencies they need? Before they go too far down the path of bad habits that are still flexible and motivated and that are already showing signs of taking hold.

I wish my roommates had reminded each other to wash the dishes in college.

It would have been much easier to pick it in the bud than to change it now.

But I still believe in a future with gleaming sinks and full-blown dishwashers.

thank you

(applause)

The philosopher Plato once said, "Music gives soul to the universe, wings to the mind, flight to the imagination, and life to all things."

Music has always been a big part of my life

Making and performing music connects people across countries and time.

You connect with the people you play with and the people you listen to with yourself.

When I'm happy, when I'm sad, when I'm bored, when I'm stressed, I listen to music and make songs.

I started playing the piano when I was a kid, and later I picked up the guitar.

By high school, music became part of my identity.

We joined a band called a band, we all attended music events.

i was surrounded by music

Music shaped me and gave me a place

I've always been fascinated by rhythm.

When I was a little kid, I used to walk down the hallway at school, and I used to catch the rhythm, tapping my legs and gritting my teeth.

It's a nervous habit, but I've always been nervous

I think I liked the repetition of the rhythm, and it calmed me down.

Then I started taking music theory classes in high school, and that was the best class for me.

I learned a lot of things I didn't know about music, like theory and history.

In that class, we basically just listened to songs, discussed their meanings, analyzed them, and figured out what made them tick.

Every Wednesday there was a "Rhythm Listening" class, and I was very good at it.

The teacher gives us bar numbers and time signatures and says the rhythm, which we write down using notes and rests.

It's like this ta ta ta ta ta ta ta ta ta ta ta ta ta ta ta

loved it

Rhythmic simplicity, simple two to four bars, but each one seems to tell a story, and there's so much potential, all you have to do is add the melody.

(Guitar performance) Melody and harmony play on the basis of rhythm

Rhythm gives structure and stability.

Music has rhythm and melody and harmony just like our life

Rhythms in music are routines and habits that remind us of things to do and keep things on track.

You may not realize it, but it's always there.

(Guitar playing) It may look simple and boring on its own, but that's what gives it the tempo and the beat.

And then there's the things in life that go on top of that that add texture, whether it's friends, family, things that create a harmonious structure in your life, in your songs, in harmonies, cadences, anything that makes you polyphonic.

It creates beautiful chords and patterns.

(playing guitar) Then I come

I play it on everything, on the rhythm and on the beat—cause I'm the melody

Things may change and unfold, but no matter what I do, I am still the same person.

Even if the melody develops through the song, it will always remain the same song

No matter what you do, the rhythm is always there, the tempo, the beat

Until I left, when I went to college, it all disappeared.

When I first went to college, I felt lost.

Sometimes it was fun and it was great, but other times I felt left out, trying to fend for myself.

Taken out of my natural surroundings Something new Where there's no rhythm, no harmony, no form Alone (playing the guitar) Just silence and my own melody

Even that started to waver because I didn't know what I was doing.

With no chords to give me structure, no rhythm or beat to know the tempo

(Guitar playing) Then I started hearing other sounds.

(Guitar playing) Both the timing and the pitch are out of order

The longer I stayed there, the more my melody sounded like it wasn't mine

And slowly I lost myself like I was washed away

But the next moment— (guitar playing) I heard it.

I could feel

it was me

i was there

Even if it's different, it's not that it's gotten worse

was just a little different

Music is how I come to terms with the changes in my life.

There's a beautiful connection between music and life.

It helps me connect with reality and at the same time allows me to escape from reality.

music lives in me

I make the music, the music makes me

Life is not only guided by music, it is also made of music.

It may sound a little overblown, but please listen to me, music is fundamental to who we are and to everything around us.

I'm into music, but I was also interested in physics.

The more I learned, the more I realized there was a connection between music and physics, especially string theory.

This is just one of many theories, but it appealed to me.

Superstring theory, very simply, is that matter is made up of atoms, and atoms are made up of protons, neutrons, and electrons, and made up of quarks.

That's what's changed

These quarks are made up of tiny spiral strings, and everything is determined by the vibration of those strings.

As Michio Kaku explained in his "Introduction to the Universe" lecture, he said, "The idea of ​​superstring theory is simple: the four forces in the universe, gravity, the electromagnetic force, and the two nuclear forces, can be viewed as music.

It's the music played by a little rubber band."

He goes on to explain that physics is the law of harmony between strings, chemistry is the melody played on the strings, and the universe is a "string symphony."

Strings define the universe, shaping everything we see and everything we know.

Strings are the notes that make us who we are and hold us together.

That's why it's all about music

(playing guitar) If you look out into the world, you see music everywhere.

If you look at yourself, you can see the music there

my life has been defined by music

i found myself through music

Music is everywhere and in everything

Music changes, rises and falls

But music is always there to sustain us, connect us to each other, and show us the beauty of the universe.

So when you lose your way, stop and listen to your music

thank you

(applause)

algorithms are everywhere

Algorithms separate winners and losers

Winners get jobs and apply for lucrative credit cards.

Losers, on the other hand, don't even get a job interview, and their insurance premiums are higher.

We are graded by a secret formula that we don't understand and have no opportunity to appeal.

So the question arises: what if the algorithm is wrong?

When you're building an algorithm, you need two things: data, a record of past events, and criteria that define what success we seek.

and train the algorithm through observation and understanding.

It's to make the algorithm understand the factors that go into success.

What conditions lead to success?

In fact, everyone uses algorithms.

just don't write it in the program

Let me give you an example

Every day, I use an algorithm to prepare meals for my family.

The data that I use is what ingredients I have in my kitchen, how much time I have, how much I'm into cooking, and I put together that data.

By the way, instant noodles are not considered food.

(Laughter) My measure of success is that my children eat vegetables.

If the younger son decides, the standards change dramatically

You will say, "If you can eat a lot of chocolate nut cream, you are successful."

But I'm the one who sets the standards

I'm the one in charge and my opinion matters.

This is the first rule of the algorithm

An algorithm is an opinion embedded in a program.

This is far from the image most people have of algorithms.

People think algorithms are objective and correct and scientific.

it's a marketing trick

It's a marketing trick to scare people with algorithms, and it's a marketing trick to make them trust or fear them, because we all fear and trust math.

Blind faith in big data can lead to many problems.

She's the principal at Kiri Soars Brooklyn High School.

In 2011, she told me that at her school, teachers were evaluated by a complex, secret algorithm called a value-added model.

I said, "Let's look at the formula.

If you show me, I will explain."

Then she said, "I tried to get the formula, and the person in charge of the city's education department said, 'This is math, you don't understand it.'"

things get even worse

The New York Post filed a Freedom of Information Act request to obtain the names and scores of every teacher in New York City, and published data that embarrassed them.

On the other hand, when I tried to get the source code the same way, I was told it was impossible.

it was rejected

I later found out that no one in New York City could see the formula.

no one understood

And then there's this crazy guy named Gary Rubinstein.

He found 665 faculty members with two scores in the New York Post data.

That's the case, for example, if you're teaching mathematics in grades 7 and 8.

he made a scatterplot of the two scores

Each dot represents a teacher

(Laughter) What is this?

(Laughter) Don't use this as a teacher's personal assessment.

Isn't it like a random number generator?

(Applause) But it was actually used.

she is sara waisaki

I was fired, along with 205 other Washington, D.C. school district teachers, in spite of being very highly rated by principals and parents.

I know what you're thinking right now, especially if you're a data scientist or an AI expert.

"If I were you, I wouldn't make such a nonsense algorithm"

But algorithms can go wrong, and even well-meaning algorithms can have devastating effects.

A plane, if it's badly designed, will crash, and you can see it crashing, but with an algorithm, even if it's badly designed, it can go on silently and wreak havoc for long periods of time.

he is roger ailes

(Laughter) I founded FOX News in 1996.

More than 20 women complained of sexual harassment

It seems that his career advancement was also hindered.

He himself was ousted in 2016, but as recent news reports show, problems remain.

This begs the question: what should Fox News do to get back on its feet?

How about replacing the recruiting process with machine learning algorithms?

Good idea, right?

let's consider

First of all, what can we do with the data?

I'd like a resume sent to Fox News in the last 21 years.

is valid data

So what are the criteria for success?

A reasonable standard is... who makes it on FOX News?

For example, if you've been in the company for four years and been promoted at least once, you're likely to be successful.

is a reasonable standard

let the algorithm learn it

We probe people and teach them what makes them successful -- what resumes have made them successful in the past -- according to this standard.

Now, what if we applied this algorithm to today's job seekers?

First, women will be left out, because they don't seem to have been successful in the past.

Applying an algorithm carelessly and blindly doesn't make things fair.

Algorithms don't create fairness

Repetition of past actions or patterns of behavior

just automatically maintain the status quo

If this world were perfect, that would be fine, but it's not.

I'd also add that most companies don't have ugly court cases, but the data scientists in these companies are instructed to focus on accuracy and follow the data.

let's think about what that means

Everyone has a bias, so sexism and other prejudices can be encoded in algorithms.

Let's do a thought experiment, because I like thought experiments, let's say we have a completely racially segregated society, where every city, every neighborhood, is racially segregated, and the only places where you send the police in to find crime are minority neighborhoods.

So the arrest data would be pretty skewed.

What if we could go find a data scientist and pay them to predict where the next crime will occur?

become a minority area

Or what if we let you predict who is likely to commit a crime next?

it must be a minority

Data scientists would brag about how good and accurate their models were, and they certainly would.

Now, the reality is less extreme, but we do have evidence that in many cities and towns there is serious racism, and that police activity and justice system data are biased.

We're actually predicting crime hotspots called hotspots.

It even actually predicts an individual's criminal tendencies.

The news organization ProPublica recently took a look at one of the so-called "recidivism risk" algorithms, and took a look at one that's being used in sentencing by judges in the state of Florida.

Bernard, a black man on the left, scored 10 out of 10.

Dylan, the white man on the right, scored 3 points.

10 out of 10 is high risk and 3 is low risk

Both were arrested for drug possession.

They both had criminal records, but Dylan, who scored 3, had a felony conviction, and Bernard, who scored 10, didn't.

The reason this is important is that higher scores tend to result in longer sentences.

What's going on?

This is "data laundering"

Through this process, engineers hide an ugly reality inside black-box algorithms that they call "objective" or "meritocratic."

This secret, important and destructive algorithm is what I call the mathematics of mass destruction.

(Laughter) (Applause) It's definitely everywhere.

Private companies are building private algorithms for private purposes.

Even the algorithms that I talked about for teachers and police were built by private companies and sold to government agencies.

The company claims the algorithm is a "secret sauce" so it can't be made public.

Also, algorithms are a private power.

Corporations profit from the authority of this enigmatic entity.

But you might think, if the algorithms are private, then there's competition, so maybe the power of the free market will solve the problem...

but it doesn't work

Injustice produces big profits

And we humans are not rational economic people.

everyone has a bias

We have discrimination and prejudice in ways we don't want or realize.

When you put the whole picture in perspective, you can see that, because it's been consistently demonstrated through experiments devised by sociologists, in which researchers sent out a ton of resumes -- equally qualified, but some with white-sounding names, some with black-sounding names -- and the results were consistently disappointing.

So it's us who have the bias, and depending on what data we collect and choose, we're injecting that bias into the algorithm.

But how can we expect flawless algorithms when we actually rely on data based on past behavior and arbitrarily choose success criteria?

I can't do that. I need to check.

I need to make sure it's fair.

Fortunately, fairness can be verified.

Because if you ask an algorithm a question, it will always answer the truth.

Can be modified and made better

I call this algorithmic auditing, let me walk you through the process.

The first is a data integrity check.

In the case of the recidivism risk algorithm I mentioned earlier, data integrity checks would mean facing the facts. For example, in the United States, whites and blacks use cannabis at the same rate, but blacks are much more likely to be arrested, four or five times more likely in some regions.

How do these biases manifest themselves in other crimes, and how do we explain them?

Then we have to think about the criteria for success, and audit those criteria.

remember the hiring algorithm

What about someone with four years of service and one promotion?

The person may have been a successful employee, but they were also supported by the culture of the company.

It's just that there may be a bias in that culture.

These two must be considered separately.

As an example, you should look at the blind auditions for the orchestra As an example, you should look at the blind auditions for the orchestra.

The auditionee is on the other side of the screen.

What I want to point out here is that the judges predetermine what's important and what's not, so they don't get bogged down by what's not important.

When we started doing blind auditions, the percentage of women in the orchestra increased fivefold.

Next we must examine the accuracy

If it's a value-added model for teachers, it's a quick failing item.

Of course, no algorithm is perfect, so we have to consider every algorithm's flaws.

How often do you make mistakes? Against whom does the model not work?

What is the loss scale if it fails?

And the last thing we have to consider is the long-term effects of the algorithm, the feedback loops it creates.

It may sound abstract, but imagine if Facebook engineers had considered the impact of feedback loops before showing only friends' posts.

I have two more things to say, one for data scientists.

We data scientists shouldn't decide the truth.

We should be the interpreters of the ethical debates that arise in the wider society.

(Applause) And non-data scientists -- and non-data scientists -- this situation is not a math test.

it's a political struggle

Algorithms like tyrants, we need an explanation.

(Applause) The era of blind faith in big data must end.

thank you

(applause)

The future I envisioned when I was young The future I'm thinking about now The future I'll think of when I'm older I'm going to try tonight to combine these three tenses into one.

In many ways, the poet sees the "dialogue nature of reality."

Now, you might ask, what is the "interactive nature of reality"?

What you want out of the world, what you want out of your marriage or in a relationship, what you want out of your kids, what you want out of your subordinates and co-workers, what you want out of yourself, none of those things happen the way you want them to.

But in the same way, what the world wants from us, our partners, our children, our colleagues, what society wants, what the future will demand of us, doesn't always happen.

What actually happens is on the boundary between what you think you are and what you think you're not.

In other words, this boundary between what we call "self" and what we call "the world" is the only place where things are real.

But surprisingly, the amount of time we spend on this dialogue boundary and not be expelled from it, no matter what means we use, is extremely short.

I got through immigration, right through the border, into the United States last year, stepping off a transatlantic international flight, not in the right place, not in the right state of mental maturity.

I'm pretty frustrated with how other people behave

I go to immigration with my shirt collar sticking out, my beard has grown a day, I'm getting more and more frustrated, and the immigration officer looks at my passport and asks me what I do.

He said his work involved "the interactive nature of reality."

(Laughter) And the examiner leaned out of the box and said that he wanted you to listen to him last night.

(Laughter) (Applause) I said, "As a poet and a philosopher, I can help.

I don't know if I can help—" Before I knew it, we were talking about his marriage.

He was at work, but the funny thing was, he was so concerned about the examiners around him that the supervisor didn't realize that we were having a real conversation.

We all live this way, on a dialogue boundary with the future.

I'll give you the example of my Irish niece, Marlene McCormick, who saw the vast Atlantic Ocean from a quay on the west coast of Spain.

My niece, who was 23 at the time, walked 800 kilometers from Saint-Jean-Pied-de-Port, on the French side of the Pyrenees, across northern Spain.

When you actually arrive in Santiago, you don't feel like you're at the extreme, and when you arrive in a city of 100,000 people, you don't get a round of applause.

(Laughter) 10,000 of those people will be trying to sell memorabilia.

But from there, if you keep walking for three more days, you'll reach the place where Marlene stood. In Spanish, it's called Finisterre, but in English, it's pronounced Finistere, which comes from the Latin word for "the end of the earth." It's the boundary between land and sea, where the present turns into the future.

Marlene took this path, graduating from the University of Sligo at age 23, majoring in Irish theater.

She said, "You're not going to get a call from a big global company."

So I calmed her down and said, "Look, I've been working in companies all over the world for decades, but a degree in theater would be the best preparation for adult corporate life -- (Laughter)."

(Applause) But my niece said, "I'm not interested in that.

I don't want to teach theater, I want to be a playwright

i want to write a play

That's why, in order to gain the courage to step into the future, I embarked on a pilgrimage."

I asked him about his most powerful moment during the pilgrimage.

She said there were many such moments, but the most powerful were the three days after the pilgrimage, between Santiago and the quay.

During that time there were three ceremonies

The first is to eat scallop tapas, if you're a vegetarian, just think of scallop shells.

(Laughter) Seashells are tokens of pilgrimage, and there are arrows under the shells to guide you along the way.

The first ritual means how you reached your goal

how it was

When you think you've been harassed How do you continue the conversation of your life

How to continue the dialogue of life that brought you here

The second ritual is to burn something you brought with you.

when asked what they cooked

It is said that he burned one letter and two postcards.

I was surprised

A 23-year-old young man with letters and postcards

I couldn't believe it

(Laughter) I was wondering if there was an app for the pilgrimage that deleted the emails that I didn't want to remember.

(Laughter) You're swathed in colored light, and you go out in flames.

You can bring the letter with you, or you can write it on the spot, but it will be burned there.

You intuitively know what's written on a letter or postcard.

About a love that has ended

And the third ritual, you're burning letters and postcards, and there's piles of clothes.

I'm leaving one of the clothes I wore on the road here.

When asked what he had left, Marlene replied,

"I put down the boots I used during my pilgrimage

It was beautiful and I liked it, but since this seven-week pilgrimage has served its purpose,

I left my boots there and walked away with my sport shoes

it was an incredible experience

The most powerful moment was when the full moon rose behind me as the sun was setting

The moon was brightly illuminated by the setting sun, and the moon was illuminated by the sun even after the sun had fallen below the horizon.

The moonlight makes my shadow And my shadow walks across the Atlantic Ocean

Then I thought this was me heading into the future But suddenly I noticed the sun was setting more

The sun's rays no longer reflected from the moon, and my shadow faded.

The most powerful moment of my pilgrimage was when I realized that I had to cross this unknown ocean and walk towards the future."

I was so inspired by this episode that I wrote a poem for my niece.

We got in the car, got home, sank into the sofa, and wrote until 2 a.m. The family was asleep, and at breakfast I gave Marlene the poem.

The title is Finisterre, a poem dedicated to Marlene.

"The path finally followed the path the sun had traveled, followed the path the sun had traveled, to the western sea, to the western sea And the moon rose from behind, at the end of the earth where it meets the sea You stood there: now there is no road to the future, only the path your shadow can follow, crossing the sea before your eyes, where the shadow goes, blocking your way, the path you've followed without understanding it. Take out the letters you've brought one by one Light a fire in the lit corner Read the shimmering letters in the dim light of the evening Empty your bag Let's leave this Let's leave this Here we swear what we had to swear all along Throw the shoes that got you here on the shore Not out of giving up Not out of giving up Now 'cause you've found another way to walk And a part of you will keep walking 'Cause no matter what Over the crest of the waves

"Finisterre"

A tribute to Marlene McCormick. (Applause) Her third production has already hit the stage, in Dublin, a long way from Broadway.

(Laughter) I'm already on my own path.

listen to another story

It's about our efforts to get to the expected destination.

The final destination could be Santiago, or it could be Mecca (the holy city of Islam), or Varanasi (the holy city of Hindus and Buddhism), or Kyoto, or it could be a goal that you set for yourself.

One of the difficulties of walking fully into your life, your body and this world is that you begin to realize that from the beginning you created three haunting illusions that you shared with everyone else.

The first illusion is the idea that we can live without any weaknesses.

It is the belief that we can escape the inevitable hardships, sicknesses and losses that have been imposed on us since the beginning of time.

When we look around the natural world, we realize that there is nothing that is not cyclical. First, there is a period of emergence or concealment, then maturity, then a beautiful disappearance, and finally a harsh and complete annihilation.

Our reaction when we saw it was, "It's beautiful, but can't we just experience the first half?

And when it starts to disappear, close your eyes and wait for a new cycle to begin."

It means that we spend half our lives fighting reality.

A mature identity is one that can live in this holistic cycle.

The second illusion is that we can live without being hurt.

first about love

When you start a new relationship or marriage, you say, "I found someone who won't hurt me."

Unfortunately, I just unconsciously chose someone with those qualities.

(Laughter) They'll eventually hurt you.

Why

because you care

when raising children

Trying to be a perfect father or mother

Children will eventually hurt their parents

Children don't have to do terrible things.

And usually they do terrible things (Laughter) and hurt their parents.

Then, like spies and operatives, the children live with their parents for years, closely observing their psychological changes and looking for weaknesses.

And then one day, around the age of 14, with my back to the kid, I was in the kitchen making something.

(Laughter) (Applause) When I asked how he knew my weaknesses,

(Laughter) They say, "I've been watching." (Laughter) "For years."

In my work, I try not to hurt myself in my professional armor.

But if you go into business with integrity, you're bound to get hurt.

You will inevitably find yourself in a situation where you don't know how to handle it.

i don't know how to proceed

what will happen

you will have to face reality

Why

because you need to ask someone for help

from getting hurt

I can't escape being hurt by people, things, or jobs that I really care about.

The third illusion is thinking that if you have enough planning, you can be prepared, see through to the end, and get things going, from where you are to the horizon.

But when you think about it that way, the only situation where that's true is in desert plains where there's no other life.

But even there, the curvature of the earth hides the way forward.

So there's no way you can see the way, you can't see it, you can see it again.

So this is "Santiago", the destination we thought we'd eventually get to, but also, in a way, a return to the beginning.

We experience the journey, the experience of the great spiritual tradition of pilgrimage.

This actually comes from standing firm in your life, but not trying to run away from planning for the future. It's just an escape from the pain of your heart in the present. The ability to stand firm in your life and see the horizon that's driving you -- then you're the journey itself.

it is the dialogue itself

"Santiago"

Hills hide your way and show you your way Roads fall and disappear Like you're walking through the air They catch you and pick you up when you think you're going to fall They catch you and pick you up when you think you're going to fall And the way you go will always be the way you came The path you followed The path that led you to the future And the path that led you to this destination Even if that path sometimes deprives you of hope Even if it always breaks your heart along the way: A feeling A feeling that you walked toward revelation from deep within You A feeling that you risked yourself in search of something that seems to be both within you and far beyond You And finally called you back to the only path you can take The clothes you love Walking in the clothes you love Walking in the clothes that you love And at night I hope you'll arrive safely In that voice that became a prayer And then one day you realized that what you wanted had already come true I realized that I was carrying feelings, thoughts and expectations And I realized that your pure hope to find your way is more than the glittering streets of any land you can reach I realized that it was more than the glittering streets of any land you can reach: I thought it was like all along I thought there would be a city with golden domes and people cheering at the end of the road And I turned the corner at the end of the road and all I found was behind a reflected image and a face looking back at me. There's a clear revelation and there's an invitation to a new path All at a glance All at a glance: Like the people and places you've been looking for Like people and places Leading you further A land of freedom Like another life Like another life The road, the road goes on."

(Applause) Thank you for your attention.

(Applause) Thank you.

(Applause) Thank you.

thank you

(applause)

Tired of your boss?

(Laughter) Don't you hate working and earning money for other people?

Who are you in the first place?

People who make money from your work

it's a capitalist

They're the people who have the capital, and they're putting you to work to increase the capital.

If you're sick of working for others and making money, then maybe you're just as sick of "capitalism" as I am.

Ironically, I'm also a capitalist.

(Laughter) I have a small business, a company in Compton called Rco Tires.

A few years ago, I read Van Jones, "Let's create green-collar jobs for low-income people," and I took it seriously.

So I co-founded a tire recycling company that I still own and run, and I'm very proud of what we've accomplished so far.

45,000 tons of rubber recycled

They turned 80,000 cubic meters of petroleum resources that were destined for landfills into new products.

(Cheers) Right now, we're hiring about 15 people, many of them people of color who have committed serious crimes, are paid above minimum wage, and are now members of the National Steel Workers Union.

(Applause) Currently, Rco is not a cooperative.

It's a privately owned company whose owner aims to contribute to the community, but hopes to one day become a cooperative.

I want my employees to kick out their bosses, who are my bosses.

(Laughter) Before I tell you why, let me tell you how it all started.

I am often asked, "How did you start Rco?" I am often asked, "How did you start Rco?"

I will answer honestly

I used my white privilege

White privilege has pushed me and Rco in this way.

My grandmother was white and was born into a plantation family in Arkansas in 1918.

My grandmother, along with her white father, took advantage of the oil boom and moved west.

My great-grandfather held various jobs at Union Oil, jobs that he wouldn't have had if he had been a black great-grandfather.

My grandmother became a hairdresser, and my grandfather and I took out a loan to build a house in West Los Angeles, a loan that no black family could ever get.

When my grandfather passed away, my grandmother was able to keep the house because she was able to receive his pension and health insurance from his grandfather, who worked for the state government, another benefit blacks never had before the anti-discrimination laws of the 1960s.

Now, 30 years later, I'm out of school and thinking about starting my own business, with a pile of debt, a credit card, and no experience in the tire industry.

But I had something that no one else had

Clean, safe and free living

I moved into my grandmother's house, and it helped me rent my first warehouse, buy my first truck, pay my first employee, because I didn't have to worry about my income.

The reason I bothered to talk about white privilege is because I often hear people say, "We should build more companies like that.

Companies like Rco, black owned businesses, women led, triple bottom line, ban the box, we need more green manufacturing companies."

But where is all that wealth and money?

But where is all that wealth and money?

Where is the capital in this community to start the business you want?

If you look at my white family, on many occasions, blacks were marginalized from the economy, while being white allowed my family to create opportunities and build wealth.

Maybe it's because racism and capitalism have been good buddies -- (Laughter) -- but in the end, you're going to ask yourself, "Why did our community fail?"

The historical context becomes very important.

There is another side to history

There's a wonderful book called "Collective Courage," which describes how thousands of African Americans were able to build businesses, schools, and hospitals, farm cooperatives, banks, and financial institutions, and ultimately communities and self-sustaining economies, with little money.

Their approach was one of working together, leveraging community resources, trusting each other, and putting solidarity first, not profit at all costs.

So there was no need to just wait for celebrities and athletes to bring money back to their poor hometowns.

But celebrities and athletes, if you're asking, feel free to donate.

(Laughter) They adopted the co-operative economy, because they knew that under capitalism, black liberation would not be financed.

This book is packed with gems of examples, and I encourage you to read it. It also contains the answer to the question I asked earlier.

The answer is the cooperative economy.

Co-operatives come in many forms.

Here it means "worker-owned"

It may be new to you, but for a century it played a key role in pushing black economic liberation and is still widely used around the world today.

You may be familiar with black Wall Street and black Zapatistas, but let me give you a more familiar example.

The South Bronx is now home to the largest worker-owned company in the United States.

Founded by Black and Latino home care workers called Cooperative Home Care Associates, the people who work there now earn a decent wage and work full time and have benefits and pensions as members of the SEIU.

The women who own this place get dividends based on their ownership in the years the company turns a profit, so almost every year.

So you can fully enjoy the fruits of your labor, and that's because you fired your boss.

Without activist investors

No rich CEO or token owner will steal the profits from the company.

Each person paid in a total of $1,000 to take ownership and become the master of their own business.

Now, there are hundreds of companies like this, and they're popping up all over the country.

I'm very inspired by these movements, because they're exploiting us -- they're replacing the current economy.

It also means that with these companies, we don't have to wait for big investors to bring chains and big box stores into the region.

Small family businesses go out of business because of big investors, entrepreneurs turn into wage earners, and money taken out of our pockets goes to shareholders.

Inspired by these stories of resistance and standing up, I started LUCI with a few friends here in Los Angeles.

LUCI is the Los Angeles Union Cooperative Initiative, which aims to increase worker-owned businesses here in Los Angeles.

So far, we've created two businesses in the last year: Pacific Electric, an electric company, and Vermont Gage Carwash.

It's an old company, but it's now owned and operated by 20 workers, all of whom are union members.

(Applause) You may be wondering why union ownership, but in fact there are a number of legitimate reasons why the labor movement is naturally associated with the movement towards worker ownership.

We have what it takes to build the kind of company that you want in your community.

money, people, and training

Union has all these

America's working class has been paying union dues for decades, and unions have used it to build dignified, decent, and democratic workplaces.

But union jobs are getting scarcer, so now is the time to call on the unions to maximize the financial and political resources that are available to create new unionized, living wage jobs in our communities.

And there are many union members who understand the importance of unity and the power of collective action.

There are also people who want to increase the number of cooperative businesses, so let's work with them.

Learning from your union, learning from your own past, learning from your peers, these are all very important to success.

It's Spanish Mondragon

In Mondragon, society revolves around worker cooperative enterprises.

We have over 260 businesses here, making everything from bicycles to washing machines to transformers.

Currently, this business as a whole employs 80,000 people and generates more than 1.6 trillion yen in revenue each year.

Every company is owned by the people who work there.

Universities, hospitals and even financial institutions have been established.

What if we could do the same thing in South Central?

The former mayor of the city of Jackson had similar thoughts.

He had ambitious plans to transform the entire city into a Mondragon-style co-op economy, called "Jackson Rising."

The story of Mondragon is a great example of what can be achieved when working-class people work together and make decisions for themselves, for each other, and for society.

What's great about Mondragon is that while we want to be like them, they're watching us.

This part of Spain is embarking on an international effort to create more like-minded societies around the world, to bring unions together, to support organizations like LUCI, and to promote the worker-owned model.

You can also participate in this activity

If you're a union member, attend union meetings Make sure your union is worker-owned and get involved

If you're an entrepreneur or a small business owner, if you're looking to start a business, work with LUCI or a similar organization to start a cooperative model.

If you're a politician, if you're in politics, if you like to talk to politicians, please work to pass laws -- at the city, state, federal or county level -- that are needed to finance and support worker-owned businesses.

For the rest of us, please learn more about our history and our model and support us. Whether you're buying things, investing, lending or participating. We can't build a more just, sustainable and resilient economy if we all work together, and that's what we need, not just for ourselves, but for our children's generations.

With that in mind, I'd like to end by quoting Arundhati Roy.

"Our strategy is not just to confront the empire head-on, but also to fill the outer moat.

keep me out of breath

ridicule

to insult

We have art, we have literature, we have music, and we also have intelligence, joy, fearlessness, and we can speak.

Tell your story, not the fiction you're made to believe

If corporate reform is going to go bankrupt, then we shouldn't buy it, reject their ideas, their stories, their wars, their weapons, their sense of inevitability.

we know we are superior in numbers

they need us more than we need them

A different future is not only possible, it's already here

When you're surrounded by silence, you can hear its breathing."

thank you

(applause)

This is a picture of me in 2006 when I was volunteering at an orphanage in Cambodia.

When it was filmed, I thought I was doing something really good and I was helping children.

i didn't know anything

It all started when I was 19 years old, backpacking through Southeast Asia.

When I arrived in Cambodia, I was reluctant to enjoy my vacation alone, and I wanted to give something back, even though there was so much poverty around me.

So I went to an orphanage and donated clothes, books and money to help the children.

One of the orphanages was very poor.

I had never seen such poverty before.

Without enough food, clean water, or money for medical care, the pitiful faces of the children hurt my heart.

I wanted to be more helpful

After raising money in Australia, I returned to Cambodia the following year and volunteered at the orphanage for a few months.

I taught English, I bought food, I bought water, I took all my kids to their first ever dentist.

But in the year that followed, I discovered that the orphanage I was supporting was very corrupt.

The director of the orphanage embezzled every penny that was donated to the orphanage, and while I was away, the children suffered severe neglect and were forced to hunt and eat rats.

I later found out that the director was also physically and sexually abusing the children.

I couldn't bring myself to turn my back on the children I cared about and loved and go back to life in Australia.

So we worked with local people and local authorities to build a new orphanage to rescue children and provide them with a safe haven.

But here again something unexpected happens.

Running an orphanage in Cambodia When I was adjusting to my new life (in Khmer), I learned Khmer, and I became fluent in Khmer.

Once I was able to communicate properly with my children, I began to notice strange things.

Many of the children we rescued from orphanages weren't even orphans.

They had parents, and a few orphans had relatives, grandparents, uncles, aunts, and siblings.

So why are these children in an orphanage when they're not orphans?

Since 2005, the number of orphanages in Cambodia has increased by a whopping 75 percent, and the number of children living in them has almost doubled, yet many of these children are not so-called "orphans."

Children born to poor families

If the vast majority of children who live in orphanages aren't orphans, then the term "orphanage" is just another convenient name for "orphanage."

Other names for these institutions include "shelters," "protective homes," "children's homes," "children's villages," and "boarding schools."

This problem is not unique to Cambodia.

This map shows countries that have seen dramatic increases in the number of foster homes and the number of children placed in these institutions.

For example, in Uganda, the number of children living in institutions has increased by more than 1,600 percent since 1992.

The problem with institutionalizing children isn't just about institutions like the one I rescued children from, where corruption and child abuse occur.

There are problems with all kinds of custody.

Sixty years of international research have shown that children raised in institutions, even in the best of settings, are at greater risk of developing mental illness, developing attachment disorders, developing growth and language delays, and many struggle to readjust when they reintegrate into society later in life, and find it difficult to form healthy relationships into adulthood.

Because these children don't know a model family and don't see how to raise a child, they also struggle to have children of their own.

So by putting so many children into institutions, we're not just affecting the current generation, but the generations to come.

This lesson has already been seen in Australia.

That's exactly what happened with the "Stolen Generation," which refers to indigenous children who were separated from their families, based on the idea that whites were better at parenting.

Think for a moment about what a foster home is like for a child.

First, the caregiver changes all the time, and every eight-hour shift someone else comes in.

On top of that, visitors and volunteers frequently come in, shower the children with the affection they need and then leave again, evoking feelings of abandonment and making them feel, over and over again, that they don't deserve to be loved.

There are no more orphanages in Australia or the United States or the United Kingdom, and there's a good reason for that. One study found that institutionalized youth were 10 times more likely to engage in sex work, 40 times more likely to have a criminal record, and 500 times more likely to commit suicide than those who did not.

Around the world, about eight million children live in institutions like orphanages, and about 80 percent of them aren't orphans.

Many of those children have families who could care for them with the right support.

But the most shocking thing to me is that we're the ones who are driving this surge in the needless institutionalization of so many children -- travelers, volunteers, and donors.

Well-meaning support, like I did in 2006, visiting children, volunteering, donating, and in doing so, unwittingly fueling an industry that exploits children and divides families.

It's no coincidence that many of these facilities are located in locations that make it easy for tourists to visit and volunteer in exchange for donations.

Of the 600 so-called "orphanages" in Nepal, more than 90% are located in the most popular tourist destinations.

It's hard to accept, but the truth is heartless. The more money that supports these institutions, the more new institutions are created, and the more children are taken away from their families to fill their capacity.

It's the law of supply and demand

I learned these lessons from my own bitter experience after opening an orphanage in Cambodia.

I put my hand on my chest and deeply regretted that I had made a mistake and that I had unwittingly become part of the problem.

I was a volunteer tourist visiting an orphanage as part of my tourism.

Furthermore, I opened an orphanage myself and arranged for tourists to visit the orphanage to raise money for it.

What I've learned is that no matter how good your orphanage is, you can't give your children what they really need: family.

Reaching out to vulnerable children and overcoming poverty can seem like a simple story, but it can be incredibly depressing to learn that it's actually not.

But fortunately there is a solution

These problems can be reversed or prevented, and the better you understand them, the better you can do them.

The organization I run now is called the Cambodian Children's Fund (CCT), and this is not an orphanage.

In 2012, we changed our operating model to support families.

Now I lead an amazing team of native social workers, nurses and teachers.

We go into communities, untangle the web of social problems, and help people and their families lift them out of poverty.

The main purpose is to keep the most vulnerable families from being fragmented within the local community in the first place.

But in cases where the child is unable to live with a related family member, we support them in foster care.

In any case, family-based support is more effective than putting a child in an institution.

Do you remember the first photo I showed you?

There's a girl trying to catch the ball

Her name is Tone, she's a strong, brave, very smart girl.

But when we first met in 2006, we were out of school, living in a corrupt orphanage where abuse was rampant.

I was severely neglected and desperately needed a mother's warmth and affection.

This is the current tone and a photo of the family.

Her mother now has a stable job, her younger brother and sister are doing well in high school, and Tone herself is about to go to college for a nursing degree.

For Tone's family -- (Applause) Tone's family broke the cycle of poverty.

The family-based support model created by the Cambodian Children's Fund has been so successful that it has become a national policy, promoted by UNICEF Cambodia and the Cambodian government, to keep children living with their families.

And -- (Applause) And the best way you can help solve this problem is by giving eight million children a voice and advocating for family-based support.

If we work together to raise awareness, we can send a message to the world that the needless institutionalization of vulnerable children should be over.

What should I do?

Let's direct our support and donations to organizations that strive to keep children with their families, not orphanages and nursing homes.

This transformation can happen in our lifetimes, so that developing communities thrive and vulnerable children everywhere are given what every child needs and deserves: the family.

thank you

(applause)

Before I get to the point, I think I should tell you a little bit about myself.

I'm not a so-called mystical spiritual person.

i am a science writer

I studied physics at university

I used to be a science reporter for NPR.

So much for the preface. While working on a topic for NPR, the advice I received from an astronomer challenged my outlook on life and, frankly, changed my life.

It was about a solar eclipse, and it was May 1994, when a partial solar eclipse was about to cross America.

I was interviewing the astronomer, and he was explaining how an eclipse happens and how to observe it, but he was emphasizing that a total eclipse, which is even rarer than a partial eclipse, is just as interesting as a partial eclipse, but it's a whole other thing.

In a total solar eclipse, the moon completely blocks the surface of the sun for a few minutes, creating what he says is one of nature's most spectacular sights.

His advice was, "You must experience a total solar eclipse before you die."

To be honest, I felt a little uncomfortable, and I felt a little familiar with the advice from someone I didn't know very well.

But I was intrigued, so I did some research.

If you're just waiting for a total solar eclipse to happen, you're going to be waiting a long time.

A total solar eclipse can be observed anywhere on Earth about once every 400 years.

But if you're willing to move, you don't have to wait that long.

A few years later, in 1998, we learned that a total solar eclipse would cross the Caribbean.

A total solar eclipse can only be seen along a narrow band, about 100 miles wide, where the moon casts its shadow.

called "total zone"

In February 1998, the total eclipse was to cross Aruba.

So I consulted my husband and we said, 'If Aruba in February

Either way it's nice," I thought.

(Laughter) We headed south to enjoy the sun and experience what happens when the sun is temporarily hidden.

So, on the day of the eclipse, we were out on the beach behind the Hyatt Regency hotel with a bunch of people waiting for the show to start.

We wore eclipse glasses with cardboard frames, dark lenses that allowed us to safely see the sun.

A total solar eclipse begins as a partial solar eclipse because the moon moves slowly in front of the sun.

So at first the sun looks like a little dip in its outline, and then that dip gets bigger and bigger until the sun takes on the shape of a crescent moon.

The process was very interesting, but not spectacular.

I mean, it was still bright around here.

If you didn't know what was going on up there, you wouldn't have noticed anything unusual.

Now, about 10 minutes before the total eclipse began, strange things started happening.

A cool breeze began to blow

There was something wrong with the sunlight, and the shadows became very strange. The shadows seemed strangely sharp. It was as if someone turned up the contrast on the TV.

Looking out to sea, I could see the running lights of the boats, so it was obvious that it was getting dark without me noticing.

It soon became clear that it was getting dark.

I felt like I lost my sight

Then suddenly the light went out

At that moment, the beach erupted in cheers and I took off my eclipse glasses, because at this stage of the total eclipse, it's safe to look at the sun with the naked eye.

I looked up at the sky and was just stunned

Considering I was in my mid-thirties at the time

I should have known, of course, what the sky was like.

I mean, (Laughter) I've seen blue skies, cloudy skies, starry skies, stormy skies, pink skies at dawn.

But this time the sky was unlike anything I'd ever seen

first is the color

Up there it was a dark purplish gray, like twilight.

But the horizon was orange, like at dusk, 360 degrees.

And in the twilight above, there were bright stars and planets.

There's Jupiter, there's Mercury, there's Venus

We were all standing in a row

And then, along this line, there was something like this, magnificent and stupefying.

It looked like a crown woven of silver thread, just floating in space, glowing.

It was the solar corona, the outer atmosphere of the sun.

Pictures can't tell

It wasn't just a ring or halo around the sun, it was like it was made of fine silk thread.

And although it was nothing like the usual sun, it was, of course, unmistakably the sun.

We could see the sun, the planets lined up, and the planets revolving around the sun.

I felt like I had left the solar system, standing in another world, looking out into space.

For the first time in my life, in that infinite space, I felt a deep connection with the universe.

It was a surreal feeling, like time had stopped. What I was seeing with my eyes felt more like a dream than a reality.

And I stayed in this nirvana for 174 seconds, less than three minutes, and suddenly the end came.

The sun suddenly appeared, the blue sky returned, the stars, the planets, the corona disappeared.

the world is back to normal

But I remained different

This is how I became an eclipse maniac, an eclipse tracker.

(Laughter) That's how you spend your time and your hard-earned money.

Every few years, wherever the moon casts its shadow, I go to it again, to enjoy a few minutes of cosmic bliss, and to share the experience with others, with my friends in Australia and the whole city in Germany.

In 1999 in Munich, hundreds of thousands of people filled the streets and rooftops and cheered when the solar corona appeared.

Over time, I changed. I became an eclipse preacher.

I see it as my mission to pass on the advice I received years ago to the next person.

So let me tell you, before you die, you should definitely experience a total solar eclipse.

The ultimate awe-inspiring experience

The word "awesome" is overused and loses its original meaning.

"Awe" is exactly the sense of wonder and admiration you feel when you encounter something grand and sublime, something that rarely happens in life.

But the experience is very powerful.

Awe eliminates the ego

we can feel connected

It really encourages empathy and tolerance.

Nothing can be more "awesome" than a total solar eclipse

Unfortunately, very few Americans have seen a total solar eclipse, because it's been 38 years since a total solar eclipse last crossed the continental United States, and 99 years since it last crossed the United States.

But that's about to change

Over the next 35 years, five total solar eclipses will hit the continental United States, three of which are particularly large.

Six weeks from now on August 21, 2017. (Applause) The moon's shadow will run from Oregon to South Carolina.

On April 8, 2024, the moon's shadow will move north from Texas to Maine.

On August 12, 2045, the track will cross from California to Florida.

I think that day should be a holiday

(Laughter) (Applause) What if we all stood together, with as many people as possible, under the shadow of the moon?

Perhaps by sharing our experiences of awe, we can dissolve our divisions and become more compassionate towards each other.

To be honest, some people think my preaching goes too far, obsessive and quirky.

Why are you so obsessed with what happened in such a short time?

Why run around the world and cross borders for something that lasts only three minutes?

Like I said, I'm not a spiritual person.

I don't believe in God either

I don't believe in God either

But when I think of my own mortality, which I often do, when I think of all the people I lost, especially my mother, the awe-inspiring memory of Aruba comforts me.

I remember being on that beach and looking up at the sky and remembering how I felt.

My life may be fragile, but it's all right too 'cause I'm part of the universe

So that's the lesson I've learned, and it applies to your life as well. The length of experience is not the same as the strength of influence.

One weekend, a little conversation, even what you see for a second, has the power to change everything.

Cherish those moments when you feel a deep connection with people and the natural world, and make them your top priority.

i chase the eclipse

you might be chasing something else

But that's not what 174 seconds is for.

What matters is what happens in the years that follow.

thank you

(applause)

This is an ongoing project based on the need for vaccine storage that was discussed at TED two years ago.

(♪Music♪) Twenty-nine years ago, a teacher told me about heat absorption and cooling, and I couldn't get it out of my head. yes! It's like a Stirling engine. That's how I feel. Well, the heat absorption type refrigerator was invented by Ferdinand Carre in 1858, but the technology at that time was not able to actually implement it. Then in 1982, Canadian Powell Crosley released something called Icyball.

It was a novel idea, but I'll explain the failures later, and here's how it works. One of the spheres connected by two pipes contains an aqueous solution of refrigerant absorption liquid, and the other contains a radiator. When you heat an aqueous solution of ammonia, the ammonia evaporates and concentrates in the other liquid. As you lower the heat,

Ammonia evaporates again and is reabsorbed by the warmer side of the water,

A cooling effect occurs. It was a good idea, but it didn't work. It exploded. If you heat the ammonia incorrectly,

A lot of air pressure is generated and reaches up to 400 psi. Toxic ammonia was released.

But it was a sensible idea.

Well, in 2006, when a really good computer became available, Stanford University

Department of Thermodynamics and Computational Fluid Dynamics Collaborate

The numbers for coolers with ammonia proved to be false. We also discovered a non-toxic refrigerant that works at low vapor pressures. Bringing in a team from the UK

About thermal cooling

I made a test device with excellent people.

And we proved that a low-pressure, non-toxic cooler is possible.

Here's how it works.

Heat it first. Everyone in the world is on fire, isn't it?

Either camel dung or firewood. After heating for 30 minutes and cooling for 1 hour, put it in a container,

Provides 24-hour cooling effect.

It's not perfect, but this is the fifth generation prototype. It weighs about 8 pounds and is effective in a 15 liter container.

Cools to just above the freezing point. Cooling effect lasts 24 hours in an environment of 30 degrees. Very cheap, $25 for a large quantity, even for a small quantity,

It can be produced for $40.

I believe that we can make refrigerators accessible to everyone.

thank you very much.

(applause)

This talk is about cancer and sugar

When I was in college, I became interested in carbohydrates.

It's not about this sugar

My biology professor taught me that sugar is what coats the cells of the human body.

You probably didn't know that your body's cells were coated with sugar.

I didn't know until I took a class on this in college, but at the time, when it was discovered in the 1980s, I didn't really understand why human cells were covered with sugar.

And what I've come to realize, after revisiting what I wrote down in my college classes, is that the sugar that coats our cells is like the sugar coat that coats M&amp;M peanuts.

Carbohydrates that coat cells were thought to play a protective role in making cells stronger and tougher.

Now, decades later, we know it's even more complicated.

If you were to become a microscopic airplane and fly over a cell and look down on the surface of the cell, you would be looking at the topography like this.

These shrubs and trees look like complex carbohydrates, and the willow trees sway in the wind.

As a biologist and chemist, when I started thinking about complex carbohydrates that look like leaves in human cells, it became one of my greatest interests.

Today, we think of the sugars that coat the surfaces of our cells as something like language.

The complex structure of this carbohydrate stores a lot of information.

what does that mean

We know some information about complex carbohydrates, and it's very important in the medical world.

One of them is that the carbohydrates in your cells determine your blood type.

Red blood cells, a type of blood cell, are coated with carbohydrates, and the chemical structure of those carbohydrates determines your blood type.

I know my blood type is O

How many type O people are there?

please raise your hand

It's a pretty common blood type, but they barely raised their hands. Either you didn't hear my question, or you didn't know your own blood type.

(Laughter) Anyway, if you're type O, like me, you'll find this chemical structure on the surface of your red blood cells: three simple sugars linked together to form a more complex carbohydrate chemical structure.

is the definition of type O

How many people have blood type A?

you here

An enzyme in the red blood cell adds another component, a carbohydrate, shown in red, to create a more complex structure.

How many people have type B blood?

there are quite a few

You have a slightly different enzyme than type A, and a slightly different structure. People with AB inherit each enzyme from their mothers and from their fathers, and have both chemical structures in roughly equal proportions.

And as we all know, this has made it possible -- now, in the last century -- to make one of the most important medical procedures in the world, blood transfusions.

By knowing your blood type, you can be sure when you need a transfusion that the donor's blood type is the same, which can prevent rejection caused by foreign sugars entering your body.

What other role does the sugar on the cell surface play?

May let you know if you have cancer

Decades ago, the analysis of cancer tissues began to reveal the relationship between cancer and carbohydrates.

A typical scenario you might think of is that once cancer is detected in a patient, the tissue is biopsied and sent to a pathology lab to be analyzed for chemical changes in sugars, and based on this, the most appropriate treatment would be informed to an oncologist.

In studying the link between cancer and carbohydrates, we discovered that carbohydrates change when cells develop cancer.

Although the relationship between cell surface carbohydrates and cancer has been repeatedly examined,

The big challenge in this field is knowing why.

Why do cancer cells have different carbohydrates and what is their importance?

Why is this happening? What can we do if we know that it is related to the pathological process of cancer?

One of the changes that we're studying is an increase in the density of certain carbohydrates called sialic acids.

Sialic acid is likely to become one of the most important carbohydrates of our time, so it's good to remember these words.

sialic acid is the sugar we eat

different sugar

It's a sugar present in every cell in the human body, each found at a specific density.

In fact, it's very common in our body's cells.

For some reason, cancer cells, at least aggressive cancer cells, tend to have more sialic acid than normal cells.

Why?

What does that mean?

What we do know is that it has something to do with the immune system.

Let me tell you a little bit about the importance of the immune system in cancer.

been featured in the news recently

There's a term that people are familiar with is "cancer immunotherapy."

Some of you may know people who are being helped by this very new cancer treatment.

What we now know is that white blood cells circulating in our bloodstream routinely protect us from internal problems, including cancer.

In this picture, the green balls are the immune cells, and the big pink cells are the cancer cells.

These immune cells inspect cells throughout the body.

that's the job of immune cells

Most of the time it's fine

sometimes there are abnormal cells

If it's cancer, hopefully the immune cells will detect it and launch an all-out attack to kill the cancer cells.

we know

Also, if we can strengthen the inspection of immune cells and attack cancer cells, we will be able to effectively prevent cancer, and we may even be able to completely cure cancer.

There are now several cancer drugs on the market that work in this way.

These drugs can activate the immune system and make it more active to protect us from cancer.

In fact, it's safe to say that one of those drugs saved President Carter's life.

Former President Carter developed melanoma that had metastasized to his brain, and the diagnosis -- usually accompanied by numbers -- was "three months to live."

But he's been treated with one of the new drugs that activate the new immune system, and his melanoma now appears to be in remission, which is amazing, which would have been unthinkable just a few years ago.

In fact, it's so amazing that new immunotherapeutics have been dubbed, in provocative terms, "penicillin's arrival in cancer."

It's incredibly bold words to say about a disease that we've been battling for so long and we've barely won.

Immunotherapy is very promising

But what does this have to do with sugar?

i will tell you what i know

When immune cells attach themselves to cancer cells and inspect them, they look for signs of disease, and if they find those signatures, the immune cells become activated, attack the cancer cells, and kill them.

But when cancer cells have high sialic acid densities, it becomes quite attractive to immune cells.

Immune cells have a protein that binds to sialic acid, and if that protein gets lodged at the immune synapse between an immune cell and a cancer cell, the immune cell shuts down.

Sialic acid tells immune cells, "This cell is fine, there's nothing here.

Look for another

In other words, when our cells are thickly coated with sialic acid, they look attractive to immune cells.

Surprise

What if you could peel off that coating and remove the sialic acid?

The immune cells may then see cancer cells for what they really are and see them as something to be destroyed.

we are studying this

We're developing new drugs, and it's basically a "cell surface lawnmower," where the molecules just go to the surface of the cancer cells and harvest the sialic acid, so that the immune system can reach its full potential, and the immune cells can kill the cancer cells.

To conclude, I'll repeat it again, our body's cells are coated with sugar.

That sugar tells immune cells whether the cells being checked are healthy.

This is important because the immune system needs to leave only normal cells untouched.

Otherwise we will get autoimmune diseases.

But sometimes cancers express these carbohydrates,

We also know that it can deactivate the immune system. To do that, we can develop new drugs that wake up the immune cells, telling them, "Ignore that sugar and eat that delicious treat called cancer."

thank you

(applause)

(Mother Earth) The world was coming to an end, but the end was far away

Wind, water, and fire have been revived peacefully Humans and I have reconciled, regained a healthy heartbeat, and a gentle environment has returned.

Man protects the earth, I reward it with grace, the picturesque blue sky is back, the rolling mountains are covered with forests, and there is no more warming.

It looks as if it was immaculate and simple

do you remember

what I gave to humans

It provided a place where the four elements of nature, the earth, the sea, birds, beasts, and all humans, especially humans and nature, meet and resonate.

(playing the piano) (playing the violin) (music) (uptempo) (playing the violin) (music) (playing the violin) (music) (music ends) (applause) My beauty is defiled, the water is murky, the fields are wasteland, the wounds inside are no longer healed, and the memory is fading.

Human beings once wondered while worrying about the extent of the earth? how was it created? My essence is diametrically opposed Sometimes the sweet wind whispers softly and sometimes the sea swells violently.

do you remember

what I gave to humans

It provided a place where the four elements of nature, the earth, the sea, birds, beasts, and all humans, especially humans and nature, meet and resonate.

An invisible traveler blows through eternity Carrying and shifting life The clouds that cover the earth have felt and listened to the wind It is powerfully shaking and blowing the earth.

The people breathe, the wind is purified, gentle and still, and finally silence.

The source is here forever The rising and falling "air"

A throbbing stream A tranquil swell that flows gracefully A tranquil swell that flows smoothly A pure thing that flows smoothly A rain that quickly replenishes The river's flow is full of dreams A multitude of powerful springs cover the earth Purifies what we don't need Drink, liquid, life and power "Water"

From the time this world was born, it gives human beings warmth and light, adding color to the swaying embers, shining brightly and powerfully.

Sacred son of air Father of wrath Dance is energized Powerful between perfection and beauty

"Fire" that moves lightly, quickly and flashily without hindrance, and inspires new ingenuity

(chunk one star dance) (hymn chanting) (drum sounds) (drums and chanting) (drums and chanting) (drums and chanting) (music ends) (applause) (violin playing) (music) (music ends) (applause)

Have you ever seen how birds fly in flocks?

Thousands of animals flying in perfect harmony, it's fascinating, isn't it?

What I want to point out here is that these bird movements can't be done if everyone follows one leader.

Follow-up makes the herd too slow to react.

Scientists say that these swarms are coordinated by a few simple rules that allow each individual to make autonomous decisions while maintaining the unity of flight as a swarm.

Coordinating the whole in this way preserves individual autonomy, and that autonomy allows the flock to move quickly and flexibly.

Now what does this have to do with us?

What this example shows is what I believe is the most important change in the way we work today.

The world is moving faster and more complex, and we need to change the way we work, putting purpose and alignment at the center, eliminating bureaucracy, and truly empowering everyone to make decisions faster.

The only question is what are you willing to give up to make it happen?

A few years ago, the bank I worked for wanted to embark on a digital transformation.

We were trying to make the product simpler, more straightforward, and more relevant.

In case you don't know the inner workings of a bank, let me tell you what a typical old-fashioned bank looks like.

There's a lot of people in suits, and they're going to get in elevators, they're going to their departments, and salespeople are sitting with salespeople, techs with techs, and so on.

There are 20 people in the meeting, and nothing is decided.

great idea? Even if there is, it's buried in tons of powerpoints.

And the handover between departments went on and on

It takes an inordinate amount of time to do anything

So the bank realized that in order to transform, it needed to fundamentally change the way it works to speed up its commercialization.

But how?

To get a hint, we decided to look at some of the more innovative companies: Google, Netflix, Spotify, Zappos.

I remember walking down the hallway at one of these companies in December 2014, and we, a management consultant and some bankers,

I felt like an outsider out of place, filled with beaded cushions, hooded sweatshirts and smart, creative employees.

We asked how the company was organized.

I thought the organization chart would come out

They came out with a chart that we had never seen before, with funny names like "squads," "branchs," and "tribes."

We asked questions to try and apply it to our own world.

"How many subordinates do you have?"

"It's case by case"

"Who is your boss?"

"It's case by case"

"Who decides the order of priority of work?"

"It's case by case"

how surprised we are

I tried to find out some basic principles of organization, but they said "case by case."

But after spending a day there, I got to know their way of doing things.

They believed that there was power in small, autonomous teams.

A team like a small start-up company

Each team had a product person and an IT person, and they were able to design ideas, build them, and test them with customers, all without the help of other people in the company.

No inter-departmental handover was required

Because the team had all the necessary skills.

And at the end of the day, we all got together and talked about what we'd realized.

We started to like the way they did it, and we were already thinking about how we could bring some of these ideas to the bank.

Then one of the hosts, a man who had been silent all day, suddenly said, "You seem to like the way we do things.

I have one question. What are you prepared to throw away? ”

What are you willing to give up?

I couldn't give you an answer on the spot, but I thought what he said made sense.

Change isn't just about bringing in the new, it's also about letting go of some of the old.

Now, over the last five years, I've been working with companies around the world to change the way they work.

Of course, every company has people who are skeptical that it won't work for them.

"Our product is more complex," or "Unlike theirs, our IT systems are outdated."

But at this bank, and at other companies I've worked with since then, I could have changed.

In less than a year, we broke down the old barriers between marketing, product planning, distribution and IT.

3,000 employees reorganized into 350 cross-functional teams

Instead of product people sitting with product people and engineers sitting with engineers, now product people and engineers are members of the same team.

Anyone can be a member of different teams, such as the account opening team, the mobile app team, etc.

Some people shook hands for the first time on the launch day of their new organization, but in reality, they'd been sitting within two minutes of each other, but they'd been sending each other emails and progress reports for the last 10 years.

I've heard voices like, "Oh, you were the one I was always reminding you of?"

(Laughter) But now we have coffee together every day.

If a product person comes up with an idea, they can just talk it out and get feedback from the engineer sitting next to them.

You can go straight to customer validation, no hands-offs, no powerpoints, no bureaucracy, just do what you gotta do.

But getting there is not easy

After all, here, "What are you prepared to throw away?"

I have to ask

Autonomous decision-making requires cross-functional teams

We want teams to make decisions themselves, rather than running up and down the organization to make decisions.

But to do that, you need to have the skills and expertise within your team to make that decision.

There's a difficult trade-off here.

Can different buildings, cities or people working in different countries be physically relocated?

Or should we invest in expanding our video conferencing system?

How do you get consistency across your team in how you work?

We still need some sort of management infrastructure.

It's not easy to change any of these organizational structures, business processes, procedures.

But in the end, I've found that the hardest thing to change is your own behavior.

Please let me explain

In order for teams to be as agile, flexible and creative as small startups, they need to be empowered and autonomous.

In other words, if a leader orders his subordinates what to do and when to do it, it will not work.

no micromanager required

Instead, each employee must be a leader, regardless of title.

We all stand up and lead

But if the teams were to run in different directions, it wouldn't work, and that would be chaos.

So, like a flock of birds, we need integrity and autonomy at the same time.

To make this happen in an organization, we need new behaviors, and with every new behavior, we have to let go of something old.

What leaders need to do is ensure that each person in the organization is aligned around the overall purpose of the organization, the why, and the overall priorities, the what.

And by liberating and trusting your team, you enable them to make the right decisions and achieve their goals.

Alignment requires open and transparent communication.

On the other hand, it is sometimes said that information is power.

Some managers feel empowered by sharing proprietary information with everyone.

and not just managers

We need open and transparent communication between teams.

In these companies, teams often work in a sprint style, and after each sprint, they meet for a debriefing session to share their achievements and maintain transparency.

And every day, everyone on the team gives progress reports on their work.

This transparency can make people uncomfortable, because suddenly there's nowhere to hide.

Everything you do is in full view of everyone

So it's not easy to be consistent, and obviously it's not easy to have autonomy.

An executive at another company often recounted how he used to be very good at keeping track of progress.

Now, if you want to know how things are going, instead of reading progress reports, you have to go to the site where the team is and attend meetings.

And instead of telling you what to do, think about how you can help.

For those who were chasing progress, this is a radical change.

But the executive said, "In the old days, it was an illusion that I was in charge.

The reality is that many projects ended up being delayed and over-budgeted.

Now that we have more transparency, we can make early course corrections if necessary.”

Middle management also needs to change

First of all, you don't need handovers and powerpoints, so you don't need as much middle management.

In the old days, people were divided into those who used their brains and those who sweated.

The employees simply obeyed orders

But today's middle managers are expected to be playing managers, not just managing people.

Imagine a person who has spent the last 10 years instructing others and is now expected to do it himself again.

Clearly, this approach isn't for everyone, and the best people leave the company.

But as a result, a new culture emerges and the hierarchy becomes weaker.

Accomplishing all this is hard work

but it's worth it

The company I worked for only introduced new products a few times a year.

Now, we're launching new products every few weeks, and without handovers and bureaucracy, the whole organization is more efficient.

And if you walk the corridors of these companies now, you'll feel a renewed sense of vitality.

It's like walking down the hallway of a very large startup.

To be fair, these companies haven't yet declared victory.

But this new way of doing things, at least, allows us to be much more responsive to change.

The world is moving faster and more complex, and we have to reinvent the way we work.

The hardest part of changing that isn't the organizational structure, the business processes, the procedures, it's not that upper management should take responsibility.

It's about everyone in the organization being a leader and embracing change.

We all need to lead the change

So the question is what are you willing to give up?

thank you

(applause)

I want to talk to you today about AI and us.

AI researchers have always said that the only jobs computers will take over are menial tasks, so don't worry.

Is that really true?

AI technology will also create new jobs, so people who have lost their jobs can find new ones.

I guess so

The question is, how many of the people who lose their jobs because of AI will find new ones, especially if AI can learn things better than most of us.

I have a question. How many of you think AI will be able to pass the entrance exams to top universities by 2020?

I'm fine

"Of course it will!"

Singularity is now a problem

Some people may think, "Since AI has already beaten the master at Go, it might be so."

And some people will say "absolutely impossible"

I don't know the answer yet

That's why I started the "Tourobo-kun" project, an attempt to create an AI that can pass the entrance exam for the University of Tokyo, the best university in Japan.

This is Tou Robo-kun

The brain, of course, runs on a remote server.

I'm writing a 600-word essay on maritime trade in the 17th century.

How does that make you feel?

The reason why I chose the entrance exam as a benchmark for AI

I thought there was a need to study the capabilities of AI relative to humans, especially the skills and professional competencies that humans are supposed to be able to acquire only through education.

In order to enter the University of Tokyo, it is necessary to take two types of exams.

The first is a multiple-choice national standardized test.

You need to take exams in seven subjects and get a high score. Unless you have a correct answer rate of 85% or higher, you will not be able to take the second written exam prepared by the University of Tokyo.

First of all, how the current AI works is the quiz show Jeopardy! Let's take as an example the challenge of

A typical Jeopardy problem goes something like this: "Mozart's last symphony has the same name as 'The Planet'."

Interestingly, the questions asked in Jeopardy are always in the form of "this what," "this planet," "this country," "this rock singer."

In other words, Jeopardy doesn't ask many types of questions, it asks one type of question -- trivia that can be answered in one word.

By the way, do you know the answer to this question?

What do you do when you don't know the answer and want to know the answer?

you search on the internet

of course

But you have to choose the right keywords to search for, like "Mozart last symphony."

AI does basically the same thing.

Then this Wikipedia page will be the first hit.

Then, as for whether the AI ​​reads the content,

wrong

Unfortunately, today's AI, whether it's Watson, Siri, or Torobo-kun, can't read.

But AI is good at searching and optimizing.

The AI ​​recognizes that the keywords "Mozart," "Last," and "Symphony" appear a lot around here.

So if there's a planet name that appears with these keywords, that must be the answer.

That's how Watson finds the answer: "Jupiter."

Our Torobo-kun works in the same way, but we've made it a bit smarter to solve historical true-or-false problems.

Torobo-kun first turns it into a fill-in-the-blank question, "Charlemagne defeated (these people)."

Then the "Avars" will be ranked higher than the "Majars".

I know this sentence doesn't seem right

Our robots don't read them, they don't understand them, but they're statistically correct in most cases.

For the second written exam, you'll have to write a 600-word essay that looks something like this [Tell us in 600 words about the rise and fall of maritime trade in East and Southeast Asia in the 17th century...] As I showed you earlier, our robot will take sentences from textbooks and Wikipedia, combine them, optimize them, and make an essay without understanding anything.

(Laughter) But to my surprise, the robot essay was better than most of the students.

(laughs) What about math?

A fully automated machine that solves math problems has been a dream since the term "artificial intelligence" was coined, but it remained at the level of arithmetic for a very long time.

Last year, we finally succeeded in developing a system that could solve a high school math problem from start to finish, like this one.

This is the original problem written in Japanese, and I had to teach 2,000 mathematical axioms and 8,000 Japanese words to be able to enter the problem written in natural language.

Here we are converting the original problem into a machine-understandable formula.

It's weird, but now we're ready to solve it.

let's figure it out

I'm doing symbol processing right now.

It's getting weirder and stranger, but this is probably where machines have the most fun.

(Laughter) The complete answer is printed, although the proof is something that even a mathematician can't read.

Anyway, last year our robot was in the top 1% in math on the secondary written exam.

(Applause) Thank you.

So did you get into the University of Tokyo?

no i didn't get in as i expected

Why?

because you don't understand what it means

Let me give you an example of a typical mistake a robot makes in an English test.

This is a fill-in-the-blank problem in the conversation between the two [A, the bookstore is coming soon. Just a little more walking. B wait, ( \_\_\_\_ ).

Thank you, Mr. A, as always. Mr. B, you tied your shoes five minutes ago, didn't you? Option 1 You walked a lot. ② It's coming soon. ③ Those shoes look expensive. ④ Your shoelaces are untied. ]

For those of us who can understand the situation

It's obvious that number 4 is the correct answer, right? But Tou Robo-kun chose number 2.

After learning 15 billion English sentences using deep learning techniques.

You see what I'm saying, the current AI can't read it, it can't understand it.

I'm just pretending that I can.

This is the distribution of the scores of 500,000 students who took the same exam as Torobo-kun.

Currently, our robots are in the top 20% and can pass over 60% of Japanese universities, but not the University of Tokyo.

But notice that you're above the majority of people who become white-collar.

You'd think I'd be happy with this result.

After all, our robot has surpassed many students.

I was rather concerned

How could this unintelligent machine outperform human students and our children?

I decided to find out what was happening in the human world.

We took hundreds of sentences from middle and high school textbooks, created simple multiple-choice questions, and asked thousands of middle and high school students to answer them.

Here is an example of the problem [Buddhism spread mainly in Southeast Asia and East Asia, Christianity in Europe, North and South America and Oceania, Islam in North Africa, West Asia, Central Asia and Southeast Asia] Of course, the original problem was written in Japanese, the native language of the students.

[Q. ( \_\_\_\_ ) spread to Oceania.

Choice ① Hinduism ② Christianity ③ Islam ④ Buddhism] Of course the answer is Christianity, right?

It's written in the question!

Tou Robo-kun also chose the correct answer

But a third of middle schoolers got it wrong on this question.

Is this a story only for Japan?

I don't think so, because Japan consistently ranks high in the OECD Survey of Student Achievement, a test that measures the mathematics, science and language skills of 15-year-olds in each country every three years.

We've always believed that if there were good learning materials available on the web for free and accessible on the Internet, everyone would be able to learn well.

But all that great material will only benefit those who can read well, and the percentage of those who can read well may be much lower than we think.

We need to think carefully about how humans coexist with AI, based on solid evidence.

And we have to do it quickly because we're running out of time.

thank you

(Applause) (Chris Anderson) Thank you very much.

(Noriko Arai) Nice to meet you

CA: Anderson, your story did a really good job of giving you a feel for how AI thinks, what it does well and what it doesn't.

If I'm getting it right, you think that we need to urgently transform education so that we can help our children about what humans can do better than AI.

(Arai) That's right.

we humans can understand

This is the part that AI is sorely lacking.

But many students just cram knowledge without understanding, and that's not knowledge, it's just rote memorization, which AI can do.

So we need to think of new types of education.

CA: It's a shift from rote memorization to understanding meaning.

(Arai) Yes

CA: That's a challenge for educators. Thank you.

(Arai) Thank you very much.

(applause)

Christmas Eve 1968

Apollo 8 had just orbited the moon three times.

Three days after launch at Cape Canaveral, this was the first human journey beyond low earth orbit.

As the spacecraft made its fourth orbit, the Earth slowly moved into view and appeared on the moon's horizon.

Astronaut William Anders scrambled for his camera, grabbed his Hasselblad, pointed it at a window, pressed the shutter, and took the most important photo in history: Earthrise.

A few days later, the crew returned safely to Earth and were questioned about the mission.

Anders replied, "What we found when we went to the moon was the Earth."

What did he and his fellow astronauts feel in that incredible moment?

In a study published only last year, a team of researchers at the University of Pennsylvania gathered testimonials from hundreds of astronauts who had the opportunity to see Earth from space.

The analysis revealed that three sensations were prevalent: first, an appreciation for the beauty of our planet; second, an enhanced sense of connection with all other life; and, unexpectedly, a sense of emotional overwhelm.

Researchers believe that by looking away from Earth, we develop new cognitive frameworks for understanding what we see.

Astronauts were forever changed by this new perspective, new perspective, new visual truth.

This sensation is known as the "overview effect."

Only 558 people have ever been to space.

558 people were awestruck by the sight of the Earth floating in the endless sea of ​​darkness.

But what if there were more people?

Three years ago, I started a mission to bring this overwhelming sense of scale and beauty to more people, using a tiny computer in my cramped apartment in New York City.

In 2013, I launched a site called "Daily Overview".

Every day, we use satellite imagery to create a vast bird's-eye view of the Earth.

I've created over 1,000 images so far, and have over 600,000 followers who want to take a break from this daily perspective.

The image I'm using is found in DigitalGlobe's vast array of satellite imagery.

This company operates five satellites, each about the size of an ambulance, constantly taking images of the Earth, orbiting the Earth at 28,000 kilometers per hour.

what does this mean?

Each satellite carries a camera with a focal length of 16 meters, which is 290 times longer than the 55 mm lens on a typical DSLR camera.

If you put such a satellite on the roof of this theater in Oxford, you could take a nice picture of a soccer ball in an Amsterdam stadium.

from 450 km away

It's an incredibly powerful technology.

When I started this project, I decided to use this incredible piece of technology to capture the places where humans have impacted the planet.

Our species digs and strips the earth for resources, produces fuel, grows animals and crops for food, builds cities, moves around, and produces waste.

And in the process of doing these things, we're shaping landscapes of land, oceans, and cities, increasing control with impunity.

With that in mind, I would like you to take a look at my bird's-eye view of the Earth.

Cargo ships and oil tankers are waiting to enter the port of Singapore.

The second largest port in the world by cargo volume, handling 20% ​​of the world's shipping containers and 50% of crude oil.

If you look closely at this bird's-eye view, I think you can see a small speck.

A cow in a feedlot in Summerfield, Texas.

Once the cows reach a certain weight, which is about 300 kilograms, they are moved here and given a special diet.

Then, in three to four months, the cow gains 180 kilograms and is shipped to the slaughterhouse.

I'm guessing you're wondering about this bright pond at the top of the picture.

This color is due to a unique combination of fertilizers, chemicals and algae that grows in stagnant water.

This is a beautiful but terrifying scar inflicted on the earth at the Whaleback Iron Ore Mine in the Pilbara region of Western Australia.

98% of the iron ore mined in the world's mines is used to produce steel, which is the main raw material for buildings and automobiles, as well as electrical appliances such as dishwashers and refrigerators.

This is a solar concentrator in Seville, Spain.

This facility has 2,650 mirrors arranged concentrically around a 140m tower.

At the top of the tower is a capsule containing molten salt, and the light reflected off the mirrors on the ground is collected to heat the molten salt.

The molten salt is sent to underground storage tanks, where the heat is used to create steam that spins turbines that generate electricity for 70,000 homes and save 30,000 tons of carbon dioxide a year.

This bird's-eye view of deforestation in Santa Cruz, Bolivia, sits alongside pristine rainforest.

The biggest drivers of deforestation in this country are the expansion of mechanized agriculture and cattle grazing, as the country struggles to meet the food demands of a growing population at the expense of its forests.

In just ten years from 2000 to 2010, the country lost 18,000 square kilometers of forest.

This is the Eixample district in Barcelona, ​​Spain.

Bird's-eye views are very useful for understanding how cities function, and they can help us come up with clever urban planning strategies.In 2030, the world's urban population is expected to reach 4.9 billion people, and the importance of urban issues is only increasing.

This area of ​​Barcelona features a strict grid pattern of apartments with communal courtyards and octagonal intersections that are sunny and airy and offer on-street parking.

This is also a grid, but the situation is very different.

This is the Dadaab refugee camp in northern Kenya, the largest refugee camp in the world.

To deal with the influx of refugees fleeing famine and conflict in Somalia, the United Nations created this grid on the left to provide housing for an ever-increasing number of refugees.When refugees arrive, they settle in white dots.These dots are actually tents that fill the area over time.

Once you have one bird's-eye view like this, you can capture the moment.

But when you get two images that are staggered, you can tell the story behind the changes that happened in between.

I call this feature of the site "juxtaposition," and here are some examples.

Every April in Holland the tulip fields are in full bloom.

Compare images taken during March, a few weeks before flowering, with images a few weeks later.

Blooming tulips are like rivers of magnificent colors

The Netherlands produces 4.3 billion tulip bulbs a year.

In 2015, two dams burst at iron ore mines in southern Brazil, causing the worst environmental disaster in Brazil's history.

Sixty-two million cubic meters of waste was released when the dam burst, destroying many villages, Bento Rodriguez being one of them.

changed by the flood

19 people lost their lives in this disaster

Over the ensuing years, half a million people have had no access to clean drinking water, and the waste that flows into the Doce River has flowed 650 kilometers down its watershed into the ocean, killing countless plants and animals along the way.

And the last one is about the Syrian crisis, which has killed hundreds of thousands of people and displaced millions.

This desert area was taken in Mafraq, Jordan, in 2011, when the civil war started. Compared to this image taken this year, 2017, you can see the construction of the Zaatari refugee camp.

Like the Apollo 8 astronauts' first glimpse of the Earth rising above the moon's horizon, landscapes like the one I'm presenting today from space were once unimaginable.

You may enjoy a beautiful image and when you find out what it is, you may be confused by the fact that you still like it.

It's that kind of tension that I try to create in my work, because that kind of thinking, that kind of inner dialogue, leads to a greater concern for the planet and more attention to what we do with it.

I think the importance of taking a bird's-eye view of the earth has never been greater.

With the amazing technology of high-flying cameras, we can observe, monitor, and expose the unprecedented impact of human behavior.

Whether you're a scientist, an engineer, a politician, an investor, an artist, if we take a broader perspective, accept the truth about what's happening, and think deeply about the long-term health of our planet, we can create a better, safer, smarter future for our unique home.

thank you

(applause)

Why do people deliberately destroy cultural heritage?

That in doing so, we can erase our history and our cultural memory.

do you believe?

The fact is that we are losing our cultural heritage to erosion and natural disasters, but this is very difficult to avoid.

Today, I want to show you how we can use photography -- your photography -- to recreate lost history through innovative technology and volunteer efforts.

In the early 20th century, archaeologists discovered hundreds of statues and artifacts in the ancient city of Hatra in northern Iraq.

These statues have been found in pieces, some without heads or arms, but we can still learn about their background from the clothing and posture they wear.

For example, we think of a barefoot figure in a knee-length tunic as a representative statue of a priest.

However, a closer look at this particular statue reveals that the tunic it wears is elaborately decorated, leading researchers to the conclusion that it is a statue of a king serving a religious function.

In 1952, the Mosul Museum of Culture was opened in northern Iraq, and this statue, along with other statues, was collected for posterity.

After the US-led invasion of Iraq in 2003, some statues and relics were moved to Baghdad, but this statue remained.

And then in January of last year, a video was released and it went viral on the internet in an instant.

some of you may remember

a short clip

(Video) (Arabic song) (End of song) Not a very pleasant sight, is it?

Did you notice anything familiar?

here

That very statue has been toppled and shattered.

When Matthew Vincent and I saw this footage, we were blown away.

As archaeologists working on digital preservation using innovative techniques, an idea came to my mind.

Perhaps we can crowdsource and digitally restore images of these artifacts taken before they were destroyed.

If it's possible, we can put them in a virtual museum and tell the history.

So, two weeks after I saw this video, I started a project called "Project Mosul."

Do you remember the picture of that statue I showed you?

In fact, this is a pre-destroyed photo, reconstructed from crowdsourced data.

Now, I think a lot of people are thinking, how does that work?

The key to this technology is something called photogrammetry, which was invented here in Germany.

This technology allows us to create a 3D model using 2D images of the same object taken from different angles.

It may seem like magic, but it's not.

I'll show you how it works

Here's a crowdsourced image of the same statue.

Computers can detect similar features in multiple photographs -- similar features of objects.

Then you can start reconstructing the object using multiple photos, in this case in 3D.

In this case, the position of the camera where each picture was taken is shown in blue.

I have to admit that this is a partial restoration, but why partial?

It's simply because the statue was placed against the wall.

we don't have a photo taken from behind the statue

If you want to do a full digital reconstruction of this statue, you'll need the right camera and tripod, and the right lighting, which isn't possible with crowdsourced images.

Think about it, when you go to a museum, how many people take pictures of all the parts of the statue, even the back side of it?

Well, if anyone is interested in Michelangelo's David, yes.

When we started the project, we thought about the Mosul Museum.

We thought we'd get some images, people would be interested, and we'd do a virtual reconstruction or two, but I had no idea that we were sparking something that would scale up quickly.

We quickly realized that it was obvious that this idea could be applied to any lost legacy.

So we changed the project name to "Rekrei"

And then last summer, I got a call from The Economist's media lab.

They asked me, "Would you like me to help you create a virtual museum to display historical artifacts?"

do you think we declined?

of course not

The answer is yes!

we were excited

This was exactly the first dream of the project.

Now anyone can experience RecoVR Mosul on mobile, on Google Cardboard, on tablet, or on YouTube 360.

This is a screenshot from inside the virtual museum.

and in it

There are partially restored statues and the project's first complete restoration of the Mosul lion.

The footage doesn't reveal that the lion statue in Mosul was destroyed, but there are many other instances where the artifact was destroyed because it was too large to be stolen.

For example, the gates of Nimrud in northern Iraq.

This is a digital restoration of the pre-destruction image, and this is the actual image of the destruction.

Also before the destruction of the lion statue of Allah in the ruins of Palmyra in Syria and

after destruction

Virtual reconstruction is the first and main focus of our project, but some people ask the question: Can we 3D print them?

We believe 3D printing is not a direct solution to our lost heritage.

When an object is destroyed, it no longer exists.

But certainly 3D printing tells us something in addition to the history of the object.

For example here we show

That statue in Hatra and the lion in Mosul.

(Applause) Thank you.

If you look closely, you can see that some parts are printed in color and others are printed in white or gray.

This part was added simply to support the statue.

The same is true in museums, where if a statue is found in pieces, it can be put together for people to see.

Do you agree?

But we're more interested in what virtual reality has to offer for lost legacies.

For example, this is a tomb tower destroyed in Palmyra.

Using Sketchfab's online viewer, I can show you three exterior parts of the tomb that we restored, and I also have pictures of the inside of the tower, so I'm starting to restore the walls and the ceiling.

Archaeologists have been working there for years, so we also have blueprints for this lost heritage.

Unfortunately, our cultural heritage is not only lost in areas of conflict and war, but also due to natural disasters.

Here's a 3D model of Dharmar Square before the Kathmandu earthquake last April.

This is after the earthquake

Now, you might be thinking that this 3D model wasn't made entirely from photos of tourists, and you're right.

But what this represents is the ability of large public institutions and private companies to work together for initiatives like ours.

One of the big challenges of our project is finding pictures that were taken before anything happened.

The Internet is basically a database with millions of images, right?

That's right

So we started developing tools that could extract images from websites like Flickr, based on the image's geotag, to complete the restoration.

Because we're losing our cultural heritage not only through natural disasters and wars, but through something else.

Can you guess what it is just by looking at these two pictures?

It's a little hard to remember, but here's an example of the destruction caused by human stupidity that happened just two weeks ago.

Because in Lisbon, a tourist climbed this statue and wanted to take a selfie. (Laughter) The statue fell with him.

So we've already found the photos to do a digital restoration of this statue.

We have to remember that the destruction of cultural heritage is nothing new.

In the 16th century, European priests and explorers burned thousands of Mayan manuscripts in Central America, of which only a handful remain today.

Fast forward to 2001, the Taliban destroyed the Bamiyan Buddha in Afghanistan.

As you know, cultural heritage is our shared global history.

Cultural heritage helps us connect with our ancestors and their histories, but we lose pieces of it every day in natural disasters and conflict zones.

Of course the loss of human life is the most heartbreaking loss.

But cultural heritage offers a way to preserve people's memories for future generations.

We need your help to recover our lost history.

Would you like to join us?

(applause)

You had a wonderful internship at Professor Ramsey's physics lab.

The professor accidentally ran into a time gate.

You only have one minute to save the professor through the time gate before it closes, and when the gate closes, the professor is trapped in the past.

Once you go through the gate, it closes, so the only way to get back is to open a new gate with a "time nodule" from the lab.

The nodules that are turned on have the property of being connected to each other in a red or blue "tachyon tangle."

And every nodule that you turn on connects to every nodule that's there.

Once a solid red or blue triangle is created with nodules, at that point the door opens to return to the present.

But the color of each connection is random, and you can't choose or change the color.

There's also another problem: each nodule is temporarily unstable, increasing the chances of it breaking while going through the door.

So the number of nodules should be minimal

The gate is about to close

So how many nodules would it take to reliably form a blue or red triangle and return to the present?

Pause the video here and think for yourself!

3 seconds ago... 2... 1... this problem has a very rich content that unfolds from there into the whole branch of mathematics called "Ramsey theory."

Ramsey's theory gave rise to a number of other notorious hard problems.

It's not an easy problem, but it can be solved if you approach it step by step.

Let's say we use only 3 nodules

Is that enough? —No, for example, if you become a triangle with two sides of blue and one side of red, you'll be stuck in the past forever.

Are four nodules enough? No, there are still many combinations that don't form a blue or red triangle.

Five?

You can see that there are combinations that blue and red triangles can't do.

These little triangles aren't directly connected to the nodules, so I don't count them.

But six nodules always produce a blue or red triangle.

Here's how to prove it without looking at every scenario

Let's turn on the sixth module and see how it connects with the other five.

It could be done in one of six ways, where the five connections are either all red, or all blue, or a mixture of red and blue.

You can see that at least three wires coming out of this nodule are the same color.

Let's focus only on the nodules beyond these three lines with the same color.

If the connecting lines are blue, if you connect even one blue line between the three nodules, you get a blue triangle.

So the only problem is if the connections are all red.

But in that case, the red connection creates a red triangle.

So no matter what you do, you'll always end up with either a red or a blue triangle and an open gate.

Conversely, even if the original three were all red, conversely, even if the original three were all red, the same argument would hold just by swapping the colors.

In other words, no matter what the color combination, six nodules always form a red or blue triangle that opens the door to the present.

You grab six nodules and jump into the gate.

Although you hoped that this internship would be a valuable experience,

It didn't seem like it would take long

In the moonlight, a group of young men sneak into the woods, where they end up infused with mind-altering drugs, swapping romantic relationships and briefly interacting with creatures from another dimension.

In "A Midsummer Night's Dream," you see Shakespeare in a hallucination, and it's a wonderful work both as a play and as a read.

First performed in the 1590s, A Midsummer Night's Dream is one of Shakespeare's most hilarious works, filled with deception, madness and magic.

Depicting the events of a single summer night, this work progresses at a bouncing tempo.

The plot consists of repeated conflicts and breakups, with characters from different worlds meeting and breaking up.

Through this repetition, Shakespeare comically mocks the selfish behavior of his characters and casts doubt on authority.

The story is set in ancient Greece, but like many of Shakespeare's works, it reflects the social issues of the time.

The enchanted setting of the nocturnal forest breaks down the walls between different groups and makes the story unfold in a different way.

Shakespeare uses the rigid status system of his time to upend the relationships between three different groups in a world where no one can rule.

The play opens with a young girl, Hermia, furious at her father, Igeus, and at Athens' king, Theseus, who forbid her from marrying her lover, Lysander.

Hermia doesn't care about her father's chosen fiancé, Demetrius, it's Hermia's best friend, Helena, who has feelings for him.

Hermia and Lysander, enraged by the elders, run off in the dark, but Demetrius is desperately chasing after them.

To make things even more confusing, Helena follows them all into the woods to win Demetrius' love.

At this point, the forest is starting to get crowded, and there, besides the lovers, there's a group of "crude craftsmen"—led by the jovial Nick Bottom, drunkenly practicing their play.

Without knowing it, humans have entered the world of fairies.

The fairy king and queen, Oberon and Titania, have powerful magical powers, but they also have love problems.

Enraged and jealous of Titania, Oberon orders a pack of tricksters to pour magic flower juice into her eyes.

It's an aphrodisiac that makes you fall in love with the first thing you see when you wake up.

Puck gleefully drips juice into the eyes of sleeping Demetrius and Lysander, and even turns Bottom's head into a donkey's head.

As they begin to wake up, it's the beginning of a chaotic night of heartbreak, mix-ups, and transformations.

Of all the characters, Bottom probably got the best of it. The enchanted Titania looks at him and calls on the fairies to give him generous gifts of wine and treasures, and then says, and the donkey-shaped Bottom is instantly captivated.

Bow and say hello, fairies." In this work, although the magic prompts us to act, it reflects the many actions we actually take because of love, and the absurdities that can be done by those caught in love's magic.

The "silver bow" moon overlooks events below, reflecting the dark side of love, its eccentric behavior and the spellbinding fascination of a different world.

Eventually, the characters come to their senses, but "A Midsummer Night's Dream" raises questions about how much control we have over our everyday lives.

And it wasn't the lovers who came to their senses, or the rulers, or the craftsmen, who spoke the final lines of the play, but the mischievous Puck, who asked whether he could really trust what he saw.

In doing so, he evokes the feeling of stepping into a magical world played out in a magnificent theater, playing with the boundaries between fantasy and reality, and theatrically expressing the possibility that life is just a dream.

Remember this little star that glows in the dark? I used to put it on the ceiling when I was a kid.

this is the light

is pure light

When I was five years old, I stared at this all the time without ever getting tired of it.

It's so beautiful, it doesn't cost electricity and doesn't require maintenance.

just stay there

Two years ago, we were in the lab working with experts to see if we could make this more durable and brighter.

At the same time, we received a request from this man, Van Gogh, that the famous Van Gogh Foundation wanted to celebrate the 125th anniversary of his death in Holland.

He came to me and said, "Can't we create a place in Holland where it feels like Van Gogh has come back to life?"

I liked the question and started trying to connect these two different worlds.

By the way, this is how my head works

(Laughter) I wish I could do this for an hour -- (Laughter) And here's what I got: a bike path that charges with the sun during the day and stays lit for eight hours at night.

(Applause) Hi

Evoking an energy-saving future, it connects where Van Gogh himself lived and literally walked in 1883.

You can go every night and it won't cost you anything.

You can experience the wonders of riding a bicycle under the stars and think about green energy and safety.

I want to create a place where people can feel connected again.

It's been great to be able to create projects like this with infrastructure companies.

I started getting calls from Sheikhs in Qatar asking, "How much is that for 10km?"

(Laughter) It's true, it's a strange question.

It's nice that this isn't just a one-off, nice-to-have thing.

I think this kind of creative thinking, this kind of connection, is the economy of the new age.

A Geneva think tank called the World Economic Forum asked smart people around the world, "What are the 10 most necessary skills for success?"

It's interesting to see this. It's not about the money, it's not about being able to program well in C++, although it would be nice to have that kind of technology.

Look at the third one: creativity, the second one is critical thinking, and the first one is advanced problem-solving, all of which robots and computers are bad at.

This gives us optimism and hope for a new world. Living in this highly technological world, our human skills -- our empathy, our curiosity, our quest for beauty -- will once again be valued. We're going to live in a world where creativity is the real capital.

That kind of creative process -- I don't know about you, but my mind always starts with the question, "Why?"

Why do jellyfish glow?

What about fireflies?

Why do we put up with pollution?

This is the view from my room in Beijing three years ago.

If the left is a good day — it's Saturday

I can see cars, people, birds, and living in a dense city isn't bad.

The picture on the right is — it's appalling.

completely covered in pollution

I can't even see the other side of town

This photo makes me sick

It's not the bright future we envision here at TED, it's horrifying.

5-6 years less life expectancy, 6-year-olds get lung cancer.

In a strange and wonderful way, I was inspired then by the smog in Beijing.

Governments around the world are fighting smog, but I wanted to create something that could be done right now.

So I decided to build the world's largest smog vacuum cleaner.

It sucks in dirty air, cleans it, and then exhales it

I actually made the first one

It takes in 30,000 cubic meters of air per hour and cleans it at the nano level, removing fine particles like PM2.5 and PM10. It uses very little electricity to create clean air. The air in parks and playgrounds is 55 to 75 percent cleaner than anywhere else in the city.

(Applause) Right.

(Applause) About once a month, this opens up like a spaceship, or Marilyn Monroe's --

whatever—

(laughter) this is that

is what I collect

beijing smog

It's in our lungs

Living on the side of a highway is equivalent to smoking 17 cigarettes a day.

What are you doing?

When did you agree to that?

I had buckets and buckets of this filthy stuff in my studio, and one Monday morning we were debating, "What's going on with this thing? Should I throw it out?"

do something about it

And then I thought, no, nothing should be wasted.

Garbage in one place becomes food in another.

please circulate

don't put it in your coffee

(Laughter) It turns out that 42 percent of that is carbon, and if you put carbon under high pressure, you can --

yes it's a diamond

And that's where I came up with the idea of ​​compressing this for about 30 minutes and making a (knock) "smog-free ring."

(Laughter) So this is— No, seriously.

When you buy this ring, you donate 1,000 cubic meters of clean air to the city where the tower is.

(Applause) Here's one. (Applause) It's a little floating cube.

let me give it to you

I won't propose, so don't worry

(laughs) Are you okay?

Please show it to the people around you

I used this to crowdfund on Kickstarter

Many people booked and paid in advance

With the money we got from this ring, we were able to build our first tower.

this is a very powerful method

Only in that way was it possible

And there's also feedback from the community. This is a married couple from India who proposed a smog-free ring as a sign of true beauty and hope.

and she said yes

(Laughter) In many ways, I love this photo.

(Laughter) Now, this project is being funded by the Chinese government and is traveling around China.

The first goal is to create parks with clean air, and this is already doing pretty well, 55 to 75 percent cleaner.

At the same time, we're working with NGOs, governors, students, engineers to ask, "How can we get rid of smog across cities?"

A dream of clean air

I run workshops and new ideas come to me.

This is a smog-free bike — I'm Dutch and I have bike DNA.

It sucks in dirty air, cleans it out, and fights cars to celebrate the wonders of bicycles.

We're working on a sort of set sale right now that's called "Smog Free Tower and Smog Free Ring."

I would go to mayors and governors around the world and say, "I can promise you that we can remove 20 to 40 percent of our air pollution in a short period of time.

Please make a contract."

(Applause) Thank you.

(Applause) This is a story about combining new technology with creative thinking.

When you start thinking about such things, there are so many things you can imagine and do.

We created a dance floor that generates electricity when you dance.

I designed it in 2008.

8-9mm up and down produces 25 watts

The generated electricity is used for lighting and the DJ booth.

Some things that are sustainable are achieved by doing more, not less.

There's also a larger scale story.In my country, the Netherlands, people live below sea level.

This magnificent dam, a 32-kilometer dyke built by hand in 1932, we live with water, we fight with water, we try to be in harmony with water, but sometimes we forget.

So we created Waterlicht, a combination of LEDs and lenses that shows how global warming will raise sea levels if we don't do anything about it.

What if everyone just sits there and says, "Someone else will do it," and waits for the government or someone else to do something about it?

That's not how it works

It's a shame, we're putting this up in public places all over the world.

thousands of people came

(Applause) Hi

You guys are so kind. You shouldn't spoil the designer so much.

Thousands of people came, but some got scared and left.

Remember the 1953 flood?

There were also people who looked at me like they were fascinated.

Is it possible to create a floating city?

Is it possible to generate electricity with the ebb and flow of the tide?

I think it's very important to create a collective experience, so that people feel connected to the vision, to the future, to start thinking about what's possible.

At the same time, it's not easy

it takes effort

So far in my life, I've seen a lot of people say they want innovation, they want the next thing, the new thing, the future.

There's a peculiar tendency for any new idea, as soon as it's actually presented, to be met with rejection that starts with a couple of words.

do you know anything?

(audience responds) It's not "How much?"

(Laughter) Now what?

you are all blessed it's good

“Yes, but”

"Good but too expensive too cheap too fast too slow too pretty too ugly impossible it already exists"

I heard everything about the same project in the same week.

very annoying

You have white in your hair and you start wearing black like a real architect.

(Laughter) I woke up one morning and thought, "No, this is just dragging me down.

I have to do something

Let's use this as a material for something."

So we decided to make the famous "Yes, but" chair a reality.

(Laughter) This is a chair by Dutch designer Friso Kramer.

I did a little "version upgrade" or "hack"

with a little voice recognition device

So when you sit in this chair and say a destructive, offensive word to that horrid creator -- (Laughter) for a moment -- (Laughter), you get a pretty nasty jolt in your butt.

(Laughter) (Applause) And -- (Laughter) this works.

I've had clients who have gone really pissed off.

Fortunately, good customers remain.

Of course we use this ourselves

please don't be afraid

be curious

As I've been at TED over the past few days, listening to other speakers and feeling the energy of people, I'm reminded of the words of Canadian author Marshall McLuhan, who said, "There are no passengers on Spaceship Earth.

We are all crew members."

i think it's a great word

it is really amazing

We are not just consumers, we are makers. We make decisions, new inventions, new dreams.

There are still new worlds to explore if we're going to start putting more of this kind of thinking into practice today.

thank you very much

(Applause) Thank you very much.

(applause)

In 2011, I changed my name to attend a far-right youth camp in Hungary.

At the time, during my PhD, I was exploring the political socialization of young people, the question of why young people develop political ideologies in a post-communist world.

And to find out why, I wanted to go to camp myself.

A colleague signed me up because my surname is likely to be known as Jewish.

I changed my name Erin to Irina and my last name Saltman to Shosh, which is Hungarian for "salt-baked."

In Hungarian, the last name comes first, so my codename became "Salted Irina," and I didn't choose it.

But when I got involved, I was even more surprised at how much fun it was.

little was said about politics

Most of the time, I learned to ride horses, learn to draw a bow and arrow, and in the evenings there was live music, free food and drink, and I practiced shooting air guns at the faces of mainstream politicians.

They seemed like a very friendly and welcoming group, but when the topic turned to Roma (Gypsies) and Jews and immigrants, the conversation quickly turned to hate.

And that's what led me to my current job, and it prompted me to ask the question, "Why do people engage in violent extremist activities? How can we successfully counter this?"

In the aftermath of horrific atrocities and attacks, not only in Belgium and France, but all over the world, people tend to think, "The perpetrator must be a sociopath."

"There must have been a problem with his upbringing," he said.

But sadly, often there's no such thing as a stereotypical culprit.

Many are highly educated, come from different socioeconomic backgrounds, young and old, men and women, some with families, some single.

Then why? What attracts them?

I want to talk to you about those issues and how we're going to tackle them in this day and age.

What we've learned from research is that there are a variety of factors that influence how people become radicalized, and we've categorized these into "push" and "pull" factors.

These factors for the far right and neo-Nazis are quite similar to those for Islamic extremists and terrorist groups.

The "push" (the force that pushes people out of the group) makes them vulnerable and pushes them toward the process of radicalization, leading them to join violent extremist groups.

There are many reasons for this, but most of them come from feelings of alienation, loneliness, doubts about one's identity, as well as the feeling that the "in-group" to which one belongs is subject to criticism, and that this "in-group" is based on nationality, ethnicity, religion, and is not protected by the institutions above it.

"Push" in and of itself does not create violent extremism, because the same factors, if true, would provoke the Roma to act, but they are not a group driven to violence.

That's where you should look at "pull," the force that pulls you into a group.

What do violent extremist organizations have that other groups don't?

It's actually very constructive. It's kind of empowering on the surface, like brotherhood, sisterhood, a sense of belonging, and even spiritual goals are set, and when those goals are achieved, God wills them to build a utopia.

Look at the foreign terrorist fighters, young men blowing their hair in the desert, women join them, and they get married in the sunset.

It's so romantic, I feel like a hero.

It's propaganda given to both men and women

Extremist groups are good at simplifying the complex, intricate, nuanced view of the world into black and white, good and evil.

people become good and stand against evil

So let me talk a little bit about ISIS, aka Daesh, because knowing more about their content and their tactics has changed the way we look at the process of radicalization.

They are a very modern political group.

One of the hallmarks is the use of the Internet and social media.

The internet itself isn't radicalizing people,

just a tool

Don't accidentally become a jihadist trying to buy shoes online

But the Internet acts as a catalyst.

The Internet offers unparalleled means, scale and speed.

With the advent of ISIS, the image of the jihadist suddenly changed from dark figures in cloaks.

All of a sudden we were in their kitchen.

they were having dinner

they were tweeting

Foreign terrorist fighters were tweeting in their language.

Women were there talking about their wedding day and the birth of their children.

All of a sudden, we're seeing gaming culture, and we're talking about the game "GTA."

Suddenly it feels like home

I became human

The problem was, in an attempt to counter that, many governments and social media companies tried to censor it.

How to get rid of terrorist content?

It was a cat-and-mouse game. When I deactivated an account, another account appeared.

But they also had a dangerous tendency: they knew the rules and even the regulations of social media.

A silly conversation with a recruiter starts on a mainstream platform, but when that conversation turns illicit, it moves to a smaller, less regulated, more encrypted platform.

Suddenly I can't track my conversations

This is the problem that censorship has created. We need another way.

ISIS has also been revolutionary in its attempt to create a state.

They're not just recruiting fighters, they're trying to build a nation.

The image of the person you want as a member suddenly becomes wide-ranging.

We need architects, engineers, accountants, hackers and women, not just fighters.

In the last 24 months, especially in the last 12 months, women's participation has increased significantly.

In some countries, a quarter of participants are now women.

The very people we are trying to prevent from joining terrorist groups are changing.

Not all pessimistic

And for the rest of my time, I'd like to talk about something constructive, an innovation to prevent and counter extremism.

Prevention is not the same thing as combating. Think of the medical term.

Preventive medicine means building a natural resistance to the effects of extremism, while those who already have the symptoms and warning signs of a violent extremist ideology will need to be treated differently.

So in preventive action, we target a very broad group of people and expose them to ideas that build resistance.

But for people online who are beginning to question and agree with certain things, or who already have swastika tattoos, or who are deeply immersed in groups, this doesn't work.

what would be the approach

I'd like to share with you three different examples at each level to show you what new ways you can engage with them.

One is "Let's Talk Extremism," an educational program that we helped develop.

It's from Canada, and it's meant to encourage conversation in the classroom. It uses a narrative format, because it's especially hard to explain to young people what extremism is.

We have connections with ex-extremists and people who have stopped extremism, and we play videos of their stories and ask the class to start a conversation about the subject.

There are two examples: Christian, who fought for ISIS and lost his son, and Daniel, a former neo-Nazi who was once very violent.

Let's look at the case of middle-level people, in fact, we need a lot of voices from civil society.

How do you deal with people who are looking for information online, people who are beginning to show an ideological interest, people who question their identity?

How do we provide alternatives?

Together with the voices of large civil society groups, creators, technologists, app developers, artists, comedians, we can create truly specialized content that can be distributed to very strategically selected audiences online.

For example, I'm going to create a satirical video about Islamophobia, and I'm going to narrow it down to internet users between the ages of 15 and 20 who are interested in white supremacist music and live in Manchester.

With marketing tools, you can be very specific about when you've viewed content, when you've viewed it, what you've done, and you're not targeting the average person, you're trying to reach a specific audience that has attributes that are different from ours.

For those who went further, a pilot program called "One to One" was developed that took former extremists and put them in direct contact with groups designated as neo-fascists and Islamist extremists.

Is there anything you want to ask me? ”

I was afraid that I would receive death threats in this kind of relationship.

Getting a former neo-Nazi to say, "How are you doing?" is a bit dangerous.

But about 60 percent of the people responded to the contact, and about 60 percent of the people stayed connected, which meant that we were asking the most difficult people to reach out about what they were doing, and by talking about these topics, we were sowing the seeds of suspicion against the organization, and giving them alternative options for action.

What we're trying to do is enlist the help of the most unlikely people.

There are great activists around the world, but their messages are often unstrategic and often fail to reach the intended audience.

So through connections with former extremists

We also work through networks of young people in different countries.

With their help, people in the technical field are contributing alongside artists, creators, marketers, and it's this kind of collaboration that allows us to be more robust and defiant in the fight against extremism.

So if you're a graphic designer, a poet, a marketer, a public relations person, a comedian in your audience, don't think that's not an area you can collaborate on. Those skills you have now may be exactly what you need to effectively deter extremism.

thank you

(applause)

My mother was a pediatrician, and when I was a little girl, she would tell me funny stories, and she would tell me scientific facts in a very original way.

One of the stories is that if you eat too much salt, all of your blood will flow back up your legs, run through your body, hit the top of your brain, and instantly kill you.

(Laughter) This was my mother's high blood pressure.

(Laughter) It was the first sci-fi story I ever heard, and I loved it.

When I started writing science fiction and fantasy stories myself, I was surprised that science fiction was considered un-African.

So they asked, "What is African?"

What we know so far is that Africa is important

Africa is the future

this is certainly true

And Africa is a serious place where only serious things can happen.

Whenever I present my work, someone asks, "What's the point of this?

This film is about a real problem in Africa: how does it deal with war, poverty, destruction and AIDS? "and

not facing

The themes of my work include a space pop band from Nairobi and a two-meter-tall robot falling in love.

it's not that important

It's just fun, it's strong, it's crazy, it's about to fly like bubblegum, it's AfroBubbleGum.

I'm not saying art with a political voice is unimportant. The charitable organization I represent deals with movies and plays about HIV, radicalization and female genital mutilation.

Art is essential and important, but it shouldn't be the only art from the African continent.

We must tell more vivid stories.

The danger of falling into just one story is still real.

may be due to lack of funds

A lot of art still depends on development assistance.

That's why art becomes a tool for political advocacy.

Or maybe we've been staring at a particular version of ourselves for so long that it's the only one we can create.

Whatever the reason, we need new ways, and Afrobubblegum is one of them.

It's a movement that promotes art for art's sake.

It's a movement driven by policies, politically motivated, and promoting art for the imagination rather than for educational purposes: Afrobubblegum art.

And to be an afrobubblegum

Does your work fall into the common pitfall of hard-selling poverty?

We should test it with a test like the Bechdel Test [1. Are there at least two women 2. Conversing 3. Are they talking about something other than men] and ask: Are the two or more African characters healthy?

Is the African in question financially stable and in need of assistance?

And are you having fun and enjoying life?

If you can answer "yes" to any of these two or more questions, then you're definitely an afrobubblegum.

(Laughter) (Applause) There's political power, too. Imagine Africans living vibrant, loving, successful, beautiful, vibrant lives.

What do we think of ourselves?

Thinking that I should be happier

Don't we think that we can share our humanity through joy?

When I create, I think of these things

I think of people and places that give me immeasurable joy and try to express them.

That's why my stories are about girls of the future who sacrifice everything to protect plants, to race camels, to just dance and have fun, because my world is full of happiness.

I know that happiness is a privilege in this divided world, and it takes effort to keep hope alive.

But if you join me in creating, curating, and commissioning Afrobubblegum art, maybe there's hope for a different way of looking at the world: Africa as a happy place, where children can be traumatized by their mother's black humor (Laughter), but at the same time, it's fun, it's powerful, it's crazy, and it's art in the name of Africa's silly things.

There are more Afrobubblegums than you can imagine.

thank you

(applause)

Maybe one day robots will have human-like intelligence, artificial intelligence, AI.

how?

Part of it will be accumulating better software, as we've done for the last 70 years.

At the current rate of evolution, it will take centuries.

Some people say that if we find a new and powerful logic of intelligence, it will come sooner.

i don't believe

But there's a third scenario that I'm going to talk about today.

The idea is to transplant software from the human brain.

This requires the maturity of three technologies, none of which have materialized.

First of all, we need a lot of cheap, fast parallel machines (computers).

Second, we need to scan an individual's brain in detail, spatially and chemically, in order to understand which cells are where, what kind of things they are connected to.

The third is to create a computer model of how each brain cell works. It takes an input signal, changes its interval state, and sends an output signal.

If we had all the brain cells and a good enough model of the brain, we could combine them into a good enough model of the whole brain, and that model would have the same input and output activity as the original brain.

Talk to it and it might give you an answer

If you tell me to do something, I might carry it out

if so, everything will change

People call this idea "uploading," and they've been discussing it for decades.

Let's call it "em" [em is a model that mimics the human brain]

People say [em is a model that mimics the human brain], "Is that really possible?

If it does, will you be conscious of it? Or is it an empty machine?

If I become an em, will it be someone else's personality? ”

I'm going to ignore all these tantalizing questions, but-

(Laughter) I forget to ask, "What exactly is going to happen?"

I'm obsessed with this question

I've been thinking about this for four years, and I'm going to use standard academic tools to try and predict what's going to happen, and I'll tell you what I've found.

Mind you — I share my analysis, not my inspiration.

I think my job is to tell you what's most likely to happen if you don't try to avoid it.

If you're not surprised by what I'm saying, then you're not paying attention.

(Laughter) So first, ems spend most of their lives in virtual reality (VR).

This is what you see when you use virtual reality.

And you can see things like this: sunlight reflecting off the surface of the water, seagulls chirping in the sky, you can feel the wind on your cheeks, you might even smell the sea, and it's the latest in hardware.

If you spend a lot of time here, you need a dashboard to make phone calls, navigate to the next virtual world, check your bank account.

This is what you look like in virtual reality This is what em looks like in virtual reality

It's a computer in a server rack somewhere.

But I can see and experience the same things as you.

But there are some things that are different for em.

First of all, you know that virtual reality isn't exactly the same as reality, but em feels the reality that you feel in this room and all that.

And there are more possibilities for em's activities

For example, your thoughts always run at the same speed, but an em can increase or decrease the computer hardware to speed it up or slow it down, and if you feel that people around you are going too fast, you'll think that if you speed up, they're going to slow down as well.

In addition, ems can duplicate themselves at that point in time, so

This copy will remember everything the same, and if the em starts at the same speed, it's indistinguishable from that speed, and you might not realize it until someone tells you, "You're a copy."

An em can also make archival copies, and if there are enough of them, the em will become immortal, in theory, but in practice it will never happen.

The em can physically move that brain -- the computer that acts as the brain.

Ems can move around the world at the speed of light, and can travel to new locations and talk faster with ems near that point.

So far we've talked about what em can do.

So what would em choose to do?

To understand that, we need to understand three main facts.

In the same situation, the em will choose the same behavior as the human role model.

So their lives and actions are very human.

They are different from humans because they live in a different world than humans.

Second, ems need physical resources to survive.

Everyone needs a house and food to live.

In order for em to live, hardware, energy, cooling equipment, etc. are necessary.

For every minute in an em's subjectivity, the em itself usually has to earn that minute

3rd point em has no money

(Laughter) The number of ems is growing faster than the em economy is growing, which means that wages will fall to subsistence levels for ems.

em means you have to work almost all the time

So this is what an em usually sees: beautiful, gorgeous, but with nothing but a desk -- they're working most of the time.

The minimum living wage scenario may seem unusual and bizarre, but it's actually a common occurrence in human history, and all wildlife has lived in this scenario, so we know how humans would behave in this situation.

Humans live to survive, and that's true of the em world, too.

If you're as wealthy as you are, you need to be familiar with those desires to anticipate their behavior.

If organisms are poor beings, they're usually acting just to survive.

I've been talking about the em world from the em's perspective, but now let's change our perspective and look at their world as a whole.

First, the em world grows faster than our world, about 100 times faster.

They experience in a year or two the changes that we experience in a century or two.

I won't try to predict what will happen after that, because something will happen and things will change.

Second, a typical emulation runs about 1,000 times faster than human speed, so

Thousands of years have passed in a year or two, and to them the world moves by much more slowly than it seems to you.

Third, em is crammed into a small number of very crowded cities.

Here's what they look like physically trapped in virtual reality and in real life.

Physical movement feels painfully slow in the EM sense, so most EM cities are self-sufficient.

Speaking of humans, everyone wants to hear

Humans will have to retire immediately and forever

can't compete with em

Humans had all of the world's capital

the economy grew so fast their wealth grew so fast

Humans grow rich as a group

As you may know, most people don't really have much other than the ability to work, and between now and then they've got to have enough assets and insurance and property sharing arrangements or they'll starve to death.

It is strongly advised to avoid such an outcome

(Laughter) You might be wondering, why would an em keep a human alive?

You can kill people and take their property?

But humans don't kill unproductive retirees and take their fortunes.

(Laughter) Partly because that would destroy em and the society we all share.

Other groups will wonder who's turn next, and in the era of em, humans may be gently retired.

We should be more concerned that the em era will only last a year or two, and then we don't know what will happen next.

ems are a lot like humans, but not typical humans

A typical em is like hundreds of the most productive humans.

So an em is as good as a billionaire or a Nobel Prize winner or a gold medalist or a head of state to the average person.

Ems probably feel nostalgia and appreciation for humans, but not as much respect for them, kind of like how we think of our ancestors when you think about it.

As we all know, human productivity varies.

Based on this, we can predict em function, for example, they tend to be smart, conscientious, hardworking, married, religious, and middle-aged.

These are the characteristics of em

The world of em contains enormous diversity

EMs, like humans, face diversity, and in addition to different industries and occupations, they also have new kinds of diversity, one of the most important of which is mind speed.

em can be a million times faster or a billion times slower than human speed.

faster ems take higher positions

get rich win the argument

sit in a perfect place

Many of the later em are retirees, ghostly figures in literature.

Remember, spirits are everywhere, and you can even send them out if you pay.

But they don't know much, they don't have much influence, they're stuck in the past -- it's not worth it.

(Laughter) An em's life takes many forms.

This is your life It has a beginning and an end—simple

An em's lifetime creates short-lived copies every day that do short-term tasks and end their lives.

We'll talk about these short-lived ems later, but they're much more efficient because they don't have to rest for the next day.

This em multiplies whenever there is a gap

I make a lot of copies of myself depending on demand

they don't know what the future holds

This is the em designer, who envisions a big system, and then splits iteratively into copies, and the em achieves a larger, coherent design.

This is the plumber type, and he has the memories of working two hours a day for the last 20 years, living comfortably.

They make 1,000 copies each day, each doing plumbing work for two hours, and only one survives the next day.

Objectively, they're working more than 99 percent of the time.

Subjectively, I remember my leisurely life

(Laughter) It's your life again. It has a beginning and an end.

This is you at the beginning of the party [Oblivion is death? ] After the party, I drank a drug that completely erased my memory of it.

It seems that there are people who do that

At the end of the party you mutter, "I'm dead, this is terrible

Tomorrow I won't be myself anymore 'cause nobody remembers me

Or you might say, "Even if you don't remember today, you'll live well tomorrow."

This em creates a short-lived copy that performs a short-term task and dies.

they can have two attitudes

"I'm a short-lived life, the worst" or

"It's part of a larger organism than you, and it's not remembered."

They're probably the latter, not because it's philosophically correct, but because it works for them to coexist.

If the president proposed an invasion of Iraq today, you would ask, "Why?"

The answer they get back is "National Secrets." I don't know if you can believe them, but [the vault keeps secrets.] If it's an em, the president's em and your em will go into the safe room and explain all the reasons why, and your copy will put out a bit of information to let you know if you're satisfied or not.

Then you'll know you had a good reason.

do you like this world

You're itching to come to a conclusion, I understand.

But think about it, your ancestors thousands of years ago would have asked you a few things and quickly decided what they liked and disliked about the world today.

So before you reject a strange future world, learn about it first, read a whole book, or if you still don't like it, try to change it for the better.

thank you

(applause)

Like it or not, the future of radical transparency and algorithmic decision-making is upon us, and it's going to change your life.

Because now it's easy to put algorithms into computers that collect all the data about yourself that you leave everywhere, know who you are, and make computers interact with you in ways that are better than most humans.

Well, it might sound a bit spooky, but

I've been doing this for a long time and I think it's great.

My goal is to do meaningful work and have meaningful relationships with the people I work with, and I've found that this can't be done without radical transparency and algorithmic decision-making.

I want to tell you why and explain how it works.

I warn you, some things are probably a little shocking.

Ever since I was a child, I've been very bad at rote memorization.

I didn't like being told what to do, and I wasn't very good at following procedures.

But I loved understanding how things worked.

At 12, I hated school and fell in love with stock trading.

I was a caddy at the time, and I got about five dollars a bag.

I invested the money I earned in stocks.

It was just when the stock market was hot.

The first stock I bought was in a company called Northeast Airlines.

Northeast Airlines was the only company I'd ever heard of that sold for less than $5.

(Laughter) And I thought, if I bought more stocks, and the stocks went up, I could make more money.

it's a stupid strategy

But my assets tripled, thanks to good luck.

The company was on the verge of bankruptcy, but another company bought it, and the assets tripled again.

i was hooked

I thought, "This game is easy."

But over time, I've learned that this game isn't all that easy.

To be a good investor, you have to bet against popular belief and get it right.

It's hard to bet against popular belief and get it right.

The reason why you have to bet against the market and get it right is that the world's thoughts are factored into the stock price.

And to be successful as an entrepreneur, you have to bet against popular belief and be right.

I'm an entrepreneur and an investor, and that comes with a lot of terrible mistakes.

So I made a lot of painful mistakes, and over time, I began to change the way I thought about making mistakes.

I started thinking of it as a kind of puzzle.

If I can solve the puzzle, I will get the gem.

And the puzzle was figuring out what to do to avoid making the same painful mistake.

And gems were "principles" that I wrote down to remember and that would guide me in the future.

I had them written down so clearly that I eventually discovered the principles and incorporated them into the algorithm.

And the algorithm was put into the computer, and the computer made the same decisions as I did, and we made decisions in parallel.

I found these decisions to be far better than my own.

Because computers can make decisions so quickly, they can process more information and make the decision-making process much more rational.

My decision-making process has radically improved

Eight years after I started Bridgewater, I made the biggest mistake of my life, my biggest mistake.

It was the late 1970s, and I was 34 years old, and American banks were lending far more money to developing countries than they could afford to pay back, and I thought we were in for the biggest debt crisis since the Great Depression.

Then there will be an economic crisis and a bear market—

It was a controversial view at the time

people thought it was crazy

But in August 1982 Mexico went bankrupt and many other countries followed suit.

And we're in the worst debt crisis since the Great Depression.

I expected that, so I was asked to testify before Congress, and I appeared on "Wall Street Week," and it made headlines.

Check out my video to see what it was like back then

(Video) "Chairman Mitchell, it's an honor to stand here before you to consider the economic issues.

The economy is now stalled and teetering on the brink of failure."

(Martin Zweig) “According to a recent article,

You said, 'I have absolute confidence, I know how the market will work'."

Ray Dalio: "I'm absolutely convinced that when you look at the liquidity base of companies and the world as a whole, liquidity levels have declined so much that we're not going to go back to an era of stagflation."

I look at this now and think, "What a arrogant guy!"

(Laughter) I was so arrogant and wrong.

And while the debt crisis happened, the stock market and the economy were actually doing better, and I lost a lot of money, myself and my clients.

I was heartbroken because they were like relatives.

I lost most of my assets and borrowed $4,000 from my father to support my family.

This was one of the most painful experiences of my life.

It was also one of the best experiences of my life because it changed the way I thought about decision making.

Instead of thinking, "I'm right," I started asking myself, "Why do I think I'm right?"

I got the humility I needed to balance my boldness.

I thought I'd find some smart people who disagreed with me, to understand their point of view and have them stress-test my thinking.

I wanted to create a meritocracy of ideas.

In other words, not a dictatorship where I lead everyone, not a democracy where everyone's opinion is equally valued, but a meritocracy of ideas where the best ideas win out.

I realized that this requires complete candor and radical transparency.

Complete candor and radical transparency means that everyone says what they believe and knows all the information.

We literally record almost every conversation and show everyone everything, otherwise meritocracy of ideas is not possible.

In order to achieve meritocracy of ideas, we created a culture in which people can freely express their opinions.

Let me give you an example. This is an email from Jim Haskell, who works for me -- and it's open to everyone at the company.

"You scored 60 at today's meeting.

You didn't prepare enough, otherwise you wouldn't have behaved so badly."

okay?

(Laughter) This is great.

Because I needed that kind of feedback.

I need feedback like this

And if we didn't give people like Jim a chance to voice their opinions, our relationship would be different.

And if we hadn't put it out there for everyone to see, the idea meritocracy wouldn't have happened.

This is how we've been doing it for the last 25 years

We've operated with this radical transparency, and we've collected these principles, largely based on our experience of making mistakes, and then we've translated these principles into our algorithms.

And thanks to these algorithms, we're following them while we're thinking for ourselves.

This is how we've always run our investment business, and this is how we manage our people.

In order for you to experience this even just a little bit, I would like to introduce you to the tool "Dot Collector" that assists us in actual meetings.

A week after the presidential election, our research team met at a conference to discuss what President Trump means for the American economy.

There were, of course, many different opinions on the issue, and different opinions on how to proceed.

"Dot Collector" collects these opinions

It lists dozens of attributes, and it's easy to give a rating when someone has an opinion about someone else's idea.

For example, since the conference began, a researcher named Jenn gave me a three-star rating, which is terrible.

As the meeting progressed, Jen's assessment of the members went something like this.

Other employees have different opinions

it's very normal

people always have different opinions

I don't know who is right

See what other members are saying about me

Some gave good grades, others gave bad grades.

For each rating, you can see the reasons behind that number.

This is Jen and Larry's opinion

And what I want you to realize is that everyone can express their thoughts, including their critical opinions, regardless of their position in the company.

Jen, who's 24 and fresh out of college, can tell me, the CEO, that her perspective is so bad.

It's a tool that allows everyone to get their point across and at the same time step away from it and see things from a higher perspective.

As Jen and her colleagues shift their attention from inputting their opinions to the entire screen, their perspective shifts.

So you see your opinion as one of many, and you naturally ask yourself, "How can I be correct in my opinion?"

The shift in perspective is as if what was once one-dimensional becomes visible in multiple dimensions.

It shifts the conversation from arguing your opinion to finding objective criteria for deciding which opinion is best.

Behind the 'Dot Collebtor' is the computer in detail

It observes what people are thinking and associates that with how they think.

And the computer uses those to give advice back to people.

And then you can collect the data from all the meetings and create a pointillist drawing of who each person is and how they think.

Algorithms guide it

By getting to know people better, we can give them jobs that are better suited to them.

For example, an untrustworthy original thinker might be matched with someone trustworthy but not creative.

When you can understand people, it's easier to decide what responsibilities to give, and you weigh decisions based on people's capabilities.

call it their authenticity

Here's an example of a poll where the majority of people converge in one direction...

But when we weighed opinions based on people's abilities, the answers were completely different.

This process allows us to make decisions based on algorithms that consider people's credibility, not based on democracy or dictatorship.

i really use this

(Laughter) Because it eliminates what I believe to be one of the greatest tragedies of humankind, arrogance, where people simply hold wrong opinions in their hearts and act on them, not even stress-test them.

this is a tragedy

This mechanism elevates us beyond our own opinions, so that we begin to see things together through everyone's eyes.

Collective decision-making, when done well, is superior to individual decision-making.

This was the secret of our success

That's why we've added more money to our clients than any other hedge fund, and we've done well 23 of our 26 years.

So what's the problem with being totally candid and being totally transparent with each other?

People say it's emotionally difficult

Critics say this is the formula that creates a brutal working environment.

Neuroscientists say this has something to do with innate brain wiring.

A part of the brain has the ability to proactively recognize one's mistakes and face one's weaknesses, leading to improvement.

That part is the prefrontal cortex.

And there's a part of the brain that sees every stimulus as an attack -

It seems that there is also an amygdala

In other words, there are two you in you, the emotional you and the intellectual you, and they're usually at odds with each other, and they're working against you.

But in our experience, we think we can win this battle.

By becoming one

It usually takes 18 months for most people to agree that this is the way it works, that it's better to operate with total transparency than to operate in an environment of opacity.

There's no office politics here, there's no terrible secrets that happen behind the scenes, there's just idea meritocracy, and anyone can have a say.

Good results so far

It's allowed us to work more effectively, and we've been able to build more effective relationships.

But it's not perfect

It turns out that 25% to 30% of the population this isn't for them.

By the way, when I say total transparency, I don't mean openly about everything.

I mean, you don't have to tell me that you're going bald or that someone's baby isn't cute.

So what I'm saying is just -- (Laughter) we're talking about important things.

So -- (Laughter) So when you leave this room, I want you to observe yourself when you're having a conversation with someone.

If you know what the other person is really thinking, what kind of person they really are

And what if they knew what you were really thinking and who you were?

I'm sure it will clear up a lot of things and make the company run more effectively.

I think it will improve your interpersonal relationships as well.

And imagine having an algorithm that can help you gather all that information and help you make decisions based on the meritocracy of ideas.

A world of radical transparency like that is just around the corner and will impact your life.

I think it would be a wonderful world

I hope this will be great for you too.

thank you very much

(applause)

Many of you know the story of a shoe salesman who went to Africa in the 1900s.

So they were sent to find out if there was any hope of selling the shoes, and they sent a telegram back to our office in Manchester.

One of them wrote: "The situation is hopeless.

"Who's wearing shoes?" Another wrote: "It's a great business opportunity. No one's shoes."

(Laughter) The world of classical music is in a similar situation, because some people think that classical music is dying.

On the other hand, there are people who think that there is still a long way to go.

So, let's stop talking about statistics like the number of orchestras that are closing down, record companies that are going out of business, and so on, and tonight I'm going to run an experiment.

I know the results, so it may not be an experiment, but

it's like an experiment

(Laughter) But before we start it

First, I want you to remember what it feels like to have a 7-year-old play the piano.

I have a child like this at home

it might look like this

(Piano) Some of you have an idea, right?

It looks like this

(Piano) After another year of practice and lessons, at the age of nine he:

(Piano) After another year of practice, when I'm 10 years old;

(Piano) About here-

(Laughter) (Applause) If he had tried another year,

(Piano) Now, what happened to him wasn't what you think it was, it wasn't that he suddenly became passionate and enthusiastic or absorbed or got a good teacher or puberty or anything like that.

The real reason is that I took less rhythm

So when I first played it, each note had an accent.

(Piano) Second time, every other accent

(Piano) You can see it in my head

(Laughter) Nine years old, nine years old, once every four beats.

(Piano) Once every eight beats at age 10 (Piano)

At 11 years old, the whole phrase will be once (piano)

I-I don't know why I'm in this position

(Laughs) I don't think I'm going to put my shoulders on it or move my body.

No, the music makes you do that, which is why we call it the "one butt" technique.

(Piano) You can use the opposite buttocks (Piano)

Someone was watching a presentation I was doing with a young pianist, and he was the president of a company in Ohio.

I was working with the young pianist and said:

"It's not good because I'm playing with two buttocks."

"Just one butt," I said when he was playing.

Then my performance suddenly got better and I flew into the sky

The people who heard the difference raised their voices of surprise.

After a while I received a letter from the gentleman:

“I was deeply moved.

I decided to let him do it with 'one butt'."

(Laughs) Another thing I want to do is to let people know themselves.

I believe there are 1600 people.

By my calculations, probably 45 of these people have an absolute passion for classical music.

I have a deep love for classical music, FM radio is always a classical channel

I have a CD in my car, and I go to concerts too Have my children learn to play instruments I can't imagine life without classical music

This is the first group: very few

And then there's another, much larger group

I don't care about classical music

(Laughter) I came home after a long day with a glass of wine and my legs on the table.

Even if the BGM is Vivaldi, it's not bad at all (laughs).

this is the second group

Third, I don't listen to classical music at all.

It's like second-hand smoke at an airport

(Laughter) When I walk into the auditorium, it's okay to march to "Aida," but otherwise I don't hear it at all.

That's probably the largest group, and then there's a very small group.

It's people who think they're tone deaf

A surprising number of people consider themselves tone deaf

Many women say, "My husband is tone deaf."

(Laughter) Actually, there can be no tone deafness, no one is tone deaf.

If you're tone deaf, a manual car

can't even change gear

I can't even tell the difference between people from Texas and people from Rome.

She says "Hello" You know who it is and if it's in a bad mood

your ears are great everyone's ears are great

So no one is tone deaf

But I can't just leave it alone

It's hard to leave a gap like this between those who understand, love, and are passionate about classical music, and those who have nothing to do with it.

The tone deaf are no longer here, but even the three groups of people here are far from each other.

That's why I can't help but make sure everyone here, from the first floor to the top, and everyone else watching, loves and understands classical music.

i will do that from now on

You can tell by the look on my face that I have no doubts that I can do it.

One of the hallmarks of a leader is the unquestioning belief that those under his or her leadership are capable of making any of the leader's dreams come true.

Would Dr. King say? "I have a dream.

However, I don't know if everyone will ride..." (laughs)

Okay, let's do some Chopin

This is a beautiful Chopin Prelude, some of you may know it.

(music) You know what I thought of what just happened in this room?

When I started playing, you thought: "Oh, what a beautiful sound" (music)

"I want to go somewhere else next summer vacation." (laughs)

That's funny, isn't it? this kind of thinking

come up with something from somewhere

And of course (Applause) Of course, if the song is long and you're tired that day, you might even fall asleep.

"Wake up! You don't understand Gejutsu!"

But have you ever wondered if classical music makes you sleepy because of the performer, not you?

Did anyone ever think, "Why is this guy so rhythmic?" while I was playing?

If I was moving my head while playing, everyone would have thought so.

(music) And for the rest of your life, you'll know if you hear these rhythms every time you listen to classical music.

Let's see what's actually going on

And the role of "do" is to make "si" sound sad

(smile)

The composer knows, if you want it to be a sad song

I play B and C (music)

basically shi, sad shi

(Laughs) Well, from there it goes down with la, so, fa

In other words, if you go si, la, sol, fa, and silasofa

What's next? Look, it's okay if it's a fluke

i will do it again

Oh TED Choir! (smile)

So no one is tone deaf, you know? no one

From a village in Bangladesh

Everyone knows, even in the villages of China La, la, la, la-la--Everyone knows that the next one will be "mi"

Well, Chopin didn't want to go to "Mi"

Why? 'Cause it's over, like "Hamlet"

Do you remember Hamlet? Act 1 Scene 5:

Knowing that his uncle killed his father the king, he approached his uncle

Stops just before killing, then approaches again, nearly killing

The critics who have been sitting in the back seat all along

I have to write something, so I say: "Hamlet is a procrastinator." (Laughter)

Or "Hamlet has an oedipus complex."

No, otherwise the play will end, it's ridiculous

That's why Shakespeare put so much into "Hamlet." So Ophelia goes mad, there's a play within a play, Yorick's skeleton, grave digging...

In a nutshell, it's the same with Chopin, who can only be killed in the fifth act.

"Hmm, let's go back and try again."

and get excited

You don't have to worry about excitement

And then it hits the sharp on fa and finally settles on mi But it's a different chord 'cause that's the chord he was looking for, but instead... It's called a false ending, and I say that because it's deceiving.

I tell my students: "When you use false endings, raise your eyebrows, and people will know." (Laughter)

(Applause) Right? So he got to Mi, but with a different chord

Try going to mi, this chord is also different

One more time, the chord is different again

Again, the chord is still different

And finally...

The man in front of me said, "Wow!"

He'll probably go home After a long day, he'll turn off the car and say: "Oh, I'm home."

So this is the song that comes home from afar

After this, I'll tell you all the way through.

Go back la, so, fa,

Mi is right there, but then it's over

Then go up to shi again Excited Fa's sharp, go to mi

But the chords are different, it's not

And finally mi welcome back

And as you can see, it's a performance of "one buttocks"

(Laughter) Because when you go from B to E, you stop thinking about each note on the way, and start thinking about the long, long B to E.

Let's say you're in South Africa, and if you go to South Africa, you can't help but think of Nelson Mandela's 27 years in prison.

what was he thinking What about lunch?

No, he thought about the vision of South Africa, he thought about people, and that means-

It's about the vision, it's about the long lines.

As birds flying in the fields don't care about fences on the ground

So I will try to trace the connection from shi to mi.

And before I play it through again, I have a request

Think of someone you deeply admire but no longer has, your beloved grandma, your lover,

Someone in your life who you love with all your heart, but he's gone

Think of that person, and at the same time follow the connection from B to Mi, and you will understand everything Chopin meant.

(music) (applause) Now you may be wondering why I'm clapping.

I've done this with 70 seventh-grade, 12-year-olds at a school in Boston.

I did exactly the same thing as now, I told them, I explained everything, and at the end they applauded in amazement, clapping their hands.

So did I. Everyone was clapping. Finally, I asked: "Why are you clapping your hands?"

Then a small child said: 'Because we listened so cleverly' (laughs).

Think about it, 1,600 people here, busy and involved in everything, listened to Chopin, understood it, and were moved by it.

That would be amazing and everyone who watched this

I think I understand, and I think I'm impressed, but of course I can't be sure.

But let me tell you what happened to me 10 years ago, I went to Ireland during a time of conflict, and I did conflict resolution work with Catholic and Protestant children, and I did it with them.

They were street kids and it was a risk to do

The next morning one of them came up and said: "I never listened to classical music, but when you played that song by Shopping (Chopin)..." (laughs).

"My brother was shot dead last year, and I didn't cry either.

I was thinking of my brother when I heard you play the piano yesterday

At that time, I noticed that tears were flowing

So I felt like it was really good to cry for my brother."

And in that moment I was convinced that classical music belongs to everyone.

So how do you lead? -because experts in my field don't see things that way

They say that 3% of the population likes classical music.

Say you'll be happy if you can increase it to 4 percent

"How should I lead, how should I talk, what should I do?

Only 3% of people love classical music, and that number has increased to 4%...

What if I say

Everyone loves classical music! You just don't realize it, do you mean? " (smile)

the two are completely different

I had an amazing experience when I was 45.

After 20 years of conducting, I suddenly realized

The orchestra conductor doesn't make a sound

There's a picture of me on the CD. (Laughter) But the conductor doesn't make a sound.

A conductor relies on his power, his ability to empower others.

It changed everything for me, it changed my life

A member of our orchestra came and said, "What's wrong with you, Ben?"

And of course I wanted to know if I could do it. look into their eyes

If their eyes shine, it means they are doing well

With this person's eyes— you can even light up a whole village (laughs).

right? If their eyes are shining, they're doing well If their eyes aren't shining, you gotta ask yourself

Like this:

What am I if the performer's eyes aren't shining?

You can do the same with a child

What am I if my child's eyes aren't shining?

completely change the way you see the world

Well, "a week of magic on the mountain" is coming to an end.

And I'll say: Let's ask the question: Who are we, returning to the world like this? ,and

I know the definition of "success"

It's so easy to me, it's not about money or power

How many shining eyes are there around you?

Now I'll give you my final thoughts, it's going to really change the words you speak, the words that come out of your mouth. I heard this from a woman who survived Auschwitz.

One of the few survivors, she was taken to Auschwitz when she was 15.

His 8-year-old brother was with him, and his parents were lost.

And she said: "We took the train to Auschwitz and found my brother's shoes missing.

And I said, 'How stupid you can't take care of yourself! ’” ―That’s what the older sister usually says to the younger brother, isn’t it?

Unfortunately, those were the last words she said to her brother, never to see him again, he didn't survive.

So when she left Auschwitz, she took an oath.

She told me: "When I came back alive from Auschwitz

I made a vow that I couldn't bear if those were my last words

I will never say it again."

can we do that? no we speak ill of ourselves

Others say bad things, but it can last a long time. Thank you very much.

(Applause) Shining eyes, shining eyes

Thank you, thank you (music)

I used to think that the purpose of life was to pursue happiness.

Everyone agrees that the way to be happy is to be successful, so I searched for the perfect job, the perfect boyfriend, the luxury apartment.

But instead of being satisfied, I felt uneasy and lost.

It's not just me, my friend was too.

Eventually, I went to graduate school to study positive psychology and explore what makes people genuinely happy.

What I learned there changed my life.

Data show that the pursuit of happiness can make people unhappy.

I was particularly struck by this fact: Suicide rates are on the rise around the world, and in the United States, they recently hit a 30-year high.

Even though life is improving by any standard objectively, more people are feeling hopeless, depressed and lonely.

There's a sense of emptiness among people, and they don't have to be depressed to feel it.

Sooner or later, everyone will think, "Is this what life is like?"

Studies show that this feeling of hopelessness is not due to a lack of happiness.

It's because something else is lacking, it's lacking something to live for.

That's where I got my doubts

Is there more to life than being happy?

And what's the difference between being happy and having a purpose?

Many psychologists define happiness as a state of comfort and rest, a feeling of contentment in the present.

ikigai is deeper

Renowned psychologist Martin Seligman has said that ikigai comes from a sense of belonging and contribution to something beyond yourself, and from enhancing your best self.

We are obsessed with the idea of ​​happiness, but we believe that seeking meaning in life is a more fulfilling way to live.

Studies show that people with purpose in life are more resilient to adversity, perform better in their studies and careers, and live longer.

So I thought, how can we live in a more meaningful way?

To find out, I spent five years interviewing hundreds of people and reading thousands of pages of psychology, neuroscience and philosophy.

Taken together, these findings reveal four pillars of a meaningful life.

By creating these pillars in life, anyone can find purpose in life.

The first pillar is "connection"

Connections come from relationships that genuinely accept you for who you are and value others as well.

Some groups and relationships create cheap ties, based on what you believe or what you hate, not on who you are.

A true bond is born out of love

It's something that happens between individuals, and it's also up to you to decide whether or not you want to connect with others.

Here is an example

Every morning my friend Jonathan buys a newspaper from the same street newsstand in New York.

But the act is more than just buying and selling.

Slow down a bit, exchange words, treat each other as human beings.

One time, Jonathan didn't have any change, and the newsman said, "Never mind."

Jonathan said he would pay, so he went into a nearby store and bought something he didn't really need and wasted his money.

When Jonathan gave money to the newsman, the newsman didn't take it.

he was hurt

Because Jonathan refused when he tried to do an act of kindness.

We all reject each other like this without even realizing it.

I am

Passing by acquaintances and not saying hello

I check my phone while the other person is talking

It is an act that does not recognize the value of the other party

make you feel invisible and worthless

But when we connect with each other, guided by love, we can connect and feel better about each other.

For many people, ties are the most important core of their purpose in life, the bond they have with family and friends.

For some people, the second pillar, purpose, is the core of their ikigai.

Having a purpose is not the same as finding the job you want.

The purpose is what you can give rather than what you want.

One hospital nurse said her goal was to heal the sick.

Many parents say it's "raising our children"

The key to purpose is to use your strengths for the benefit of others.

Of course, many of us do it through our work.

They contribute through their work and feel needed.

The flip side of this is that being incapacitated, unemployed, and having low labor force participation is not just an economic problem, it's also a raison d'etre problem.

People panic when they lose something they love

Of course, you don't have to look for purpose in your work, but purpose gives you purpose in life and gives you a reason to move forward.

The third pillar is also about surpassing your limits, but in a completely different way: Transcendence.

The state of transcendence is a very rare moment, when you step away from the hustle and bustle of everyday life, your sense of self disappears, and you become one with a higher reality.

Some people say that seeing a work of art gives them a sense of transcendence.

Some people experience it during church services.

I'm a writer, and writing makes me that way.

Sometimes we get so caught up in it that we forget the time and place.

These moments of transcendence transform you.

In one study, students were asked to look up at a 60-meter eucalyptus tree for one minute.

Afterwards, the students became less selfish and more tolerant in helping situations.

Connection, Purpose, Transcendence

Many people are surprised by the fourth pillar of ikigai

The fourth pillar is storytelling, the story you tell about yourself.

Spinning a story out of life events makes things clear.

It makes it easier for me to understand how I got to where I am today.

But sometimes we don't realize that we are the ones telling the story and that we can change it.

life is not just a series of events

You can edit, interpret, and retell your own stories, even with the limitations of fact.

I met a young man named Emeka who became paralyzed while playing football.

After his injury, Emeka recalls thinking, "I had a great life playing football, but now it's like this."

People who tell stories like this -- "It used to be good, it's not now," -- are often anxious and depressed.

So was Emeka for a while.

But as time went on, he began to tell a different story.

His new story is, "Before my injury, my life had no purpose.

Playing around and being selfish

But I realized that my injuries made me a better person."

Editing her story changed Emeka's life.

After telling himself a new story, Emeka began teaching children and found a purpose in life: to live for others.

Psychologist Dan McAdams calls it a "recovery narrative," a story in which evil is redeemed by good.

People who lead meaningful lives tend to define their life stories by redemption, growth and love, they say.

What triggers people to change their narratives?

Some people get help from a therapist, but you can do it yourself. Just take a moment to reflect on your life, how your perception of experience and what you've lost and what you've gained have shaped you.

Emeka did

The story doesn't change that easily, and it may take years of hard work.

Everyone experiences pain and suffers

But by embracing painful memories, we can gain new insights and wisdom, and find the good that supports us.

Connection, purpose, transcendence, and storytelling are the four pillars of ikigai.

When I was young, I was fortunate enough to be surrounded by all four of these pillars.

My parents ran a Sufi meeting house in their home in Montreal.

Sufiism is a mysticism known for its whirling dances and the poet Rumi.

Twice a week, the Sufis would come to our house to meditate, drink Persian tea, and share stories.

It includes serving all life in small acts of love, and being generous even when others treat us badly.

This gives us a purpose, which is to control the ego.

When I finally left home to go to university and the Sufi practice disappeared from my daily life, I felt like a kite with a broken string.

I started looking for something that would enhance my life.

that led me down this road

Looking back, I can now see that Sufi meetinghouses had a rich purpose in life.

The four pillars were firmly embedded, and the four pillars allowed me to live more deeply.

Of course, the same principles apply to other close-knit communities, for better or worse.

Gangs and cults use these pillars of life to give people something to risk their lives with.

That's why we have to show society a better choice.

Embedding these pillars within families and organizations to help them become better selves.

But living a life worth living takes effort.

it's a constant process

Every day, we create our lives, we weave our stories.

sometimes you get off track

When that happens, I try to remember a memorable experience I had with my father.

A few months after graduating from college, my father suffered a massive, life-threatening heart attack.

When my father survived and when I asked him what he thought when he was dying, he said the only thought that crossed his mind was that he had to live for me and my brother.This thought gave me the will to live.

When my father was under anesthesia for emergency surgery, instead of counting down from 10, he chanted our names like a mantra.

May our name be the last word if life is lost

My father is a carpenter and a Sufi.

It's a modest life, but it's a rich life

Because I had a reason to live while I was dying, yes, love.

My family ties, my purpose as a father, my transcendental meditations in repeating our names, which my father says were the reason he survived.

My father is spinning such stories himself.

That's the power of life

Happiness comes and goes

But if your life is really fulfilling, even when things aren't going your way, having something to live for will keep you going.

thank you

(applause)

(Yoruba) As a true Ogbogbo tribe born free, our wealth and resources surpass all that Europe ever had, our altars overflow with gold (English) This chant is called Oriki.

My grandmother used to sing to me when I was a kid in Nigeria

Oriki is a song of praise for the Yoruba people, but what this song specifically celebrates is a treasure that Western society does not have.

"Mama" - that's what I call my grandmother - told me a lot of Yoruba mythology.

The Yoruba are an ethnic group from the southwest region of Nigeria, and I've always been fascinated by these stories.

always intrigued

Also, Yoruba culture has influenced my art since I was a child.

African art isn't just what you buy at the market in Harlem, New York.

Each artist has a name, each has a story.

here is my story

"Mama" had tattoos on her arms and legs

I thought it was something I had in my child's mind since I was born, and it was engraved with beautiful black lines and tiny symbols.

Then one day he told me that "mama" was actually a symbol from Yoruba mythology.

I didn't know how this would affect me as an artist now.

As a child, I saw art everywhere.

I remember the house we lived in on Stadium Road in Ilorin City.

It was a marble floor, and when I looked at the marble, I saw all sorts of patterns and designs, and I thought that everyone saw the same thing.

So I called my brother and said, "Ikeol, look at the marble design, look at this pattern, this mask."

He replied, "Raoul, I can't see anything."

So I used ink to trace what I saw on the floor.

When my mother found it, she got very angry.

(Laughter) But that didn't deter me.

I used chalk instead of ink because my teachers and parents often scolded me.

I remember my mother saying, "Raol, we are Christians.

Why don't you draw something similar to other people's?

Landscapes, chairs, furniture, Jesus, etc."

If I had the chance, I could have painted all over the house, but I knew I had no choice but to become an artist in the future.

Of course - this is my father - but he was very proud that day.

And this is my notebook while in law school.

(Laughter) Of course, I missed a lot of classes, and I found excuses for not going.

But when I started working as a human rights lawyer on the Human Rights Commission, my heart wasn't there.

I was faced with a harsh reality

The children I met through my work were forced to choose between prioritizing their studies or accepting marriage.

I was frustrated by the many injustices around me, and art was the only way out, and that's what inspired me to start painting.

This work is called "Dreamscape"

If you zoom in on the painting, you'll see a girl and an accidental birth, telling us that our future is governed by where we're born.

The next picture I'm going to show you is a man holding a hand, and a woman holding a hand.

In fact, same-sex relationships are criminalized in Nigeria.

14 years in prison

I want my art to tell a story

I want to start a dialogue through art.

Here you see a map of Africa, filled with questions, with crying figures, and here with syringes stuck in Africa, with natural resources being extracted.

So I ask myself where is it going?

Who will benefit?

As you can see, the weaving of patterns, masks, stories into my art, and the way I draw lines, all come from the Yoruba culture.

So in 2013, I made a bet of my life.

I quit my job and moved to New York City to focus on art.

Of course, what my parents thought was, "It's only temporary. I'll be right back."

But the life of an artist in New York is not easy.

I thought I had to make a living

So I started painting on clothes to earn a living.

Draw on shoes

I started painting on different things to order.

And I realized there's power in that. Everyone wears their story proudly.

So I started drawing on everything

I painted on guitars, I painted on murals, anything that my hands would touch became my canvas.

One day, I was looking through my Instagram photos, and a picture caught my eye.

It was Rain, and he stood in front of my work and took a picture, and the moment I saw that picture, something happened.

I could clearly see my art going into her body and coming out of her, and that experience inspired me to paint on the human body.

When I was a kid, I saw art on marble floors, and just as it embossed on walls, I started seeing it on people's faces and bodies.

As I thought back to my grandmother, I realized that most of my creative intuition was essentially rooted in my childhood memories and art on my grandmother's skin.

Looking at the people I painted, I thought, What would it be like for all of us to walk around like gods and goddesses in Yoruba mythology?

That is how Boom and Ori's sacred art were born.

Ori is a Yoruba myth, but it represents one's soul, one's essence, one's intuition.

I've found that only when you pursue your own cage do you have the power to move mountains.

The act of drawing a picture on the human body is something intuitive

like art in action

Or it feels like a three-dimensional experience.

So one day, I was in Brooklyn doing my usual job when I got an email that said, "Hello, I'm a huge fan of your work.

Can you draw a picture for my music video work? ”

Beyonce's signature

It looks like an email from Beyoncé to me

My reaction is, "What is this?"

(Laughter) Eh, how did you know I existed?

This isn't real, it's definitely some kind of prank

Nigerian emails are useless

(Laughter) (Applause) But, unbelievably, it was true, it was true, and from there, things happened in the blink of an eye.

Beyoncé wanted to pay homage to New Orleans and said my art reminded her of her Creole roots.

And when her song "Lemonade" comes out, of course, it's like, "Boom!"

I was featured in many magazines and interviewed

Stopped even in the city

I got a name for it, and sometimes it took a step back and a cool head to accept it all.

As artists, I consider myself lucky because we spend our whole lives acknowledging art and making an effort.

But the lawyer part of me is still alive and well, so I use art and fight for my beliefs.

The legacy I inherited from the Yoruba will always be with me.

Good evening, I would like to show you my live art.

please welcome me with you

(Music) (Applause) Introducing Jeri and Rain.

These two are the first people I ever drew, and yesterday I spent the whole day painting them.

Good evening, they represent my hopes and fears.

I drew my fears on my back

hope is ahead

what is my hope

Please know this: Africa is not just one big, nameless continent.

Please also know that there are over 350 ethnic groups and languages ​​in Nigeria, and I am an artist from one of them.

(Applause) I want you to know that on the continent and here, I want to change the perception of African art. I want you to know that African art isn't just something you buy at a market in Harlem, New York. Each piece of art has a story, each artist has a name.

thank you

(applause)

My name is Chetan Bat, and when I introduce myself, people often ask me, "Where are you from?"

I always say "London"

(Laughter) But I know exactly what you're asking, so I'll answer something like, "My grandparents and mother were born in India, my father and I were born in Kenya, but I was raised in London."

It seems that the opponent is going to agree with this

"You're Asian Kenyan. I've worked with people like that."

(Laughter) From my name, you're guessing I'm Hindu.

Within that person, an image of me as a person is formed.

But the Christians, the Muslims, the atheists that I've been around since I was a kid?

Socialist or liberal? Don't forget the occasional Conservative supporter.

(Laughter) In fact, in my working-class neighborhood, the greengrocers, the factory workers, the cooks, the mechanics -- women and men, all of them, in a very important way, are part of me and are here with me.

Maybe that's why I find it hard to answer questions about identity and origin.

It's not the teenage rebelliousness of not wanting to be labeled.

It's about the primary identities that coexist within you. The things you raise your hand for, the things you support as if they're your own, the things you fight over, the things you feel attached to and the things you hate.

And it's also about how we perceive ourselves, not just others.

It's about identities that we don't really think about and take for granted.

But how we answer questions about identity and origin is of critical social and political importance.

Identity-based violence and conflict are happening all over the world.

Violent strife erupts over religion, nation and ethnicity.

These conflicts are often based on age-old discourses about identity, belonging, and origin.

These identities rest on conventional wisdom, often on ancient discourses of primordial origin.

It could be about Adam and Eve, it could be about caste or gender superiority, it could be about the superior vitality of a race, it could be about the past glory of an empire or civilization, it could be about a land that was endowed by a fictional "god."

People say, "Origin stories and identity myths give us comfort.

what's wrong

Creates a sense of belonging

Identity is like a national costume, and people feel a certain warmth in it."

Will it be so?

You need a myth about identity to feel safe?

Because to me, religious, national, and ethnic dissensions make people more miserable.

Let's be clear: deny all the myths about your origins that you believe.

Why not cultivate a deeper sense of being human after rejecting all myths about our primordial origins? As a human being, responsible not for one particular race, but for humanity as a whole. This allows us to look at humanity in a whole new light, and to see how myths about our origins confuse us with the power that dominates the world, the greedy exploitation, the poverty, the oppression of women and girls around the world, and the deep and growing inequalities.

Now, myths about origins are closely related to "tradition," and the word "tradition" refers to something old and enduring -- something that should be taken for granted. People tend to equate tradition with history, simply the past well-wrapped into a story.

But tradition should not be confused with history.

In many cases, the two are completely incompatible.

Origin stories are usually recent, fictional tales of ancient belonging, which are downright ridiculous given the unequal yet widely interconnected world and human complexity.

And in this day and age, we see things that claim to be traditional and things that claim to be ancient change before our very eyes at breakneck speed.

I grew up in the '70s near Wembley, in a neighborhood of Asian, British, Caribbean and Irish descent. The neo-Nazi British National Front party was a powerful force at the time, marching regularly and attacking us as a persistent threat, and often violence directed at us, was a reality in our neighborhoods and homes, mostly from neo-Nazis and racists.

I remember seeing a flyer in my mailbox during the general election with a picture of a local candidate for the British National Front.

The person in the picture was the person who lived next door.

When I was a kid, I was playing in the yard and was threatened with gunshots, and on weekends, skinheaded British National Front activists would gather at his house and carry lots of placards and yell at us, "Go back to your country."

But he is now one of my mother's best friends.

He's a very nice, kind, and kind person, and at some point his political views changed and he left fascism and embraced the broader concept of humanity.

There was also a Hindu family that I was very close to. Our neighborhood was the setting for a South Asian daytime drama, and everyone knew everything about each other.

I didn't know what I didn't want people to know. I didn't have a choice.

But this family had a quiet boy who was in the same school as me, and I never heard of him after I graduated, only knowing that he had gone to India.

It wasn't until around 2000 that I saw the thin book you see in this picture.

It was a strange book, written by a British al-Qaeda sympathizer, and he said in the book, "Attack Britain."

This was in 1999, before 9/11 and the invasion of Iraq, and he helped reconnaissance targets during the bombings of New York.

He also taught people how to make the bombs used on the London Underground, and planned to blow up all the shops in London.

Now he's one of the most high-risk prisoners in the UK and one of the most important al-Qaeda people arrested in the UK.

The author of this book was that quiet boy I went to school with.

A Hindu boy from England who became an al-Qaeda fighter and a most wanted international terrorist, abandoning his Hindu, Indian and British identities to become a completely different person.

Throw away your old self

I reinvented myself. This process of change is common among young men and women who become involved with international armed groups such as al-Qaeda or the Islamic State.

The al-Qaeda media representative is a white, American citizen of Jewish and Catholic backgrounds.

The question of where they came from is completely meaningless.

More importantly, where are we going from here?

I would also like to point out that young men and women who grow up in the Islamic process go through exactly the same process.

People who have joined al-Qaeda or Salafi jihadism -- many of whom come from Europe, Asia, North America -- and often even the Middle East -- have completely abandoned their own backgrounds and become, as it were, "new selves."

These people spend an enormous amount of time attacking their parents' backgrounds as ungodly, impure, blasphemous, false Islam, and instead come up with the inconceivable idea of ​​the end of the universe.

The concept of "new experience"

"Throw away your past, your society, your family and your friends, because they are all dirty."

"And instead be the new you, the real you, and the real you."

This is not a story of going back to the past.

It uses a fabricated past to paint a horrifying future where the present is year zero.

That's why more than 80 percent of the victims of Al-Qaeda and the Islamic State are Muslim.

The first thing Salafi jihadism did when it took control of a region was to destroy existing Islamic institutions, including mosques and chapels, preachers and daily practices.

The main goal is to control and punish the population from the inside out, restricting where women can go, and controlling the details of their clothing, their family ties, their beliefs and their prayers.

When you look at the news, it looks like Western countries are being targeted, but the real target is other Muslims.

The belief that no other Muslim can be pure, and the common beliefs and practices that have been practiced for centuries, are attacked as impure, by ignorant teenagers from Birmingham and London, who gleefully trample on a history they know nothing about.

Now, although their claim to "tradition" is at odds with history, they have no doubts about their own purity and the impureness of others.

The search for "purity", "certainty", "return to true tradition" can lead to destructive ideas of perfect societies and perfect peoples.

Here's a picture of a large gathering of Hindu fundamentalist groups in India today.

This might remind some of you of Italy or Germany in the '30s, a movement that, in fact, stems from fascism.

It was a member of this group that assassinated Mahatma Gandhi.

Today's Hindu fundamentalists see this assassin as a hero and want to erect statues of him across India.

For decades, they wielded large-scale violence against minorities.

ban books, art and movies

They attack lovers on Valentine's Day and Christians on Christmas.

They don't like to be criticized, imaged, caricatured, or depicted in cartoons for what they consider to be ancient culture.

But the very people who insist that their sect is the "old and timeless Hindu" are dressed in brown shorts and white shirts and, strangely, claiming to be primordial Aryans.

Such people develop a pure, primal identity with strong convictions and certainties.

Fundamentalists view religion and culture as their own possessions - their "things"

But religion and culture are processes.

It's not a "thing", it's not permanent, it's chaotically mixed.

No matter what religion you look at, there's always discord and controversy.

That's why criticism of religion, in whatever form it takes, must be part of the broader humanity we strive to be.

We respect your right to believe and express your religion, and we respect your culture and your opinions, but we don't have to respect their content.

There are things that you might like, like an old church that you think is beautiful.

but that's not the same

Likewise, I have human rights, so I can say things that make you feel bad, but you don't have the right not to do so.

In a pure democracy, someone is always going to be offended, because constantly someone is voicing different ideas.

Also, ideas change and are not permanent.

A person's political views cannot be determined from their religious or national or cultural origins.

And what's about fundamentalist religion also applies to nationalism and racism.

What I have trouble understanding is being proud of your nationality and ethnicity, being proud of where you happen to emerge from your mother's warm, comfortable womb, and thinking you're better than others just because you happened to be born there.

They're drunk with their own culture, and they have strong beliefs about what's included and what's not included.

Let's put a little satire on the figure, just a little bit.

Imagine an English nationalist or a follower of a British nationalist party, sitting at home watching Fox News, hollering about the invasion of your country by foreigners. This channel is American cable TV, owned by an Australian, and the TV you're watching is made in Korea, bought with a Spanish credit card, paid for by a major British bank, but headquartered in Hong Kong.

Favorite domestic soccer team owned by Russians

Your favorite fish and chips is the product of a Swedish venture.

The church I go to from time to time teaches the creed decided at a conference in Ghana.

The British flag-patterned trunks that I love are made in India.

(Laughter) And then- (Laughter) Thank you.

The one who regularly washes those pants is a nice Polish woman.

(Laughter) There is no such thing as a pure ethnic or national culture. Today, when it comes to making ethical choices, instead of having to choose between the racist right and the religious right with a gloomy view of culture, we have a much wider choice.

Culture isn't just about language and food and clothing and music, it's about gender, ancient monuments and ancestral scriptures.

But it also includes cultures that have been arbitrarily turned into cultural prisons by political interests.

A grandiose political identity claim is an elite claim to power.

Rather than the answer to social, economic and political injustice

make it difficult to see

And there are so many people around the world who can't rely on historical monuments, who don't have scriptures, who can't trace their past glory to civilizations and empires?

Are they inferior as humans?

Now you're listening to me - yourselves

What is your own identity? You're stitching together experiences and thoughts to create a person who keeps moving forward in time.

That's what you call "I," "you," and "self."

But this self includes your hopes and dreams, who you might have been, and includes all the other people and things that make you who you are.

Other people - yes, they are part of you, moving forward with you.

Your true self, if it exists, is a complex, chaotic, uncertain self, and that's a very good thing.

Why don't you find value in chaotic and uncertain things?

Holding on to a pure identity may be a sign of immaturity. Ethnic, nationalistic, and religious traditions are bad for you.

Why not be skeptical of all the claims of a principled origin around you?

Try to reject the myths of identity that force you to belong. It's a myth about the identity that politicians, community leaders, and those who claim to be, assign you.

If we don't need origin stories or fixed identities, we can challenge ourselves to think creatively about each other and the future.

And culture always moves on its own.

don't worry

Culture is a creative, dynamic process, not about imposed laws and boundaries.

Abu al-Walid Muhammad ibn Ahmad ibn Rushud was a high-ranking Muslim judge and thinker who lived in Cordoba in the 12th century. His writings were considered highly profane, heretical and evil.

Long after his death, his followers were ruthlessly pursued, banished, and murdered for centuries by the most powerful religious groups of the Middle Ages.

That group is the Roman Catholic Church.

I wonder why?

That's because Ibn Rushud said, "What is religiously true and what reason judges to be true in the real world may contradict each other, but the latter is true."

"There are two different worlds of truth, one based on reason and evidence, the other on the power of God. State, political power, and social law belong to the world of reason.

Religious life is a different world

the two should be considered separately

Social and political life should be governed by reason, not by religion."

You can see why his writings pissed off the church. During his lifetime, he pissed off even Muslims, because he insisted on the secularism that is common in Europe today.

Now, history often deceives us.

It undermines what they believe to be their hard truths and their cultures.

Ibn Rushud, who happened to be a Muslim, is considered one of the key figures who introduced and spread secularism in Europe.

Ladies and gentlemen, can you make the story of Ibn Rushud your own against all the religious, nationalistic and racist things? Not because he was a Muslim, not because he was an Arab, but because he was a man, a man of great brilliance who shook the world at the time, and our world.

thank you

(applause)

This is my favorite place on earth, the Uyuni salt flats in Bolivia.

When the surface is covered with a thin layer of water, it reflects the appearance of clouds.

Sometimes I feel like I'm floating in clouds

On the other hand, the horizon can disappear, and the distinction between sky and earth can disappear.

I feel like I'm trapped in something bigger

One night I woke up from a dream and even the stars were reflected in the water.

not a dream

It was like walking among the stars

With every step you take, the stars at your feet shine brightly

I felt like I was floating in outer space, in the clouds of the galaxy.

But it's not just galactic clouds that are floating here right now, there's also a lot of plastic junk.

The footprints we leave on the earth

It marks the arrival of a new era in which some human actions are having a global impact on the environment.

This geological epoch is called the Anthropocene.

There's another type of noxious cloud in the atmosphere. It's the cloud that's created from carbon dioxide emissions -- the burning of fossil fuels like oil, coal, and natural gas.

I don't know about you, but I've always dreamed of floating in the clouds.

Let's imagine together today a different type of cloud, a cloud that can coexist with us.

You wonder what this photo is, let me explain. It looks like a collage or a photo montage.

But no, it's real

But sometimes the question arises: What is reality?

According to Alexander Kluge, "Human beings are not interested in reality.

I can't be interested 'cause that's part of human nature

humans have aspirations

It's in direct conflict with all reality

I think it's better to lie than to part with your desires."

But how do we learn to float in the clouds?

As an artist, I thought I could start by building a flying museum.

"What do you do with a plastic bag?"

In 2007, our colleagues around the world started working together to collect used plastic bags, not new bags.

So I washed it, cut it, glued it together, made a giant canvas, and started painting I made a giant canvas, and started painting.

I now have a collection of paintings that depict personal stories and friendships.

You put them together, you bend them, you fold them, you put them together, and you have a space filled with air.

As the sun rises above the horizon, the museum rises into the sky.

So we named it "Museo Aero Solar".

From this simple idea, we learned a revolutionary way to stay in the air without using any kind of fuel.

The temperature difference between inside and outside creates a rising force

This approach doesn't use fossil fuels, helium or hydrogen gas, solar panels, batteries or motors.

They've found a clean, universally accessible and easy way to lift us up into the sky.

I remember working with 120 engineers at NASA in 2009.

As you know, launching a space shuttle requires a giant control panel.

The launch technology is very complicated, but then I show up with a plastic bag and say, "Isn't there another way?"

I had a hard time understanding the concept.

Once the power of this idea was understood, we started a new era, out of the apocalyptic Anthropocene and passing the baton into a new era, which we call the Aerocene, an era of environmental awareness, where we can float together, live in the sky, and be ethically responsible for our atmosphere and our planet.

I brought this rucksack today

you know...

This is a balloon, but we also call it a "sculpture."

If the weather clears up tomorrow, I can fly outside as soon as possible, but the weather in Vancouver isn't great... (laughs) Not so much...

not a good situation

What other features do you think this has?

It's got sensors attached, and when the balloon moves, it's like painting the sky.

there are other sensors

I think you should always feel the air first and then start observing. Listen to the voice of the atmosphere and the climate and the hot air. Listen to the voice of the atmosphere and the climate and the hot air.

We're working with teams around the world to develop these sensors. We're developing these sensors with teams all over the world to reconnect with climate, temperature, and the environment.

The atmosphere is teeming with life

Humans just live at the bottom of the atmosphere

The exact same sculpture that I have here has flown 600 kilometers from Germany to Poland in 12 hours without fuel.

But border crossing wasn't free.

Making this journey a lot more complicated than I thought.

Using the wind, the heat of the sun, and the radiant heat of the earth, flight is both complex and wonderful.

But it's more complicated to get permission to fly -- to fly with the wind and cross national borders.

At the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in Paris, I introduced this spherical sculpture and said that it might fly around the world.

But how can wind-powered flight get you where you want to go?

Together with MIT, we developed a program to predict navigation on wind highways.

For example, to return from Vancouver to Berlin, you first need to determine your altitude.

Direction and speed of airflow vary with altitude Direction and speed of airflow vary with altitude

The red line is the route when I flew tomorrow, and the orange line is the route for the next day.

If you investigate like this

We find that the best time to return to Berlin is after six days for a flight that relies solely on the wind.

You can travel 100 miles (169 kilometers) from central Berlin without burning a single drop of fuel, just riding the air currents.

I thought that this trajectory drawn by the wind could serve as a sign declaring "the day to break away from fossil fuels."

More people are experiencing the atmosphere in some other way.

You all know "Earth Day"

I think we should also celebrate "Air Day," which commemorates the treaty we make with the Earth to meet our ethical obligations to the atmosphere.

But keep thinking, keep dreaming

I learned that the bigger the sculpture, the heavier it could lift.

You see, it's just air heated by the heat of the sun that makes it rise.

You can even build a garden in the air this way.

Will we one day be able to live in a garden the size of the Earth?

Can we live in an ecosystem that floats among the clouds?

These questions are not just technical challenges, but answering them also rethinks freedom of movement across borders and overcomes the political, social, cultural and defense constraints of our modern world.

After all, the air belongs to everyone, not to any government.

(Applause) As I said earlier, it's only our imagination that allows us to create places like this.

This is an installation I made in the Metropolitan Museum of Art in New York.

It asks, "What does transnational space look like?"

If you're going to live in a space like this, you've got to learn how to move within it. You learn how to walk between clouds.

shrink

we're floating 22 meters high

When two or more people get too close, it affects even those who are far away, and they all converge.

this is a fragile ecosystem

Between the spheres, we set up a net that allows them to move back and forth.

There are moments when you see nothing below and you freeze in fear.

One of the most amazing things about this exhibit is the kind of unity that comes with this new Aerograph.

I'll tell you one last thing

On July 16, 1945, the first atomic bomb was detonated at White Sands, New Mexico.

This explosion created a cloud of radioactive particles that spread around the world, heralding the beginning of the Anthropocene.

70 years later, on November 8th, 2015, in this exact same place, another event will take place.

For the first time ever, we've lifted a man into the sky using only the power of the sun, without burning fossil fuels.

As the sun rises above the horizon, we rise quietly and slowly We rise quietly and slowly We rise quietly and slowly We haven't exploded anything.

It felt as if gravity was acting in the opposite direction, not pulling it toward the center of the earth, but pulling it toward space.

As Neil Armstrong said when he walked on the moon, "This is one small step for me, one giant step for mankind," we should ask ourselves, "What step should we take now?"

In the Avocene, our steps, though very small, are fundamentally different. This step began with a plastic bag filled with air and a wish. But it brings us independence from fossil fuels and gives us the opportunity to celebrate Air Day.

It's a small step in a small place, but I hope we can all walk together.

A walk like this will surely take us farther than the moon and make us float on our feet.

thank you

(applause)

we are all activists now

(Applause) Thank you.

Shall we finish with this

(Laughter) From families working to fund public schools, to the tens of thousands of people who participated in Occupy Wall Street, to Black Lives Matter, to those who marched against police violence against African-Americans, to families who marched for or against the legalization of abortion, to those who feared their friends and neighbors would be deported or put on deportation lists just because they were Muslims, to gun ownership. advocates for gun rights and gun control, millions of people who attended the women's marches across America last January.

(Applause) Now we're all activists, which means we all have something to worry about, government surveillance.

Surveillance is the collection and use of sensitive personal information by governments.

Government surveillance is essential to public safety and national security.

But government surveillance also has a history of abuse, and sensitive information can be used against people based on their race, national origin, sexual orientation, and especially based on the social activities and political beliefs they're involved in.

About 53 years ago, Dr. Martin Luther King, Jr. gave his "I have a dream" speech in Washington.

The ideas behind this speech for racial equality and tolerance are so uncontroversial that my daughters study it in third grade.

But at the time, Dr. King's ideas were controversial.

The famous and infamous FBI director, J. Edgar Hoover, tried to think that the civil rights movement was a Soviet communist plot to destabilize the United States government.

Hoover installed a wiretap in Dr. King's hotel room, which picked up the conversations of civil rights leaders as they worked out the strategies and tactics of the movement.

They even caught recordings of Dr. King having sex with a woman who wasn't his wife, and this is what J. Edgar Hoover saw as an attempt to discredit and undermine the civil rights movement.

The FBI sent this audio recording, along with a handwritten note, to Dr. King, and a draft of this note was found many years later in FBI archives.

As all charlatans do, your end is near, King."

The letter even suggested that Dr. King commit suicide, saying, "King, there's only one thing left for you to do.

you should know

Before this filthy and perverted charlatan is shoved into the country, end it with your own hands."

The point here is that Dr. King was not an anomaly.

Everyone has things they want to hide from others.

More importantly, J. Edgar Hoover was not an anomaly either.

The history of government abuse of surveillance isn't the result of one vicious megalomaniac.

During his decades at the FBI, J. Edgar Hoover had the endorsement of every president, Democrat or Republican.

After all, it was John F. Kennedy and his brother, Robert Kennedy, who knew about and authorized Dr. King's surveillance.

For 15 years, Hoover directed a program called COINTELPRO, which was designed to monitor and undermine civic groups -- the civil rights movement, the women's rights movement, the peace movement, the anti-war movement.

Surveillance didn't end there

During the campaign, Lyndon Baines Johnson tried to win the election by tapping the plane of his opponent, Barry Goldwater's campaign.

And of course the Watergate scandal.

The intruders were caught breaking into the Democratic National Committee headquarters at the Watergate Hotel, and the Nixon campaign tried to cover up the break-in, which ultimately led to Nixon being ousted from the presidency.

COINTELPRO and Watergate were alarm bells for the American public.

Surveillance had gotten out of hand and was being used to crush political opponents.

The American people have taken this opportunity to change the government surveillance law.

The main tool they used to change the law was to require a search warrant, so the government needed a warrant to see the calls and letters.

Search warrants are important because they intervene between investigators and the public. Judges are required to ensure that there is a good reason for surveillance, that surveillance is aimed at the right people, and that the information collected is used for legitimate government purposes, not on discriminatory grounds.

This is the current system, which means President Obama didn't wiretap Trump Tower.

Thanks to this system, that doesn't happen without the intervention of a judge.

But what about other than phone calls and letters?

Technology is now making it possible for governments to gather information about ordinary people cheaply and easily.

Call records can tell you if you have a drug addiction, what your religion is, what charities you donate to, and which candidates you support.

And yet, the government has been collecting telephone records of American citizens for years, using a trawling method.

In 2012, the Republican National Convention showcased a new technology that was set to be adopted: facial recognition, which would identify and preempt campaigners and people of interest from a crowd.

Today, more than half of all adults in the United States have their faces recorded in government databases.

The Alcohol, Tobacco, Firearms and Explosives Administration has devised a plan to have a license plate recognition device scan the license plates of the cars attending the event to identify citizens going to gun shows.

Today, more than 70 percent of police vehicles are equipped with automatic license plate recognition technology that recognizes vehicles as they drive through town.

All of this information -- license plates, facial recognition, call records, address books, friend lists, photos uploaded to Dropbox and Google Photos, and sometimes even chat transcripts and emails -- all collected without the need for a search warrant.

What this means is that all of this information that the average person has is very easily available.

It's a golden age of surveillance

Parents know what this means

When you have a child, while they are young, they cannot get out of their crib on their own.

But sooner or later, your little one will grow up to be able to get out of the crib on his own, and you'll tell him not to.

But you know what happens

Some children will leave

Right? This is the difference between ability and permission

Same with the current government.

In the past, governments simply didn't have the capacity to collect and abuse information from hundreds of millions of people at scale and at scale.

But now the government has grown and we have the technology to do it.

Government has the ability, which means that regulation is more important than ever.

Laws should define when the government can oversee, and when there are problems.

There should be some consequences or penalties if the law is not followed.

Laws are more important than ever because in the world we live in today, rules are the only thing that keeps governments from abusing them.

but the law isn't working

Especially after 9/11, the laws aren't working properly and we don't have the regulations we need.

I'm already seeing the results

Fusion Centers are local, state, and federal governments working together to uncover domestic terrorist activity.

So far, people have reported that fusion centers are unsafe because they voted for third-party candidates, because they own the "Don't trample your freedom" flag, or because they've seen anti-tax movies.

The same organization scours reading lists of Muslim community groups to monitor Quakers who oppose recruiting in high schools.

The United States Internal Revenue Service is disproportionately scrutinizing groups labeled "Tea Party" or "Patriots."

Now, customs and immigration officials are stopping people as they enter the country, demanding social network passwords, checking who they're friends with, what they're saying, and even "spoofing."

Civil libertarians like myself have been trying to get these things noticed and campaigning against them for years.

This was a big problem under Obama, but it's gotten worse.

New York police spying on Muslims, police using license plate recognition technology to locate their spouses, and things like that are extremely dangerous.

But when one president reshapes government oversight and federal power to retaliate against an opposition, that's tyranny.

Now we're all activists, which means that there's something about everyone that fears government surveillance.

As in the days of Dr. Martin Luther King, we have the power to change things.

use encryption first

Encryption keeps your information from being easily opportunistically collected.

We can repel the golden age of government surveillance.

Second, help us change the law on government surveillance.

Did you know that if you have a friend who works for the French government or the German government, a friend who works for an international human rights group, a friend who works for an international oil company, that friend could be a target of lawful surveillance by a foreign government?

So if you talk to that friend, the U.S. government may be collecting that information.

Once that information is collected, even conversations between American citizens can be given to the FBI for investigation by the FBI, without search warrants or justification, and without the need to prove suspicion, for information against Americans, for any crime, no matter how trivial.

The law in question that allows this to happen is called Section 702 of the Foreign Intelligence Surveillance Act Amendments Act. We have a great opportunity this year.

Pressure our deputies to make important changes to this law to protect our data from misuse and misuse.

Finally, one of the reasons things have gotten so bad is that so many things around government surveillance -- the technology, the rules, the policies -- the things that are supposed to protect us -- are top secret and classified.

We need transparency, and as Americans, we need to know what our government is doing, and democratically explain how the government oversees and uses information.

Now we're all activists, which means we all have something to worry about, government scrutiny.

We can act like we did in Dr. Martin Luther King's time.

please join me take action

thank you

(applause)

What do you think of when you hear the name Cuba?

Classic car?

A fine cigar?

maybe a famous baseball player

What about North Korea?

Missile tests, the notorious Supreme Leader and his best friend Dennis Rodman.

(Laughter) The first thing that probably doesn't come to mind is a country where a free economy gives people access to a wide range of products at affordable prices.

I'm not here to discuss why these countries are what they are.

Let me give you an example of how our citizens have been adversely affected by our trade policy of restricting imports and protecting our own industries.

Recently, many countries are trying to protect their domestic industries by restricting imports.

It may sound good, but it's basically protectionism.

We heard this a lot during the 2016 presidential election.

It's been in the Brexit debate, and most recently, during the French presidential election.

In fact, it's a topic of great importance around the world, and many aspiring political leaders have policies in favor of protectionist trade.

I can understand why you think it's a good idea, because trade can sometimes seem unequal.

Some people blame trade for some of America's domestic problems.

For years now, it's been said that there are fewer high-paying manufacturing jobs in America.

Many believe that manufacturing in the United States is declining because companies are moving their operations offshore to markets like China, Mexico, Vietnam, and other markets with cheap labor.

Trade agreements are also perceived as unfair in some ways, such as NAFTA and TPP, because these agreements allow companies to reimport cheaply produced goods abroad to countries like the United States that have lost manufacturing jobs.

It looks like the exporting side gains and the importing side loses.

But the reality is that manufacturing output in the United States is increasing, but jobs are decreasing.

that's quite a few

Between 2000 and 2010, 5.7 million jobs were lost in manufacturing.

But the cause may be different than you imagine.

Mike Johnson of Toledo, Ohio lost his factory job to Miguel Sanchez of Monterrey, Mexico?

wrong

the machine took it

Of the lost manufacturing jobs, 87% are due to increased productivity through automation.

This means that only one-tenth of all jobs have been lost to offshoring.

This is not a phenomenon unique to America

Automation is pervasive on every production line in every country.

Well, I know how you feel. If you've just lost your job and you read in the newspaper that your former company is partnering with China, it's no surprise that you're supposed to be replaced on a one-for-one basis by someone else.

Every time I hear something like this, I think that people think that trade only happens between two countries.

A company in one country manufactures a product and exports it to consumers in another country, and it feels like the manufacturing country wins and the importing country loses.

but the reality is a little different

I specialize in supply chain and live and work in Mexico.

I work in a network of closely connected manufacturers around the world who work together to create many of the products we have.

Here's what the scene looks like on the front lines in Mexico City.

I think this is a more accurate depiction of trade.

Thankfully, I've seen the manufacturing process for a variety of products, from golf clubs to laptop server equipment to automobiles to airplanes.

Nothing is completed on a single production line

give an example

A few months ago, I was touring the manufacturing plant of a multinational aerospace company in the state of Queretaro, Mexico, when the logistics director showed me the completed aft section.

The tail is said to be assembled in Mexico using panels manufactured in France and parts imported from the United States.

Once assembled, the stern is trucked to Canada, where it's assembled with thousands of other parts at the final assembly plant, from the wings and seats to the window shades and everything else that makes up the new aircraft.

please think about it

That new aircraft has crossed borders countless times before it took off on its first flight, putting Angelina Jolie to shame.

This approach to processing is used all over the world, and is used to create many of the products we use every day, from skin creams to airplanes.

Please take a look when you get home tonight

You may be surprised to find a label that says, "Made in the USA with domestic and foreign parts."

Economist Michael Porter sums up this situation perfectly.

As he put it decades ago, "What is most beneficial to a country is to concentrate on manufacturing the products it can produce most efficiently at home, and rely on trade for the rest."

This means that the international division of labor and efficiency wins.

You probably have similar experiences at home and at work.

Let's consider an example

when building a house or renovating a kitchen

Typically, there's a general contractor who coordinates the work of the various contractors, whether it's having an architect draw up the blueprints, an excavator digging the foundation, a plumber, a carpenter, etc.

Why don't general contractors just let one contractor do all the work? For example, an architect

because it doesn't make sense

We employ multiple professionals because it takes years to learn and master the individual tasks required to build a house or renovate a kitchen, some of which require special training.

Would you hire an architect to install the toilet?

I won't let you

Let's apply this method to business activities

Companies today focus on what they do best and can produce efficiently, and they buy everything else.

So we rely on an international network of interconnected, interdependent manufacturers to manufacture our products.

This interconnectedness is so close that it would be next to impossible to dismantle it and make a product in one country.

Let's focus on the single line that connects the United States and Mexico in this interconnected network that I showed you earlier.

According to the Wilson Institute, 40% of the $500 billion in trade between the two countries is related to the division of labor.

So $200 billion, the equivalent of Portugal's Gross Domestic Product.

What if the US decided to impose a 20% border tax on all imports from Mexico?

mexico shut up

do you see it?

it's impossible

In retaliation, we would put a similar tax on all goods imported from the United States, and it would come back to us. If a 20% tariff were put on anything, any product or component that crosses the border, the tariff would increase by over 40%, which is over $80 billion.

You see, we're the ones who ultimately bear the cost.

What impact will it have on the price of the products we buy every day?

If the 30% tax increase were added on top of that, prices would go up quite a bit.

Lincoln MKZ luxury car goes from $37,000 to $48,000

Sharp's 60-inch HD TV goes from $898 to $1,167

A 450g pack of moisturizing cream at drugstores will increase in price from $13 to $17.

And this is only in the context of the production chain between the United States and Mexico, because it's multiplied by all the connections.

It's a huge impact

Now imagine, even if we were to dismantle this network and produce everything at home -- if that's possible -- we would only be able to save 10 percent of the lost manufacturing jobs.

Remember, most of those jobs, 87%, were lost to their own productivity gains.

And unfortunately those jobs aren't coming back.

The real question is whether it makes sense to raise prices to the point where many people can't even afford to buy daily necessities, leaving jobs that will be gone in a few years no matter how hard you try.

The reality is that the division of labor allows us to produce higher quality products at lower costs.

it's simple

This allows us to maximize profits from limited resources and technology while keeping prices low.

Successful division of production depends on efficient cross-border movement of raw materials, parts, and final products.

So remember, if someone starts arguing that trade protection is a good idea, they're making a big mistake.

thank you

(applause)

where does the end begin

For me it all started with this little creature

This cute creature, and I think it's cute, is a single-celled creature called Tetrahymena.

Known as "green algae"

Yes, my career started with green algae.

It was only natural that I became a scientist.

I was a girl who grew up far away from here, with a keen interest in anything living.

I used to pick up a deadly poisonous jellyfish and sing a song to it.

At the beginning of my career as a biologist, I had a strong curiosity about the mysteries of the most basic building blocks that make up life, and I was fortunate to be in an environment where that curiosity was respected.

Studying this little green alga, Tetrahymena, was a great way to get to the bottom of it, and what I was most interested in was the bundles of DNA that live inside cells called chromosomes.

Because I was particularly interested in the ends of chromosomes, telomeres.

When I first started studying telomeres, we only knew that they were structures involved in protecting the ends of chromosomes.

important during cell division

It was very important, but I wanted to find out more about what telomeres are made of, and that would require a lot of telomeres.

In fact, this cute little Tetrahymena has a lot of short, linear chromosomes, roughly 20,000, or a lot of telomeres.

And I discovered that telomeres consist of a special segment of noncoding DNA at the tip of the chromosome.

But here I ran into a problem

All living things start with one cell

It becomes two, two becomes four, four becomes eight, and as it divides repeatedly, it forms [about 40 trillion (Speaker's correction)] cells to form an adult.

Some cells need to divide thousands of times.

In fact, even at this moment, my body is actively replenishing cells, which is why I can stand like this.

Every time a cell divides, all of the DNA must be replicated, the interpretable DNA in every chromosome, because it contains the information essential for the cell to function properly. That's why my heart beats properly.

But there's a little problem with the DNA replication process.

It's one of the many mysteries of life

Each time the cell divides and the DNA is replicated, some of the DNA is worn away from the ends and shortened, and this is the telomeric DNA.

Imagine a kind of protective cap at the end of a shoelace.

That cap-like thing protects the ends of the chromosomes from shortening, but if the tips get too short, the caps fall off, and those frayed telomeres stick to the cell.

"This DNA is no longer protected"

It's a signal that it's time to die

this is the end of the story

I can't say

As long as there is life on Earth, this is not the end of the story.

So, if shortening was inevitable, I was curious as to what laws of nature operate to keep chromosomes intact.

Do you remember the Tetrahymera that I introduced at the beginning?

Strangely enough, Tetrahymera cells never age or die.

Tetrahymera's telomeres do not shorten over time.

can even be long

There was some kind of unknown force at work. That's right. It's an unknown force not written in any textbook.

This is the work that would later lead me to win a Nobel Prize with one of my wonderful students, Carol Glyder, but when we started working on it, we discovered that cells do indeed have something else.

It was an enzyme that we hadn't thought of before. It was recruiting telomeres and allowing them to grow. We named the enzyme telomerase.

When you took that telomerase out of the green algae, the telomeres shortened and the green algae died.

Thanks to its abundance of telomerase, green algae never age.

This was a very hopeful message for mankind from green algae, because as we get older, our telomeres get shorter, and that's why we get older.

In general, the longer the telomeres, the longer a person lives.

When your telomeres get too short, you start to notice and start to see signs of aging.

My skin cells started dying and wrinkles started to appear.

When the pigment cells in the hair die

I'm starting to see gray hair

when immune system cells die

more likely to get sick

In fact, the accumulation of research over the last 20 years has shown that telomere shortening is involved in the development of cardiovascular disease, Alzheimer's disease, certain cancers and diabetes, which are the leading causes of death in modern humans.

have to think about this

what the hell is going on

It's this shortening that makes us old, and it's obvious.

This is because the speed at which telomeres are repaired is outpaced by the speed at which they are shortened.

And it turns out that people who stay young into old age have longer telomeres for longer periods of time, which means they feel younger for longer, and they're less likely to have the disease that everyone dreads every birthday.

I think it's simple and clear I think it's simple and clear

So if telomeres play a role in aging, if telomerase regenerates my telomeres, then all I have to do to regain my youth is find out where I can get a large bottle of good, organically grown Costco telomerase, right?

Done problem solved!

(Applause) No, sorry.

it's not that easy

Why

Because genetic studies show that manipulating telomerase in humans is a double-edged sword.

In short, yes, manipulating telomerase can reduce the risk of certain diseases, but it also increases the risk of other nasty cancers.

Even if you could buy a Costco-sized bottle of Telomelace, the real problem with these questionable products being sold online is that they increase your chances of getting cancer.

I don't like that

But don't worry, right now, in a way, it's kind of funny that you're all wishing you were born in green algae.

(Laughter) Because, actually, there's something about telomeres that's actually useful for humans.

But one thing I would like to point out is

It's not about dramatically extending human lifespans or immortality.

it's about healthy life expectancy

Healthy life expectancy is the number of years you live healthy, productive and enjoying life without getting sick.

Regarding healthy life expectancy, the disease period is the period during which people feel old, get sick, and die.

The crux of the question is, without guzzling telomerase, can we control telomere length and live healthily and happily without worrying about cancer?

But it is that

Well, it's the year 2000 AD.

At the time, I had spent years and years contentedly studying these tiny telomeres, until one day, psychologist Elisa Epel came to visit.

who specializes in the effects of severe, chronic psychological stress on the human mind and body.

He came into my lab, which, ironically, overlooked the entrance to the mortuary (Laughter), and was asked a very important, life-or-death question.

“I wonder what happens to the telomeres of people who are exposed to long-term stress.”

That's what I was asked

Elisa studies caregivers, especially mothers who care for children with chronic conditions such as bowel disease and autism, who are by all accounts experiencing high levels of long-term emotional stress.

Elisa's question completely changed my sense of values.

Until then, I had been thinking only about telomeres and the genes that control telomerase, tiny molecular structures.

But when Elisa suggested that I study caregivers, I was able to look at telomeres in a whole new light.

We went beyond the genetic and chromosomal level and looked at the living human life that we were studying.

I'm a single mother myself, and in that moment I had a vivid picture of mothers often caring for their children with difficult illnesses alone.

After all, such women often look haggard.

So is it possible that telomeres are also haggard?

Our combined curiosity spurred

For her first collaborative study, Elisa chose a few of these caregiver mothers, and she wanted to examine the relationship between the number of years these mothers had cared for children with chronic illnesses and the length of their telomeres.

Four years later, the results came out, and when Elisa saw the scatterplot, she gasped because she saw a definite trend there, and it was the correlation we feared most.

It was right there

The longer the years of caregiving, the shorter the telomeres, regardless of age.

And the more stressful people felt about their situation, the lower their telomerase and the shorter their telomeres.

It was a completely new discovery that had never been heard before. The more chronically stressed people were, the shorter their telomeres were, which meant that they were more susceptible to illness and possibly shorter lifespans.

This discovery meant that what happens in life, and how we perceive it, has a bearing on maintaining telomere length.

Yes, age is not the only determinant of telomere length.

Elisa's question at that time was truly a life-and-death question.

And fortunately, the results of my research also gave me some unexpected hope.

In some mothers, despite years of devoted care for their children, telomere length did not seem to be affected.

Our analysis showed that such women were more resilient to stress.

We saw our situation as a challenge rather than as an endless torment. This gave us a very important insight: that we can decide how we age, even the aging of our cells.

Our initial curiosity inspired other researchers,

Many researchers from various fields have contributed their expertise to telomere research, and new discoveries are continuing one after another.

There are over 10,000 academic papers and the number continues to grow.

A number of studies soon confirmed our findings that chronic stress negatively impacts telomeres.

And more and more research is showing that when it comes to telomere-related aging, it's more up to you than you might think.

For example, a UCLA study that looked at long-term dementia caregivers' ability to repair their telomeres found that 12 minutes of meditation a day for two months improved their ability to repair their telomeres.

It's how you feel that matters

If you're a negative thinker, you probably find stressful environments threatening. For example, if your boss tells you, "I need to talk to you," you automatically think, "I'm going to get fired." Your blood vessels constrict, and your stress hormone cortisol rises and stays high, and over time, this sustained high level of cortisol reduces telomerase activity.

bad for telomeres

On the other hand, if you're the type of person who sees a stressful environment as a problem to be solved, the blood will flow to your heart and brain, causing a brief spike in cortisol and a boost of energy.

If you have this attitude of "get it and stand", you don't have to worry about affecting your telomeres.

Now

What do all the above tell us?

your telomeres are fine

You have the power to change what happens to your telomeres, that's what it is.

So our curiosity grew even more, because we started to wonder what external environmental factors might affect telomeres.

Does it also affect the maintenance of telomeres?

We humans are extremely social creatures.

Could it be that telomeres are also social?

I'm getting amazing results

Going back as early as childhood, we've found that emotional abuse, violence, bullying, racism, and all these things have long-lasting negative effects on telomeres.

Can you imagine the impact on children who have survived in war zones for so long?

People who can't trust any of their neighbors and live in fear of safety all have consistently short telomeres.

Where you live is important for your telomeres.

On the flip side, trusting communities, stable marital relationships, and lifelong friendships all improve telomere maintenance.

What can be learned from the above

I have the power to influence my telomeres, and I have the power to influence yours.

Telomere research tells us how humans are interconnected.

But my curiosity never ends

I wonder what we can leave to the next generation

Looking through a microscope at something that's the next generation's telomere or green algae, and being curious about issues that people today don't even question -- can we nurture the next generation of young people?

It could be the big question that could change the world.

Maybe you are curious about yourself.

Now that you know how to protect your telomeres, you might be curious as to how you're going to live a healthy life for decades to come.

And now that you know you can influence the telomeres of other people, are you interested in how you can make a difference?

And now that we know that curiosity has the power to change the world, how do we ensure that the world invests in curiosity for the generations to come after us?

Thank you very much

(applause)

This is a photograph of a Martian sunset taken by NASA's Curiosity rover in 2013.

Mars is a very cold planet, very high UV levels, and very dry.

In fact, organisms as we know them are thought to be too dry to survive.

i'm an astrobiologist

I study the origin of life on Earth and the possibility of finding life elsewhere in space.

People sometimes ask me, can I become an astrobiologist without owning a spacecraft? and

What I'm actually doing is studying organisms that live in environments on Earth that look a lot like interesting places in space.

All life on Earth needs water, so in my case, I'm focusing on the close relationship between water and life, to explore the potential for finding life on a planet as dry as Mars.

But we can't spend $2.5 billion to send our own robots to Mars, so we're researching the most Mars-like place on Earth, the Atacama Desert.

Located in northern Chile, it's the oldest and driest desert on earth.

Imagine how dry it is, even though we get over a thousand millimeters of rain each year here in Vancouver.

There are places in Atacama that haven't had rainfall in the last 400 years.

why do you know

After all, I was born and raised in Atacama.

So let me share with you some of the great examples that this boy found about how life adapts to an almost waterless environment.

The first thing I found was at the entrance of a cave facing the Pacific Ocean.

Here we found and published a new microalgae, an algae that grows only on the surface of the spider webs that cover the entrances to caves.

Have you ever seen a spider's web in the early morning?

Because the spider's web is covered with dew, this microalgae has come to use it for photosynthesis on the coasts of some of the driest deserts on Earth.

This place will get water from the fog that covers the area every morning.

And in other caves, we found different types of microalgae.

This algae can harness moisture from sea fog. And what's also striking is that it lives in the deepest caverns, so it's adapted to less than 0.1 percent of the light that a normal plant needs.

Findings of this kind suggest that we may even find organisms that perform photosynthesis in Martian caves.

By the way that is me

(Laughter) This area in Yungay was discovered by NASA and was thought to be the driest place in the desert for almost 15 years, but I knew it wasn't.

How did you know? you already know

Because I was born and raised in this desert

I remembered that Yungay is usually foggy, so I put sensors in many places where I've never seen fog or clouds, and found and reported four places that were much drier than Yungay.

Now, what we're trying to do in this research is actually find out the limits of aridity for life on Earth, places that are too dry for anything to survive.

But even here, deep underground, we've found a wide variety of microalgae, and it seems to me that this could indicate that life could be found in dry places, like Mars, as well.

It's still tentative, but there's some evidence that these microalgae seem to be alive even when they're dehydrated, like mummies walking around us.

Confirmation of this evidence would have a profound impact on how we define life and how we search for life beyond Earth.

Thanks to clear skies, by 2020, 60 percent of the largest telescopes on Earth will be in Atacama, and while everyone looks up at the stars and tries to answer the question, "Are we alone?"

I'm looking at the ground beneath my feet, and I'm sure I'm looking for the same answer in my own backyard.

Thank you very much

(applause)

But anyway, this is a song about the bad side of science, and I think it's a great song.

Who's walking beside me that you can put in your eyes without hurting? Oh my crony. Even when you're walking around, you look cool when you're talking to Clooney on the phone, right? We're friends and we're not alone, so that's good. A shallow gene pool is nothing to my cloney. You and I, we'll get through it all together, day by day, our DNA, so we're not afraid of our twin Olson. We will survive, hand in hand. Mother Nature, don't call her a fake, she's my crony. I was rich but not healthy and lived alone. So, look, I created a crony. Bored rich people who never run out of money, we don't need natural egg yolks. Our babies are born perfect from the beginning. We're cuddly cute, call the publicists. And show us the cutest we've been since the damned Eminem. Friends, let's multiply, we're franchises like Walt Disney and Hannibal Lecter. Our cancer cells are guaranteed to be more benign than Phil Spector's. We will survive, hand in hand. I wish I had signed a deal with Verve instead of Sony. you are my crony Oh crony, i love you

"Huh? I've only ever loved myself."

Hmmm. But it's okay I think you're my destiny you are my crony thank you.

(applause)

When I was in graduate school, I went snorkeling off the coast of the Bahamas.

I had never swam in the ocean before, so I was a little scared.

One of the most memorable moments was when I was head-to-head in the water trying to catch my breath with my snorkel when a huge shoal of yellow-and-black striped fish came at me.

i was frozen

But when the horde came toward me, it swerved to the right as if it had changed its mind and shunned me.

It was a really mesmerizing sight

You may have experienced

Of course, part of it was the vividness and beauty of the school of fish, but it was also the cohesiveness that was amazing. It was as if hundreds of fish didn't exist individually, but rather as a single being, making decisions with a collectively shared head.

Looking back, I believe that this experience shaped the outline of my research career.

I'm a computer scientist specializing in artificial intelligence (AI).

One of the big themes in the field of AI is understanding intelligence by creating unique computational systems that mimic the intelligence found in nature.

When you think of AI, most people think of science fiction and movies, and I love Star Wars.

But the intellect it portrays is often human-centric.

If you think about a school of fish or a school of starlings, it feels like there's a whole different kind of intelligence there.

First of all, any single fish is very small compared to the whole group, so even if you try to figure out what's going on with each individual, you should be able to see only a very limited amount of things around you.

Secondly, I still think it's really amazing that these schools of fish don't have a leader fish to oversee the whole thing.

It's the interaction of individual fish that creates incredible collective intelligence behavior.

It seems that these interactions and behavioral rules with nearby fish are what make this movement possible.

So the question for AI is, what are the rules of behavior that create this kind of intelligence, and can we create them?

This is the main research that we do in my lab with a team.

From a theoretical point of view, we look closely at abstract rule systems and try to discover the underlying mathematical relationships.

We also work closely with experimental researchers from a biological perspective.

But the main thing, from a robotics standpoint, is to create our own collective system that behaves like the natural world, or at least approaches it.

One of the first challenges with robots was to create a unique colony with 1,000 robots.

It's a very simple robot that can be programmed to exercise collective intelligence, and it's done it.

The robot alone looks like this

It's very small, about the size of a quarter, and you can program its movements, but it can also communicate wirelessly with other robots, and it can measure the distance to other robots around it.

Now we can precisely program the rules of interaction, the rules of behavior, with the individuals around us.

Once we have these systems, we will be able to program many different behavioral rules that we see in nature.

For example, a behavior called spontaneous synchrony, where someone's applause suddenly causes everyone to clap in unison, or fireflies to light up in unison.

The rules of pattern formation can also be programmed, just as cells in tissues know their role and form patterns to shape the human body.

You can also program the rules of locomotion, and this is how it learns more and more from the rules of the natural world.

We can go one step further

We combine these rules, learned from nature, to create a whole new set of collective behaviors that are unique to us.

For example, let's say you have two rules

One is the rule of motion, which says that a robot in motion can orbit around a robot that is stationary.

The other is pattern rules, where two robots next to each other determine their color.

If you give a swarm of robots a trigger to create a pattern, with just these two rules, the swarm will be able to form simple linear patterns on its own.

If you create more complex rules that define patterns, and add error-correction rules, you can also get pretty complex self-organizations, something like this.

Here we have 1,000 robots working together to shape the letter "K."

Horizontal K

The important thing is that we're not acting on someone's orders.

Individual robots, just communicating with a small number of robots around them, move around the shape in progress according to the rules of motion and find their place according to the rules of patterns.

No robot is perfect, but these rules ensure that all robots work together to achieve their goals.

And it creates the illusion of perfection: the robot as a whole becomes one entity, like a shoal of fish, so much so that you don't realize that each individual robot is acting independently.

These robots and rules were in two dimensions, but you can also think of robots and rules in three dimensions.

What if we could build a robot that could build something for itself?

In this regard, social insects are helpful.

Mound-building termites and army ants use mud and sometimes even their own bodies to build wonderfully complex nest structures.

Like the system I showed you earlier, these insects actually have pattern rules that tell them what they're going to make, just that other insects and dirt can create patterns.

We can use the same idea to create rules for robots.

Here is a robot simulation

The robot's rules of motion are to follow the entire structure, look at it, and look for a place that fits.

By giving it the right rules of motion and rules of pattern, we can make the robot build whatever we want.

Of course, everyone wants their own "tower", right?

(Laughter) Once we have these rules, we can build a robot body that meets those rules.

This is a robot that can climb blocks, it can lift blocks, it can move blocks, it can modify the very structure on which it sits.

This isn't the only possible shape of a robot body that fits this rule.

I can imagine many more

You might be able to have a robot that carries sandbags to help you build a bank, or you can build a robot out of soft materials and work with them to hold up a collapsed building, and you can apply the exact same rules to different robot bodies.

Or, if you're as fascinated by army ants as we are, maybe one day you can build robots that can literally climb over anything, climb above their peers without hesitation, and use their bodies to build things themselves.

Once you understand the rules, you can realize a wide variety of robots.

Now, coming back to snorkeling, we've learned quite a bit of the rules that schools of fish use.

If we can invent a robot body to match that, maybe in the future, we can enjoy snorkeling with our own schools of fish.

Through the development of these systems, we're one step closer to harnessing the mathematical and conceptual tools to create our own collective power, which can be applied to many things in the future, such as robots that build flood barriers, colonies of robot bees that pollinate crops, swarms of underwater robots that monitor coral reefs, and even going a little overboard and programming satellite constellations.

Understanding how to design the rules of behavior in any system to create good collective behavior is key to realizing these visions.

Now, we've talked about the rules that apply to insects, fish, and robots, but what about the rules that apply to our collective human population?

In closing, I want to tell you that science, in and of itself, is a great example of collective intelligence, but unlike the beautiful schools of fish that I study, I think our evolution will continue much, much, much longer.

So, not only are we working to advance the science of robot populations, but we're also trying to improve ourselves as a scientific community through robots and rules.

One of my favorite quotes is, "Whoever does science determines what science can do."

Imagine a society with these rules of conduct, a society where every child grew up believing that one day they could stand here and be the technologists of the future, and where adults also believed that they could not only understand how technology interacts with our everyday lives, but that we could change it.

What would happen if we became such a society?

i believe we can

I believe that we can choose our own rules and run not only robots, but all of us humans, and if we can do that, it will be great.

thank you

(applause)

I would like to pose a question to you today

"What is life?"

It's a question that's made me think for over 25 years, and it will continue to do so for the next 25 years.

This is my thesis when I was an undergraduate

My classmates still treated computers like big calculators, but I started teaching computers to learn.

So by creating a digital ladybug, I tried to learn one thing from a real ladybug: it looks for food.

If you use very simple neural networks, genetic algorithms, etc., it's almost like the real thing.

a pattern emerges

It was a very impressive learning experience for me at 20.

life is a learning program

If you look at these wonderful worlds, you'll see that each animal species has its own learning program.

That learning program is a genome, and it uses DNA as the program code.

Each animal species' genome has its own survival strategy.

Hundreds of millions of years of evolutionary history

All animal species were influenced by the interactions between their ancestors, the environment, and so on.

I was fascinated by the world, DNA, the language of life, the learning program of life.

So I decided to co-found an agency to decipher them.

parse a lot of genems

By now, probably more than half of the world's animal genomes

have analyzed

we learned a lot

The human genome has been analyzed many times

I was the first Asian to perform genetic analysis

I've analyzed my own genes many times, and I've taken advantage of the analysis platform.

Repeated base pair "ATCG"

I don't understand anything with just this

But this base pair—

Five letters "AGGAA"

These five single nucleotide polymorphisms (SNPs) represent a highly characteristic Tibetan haplotype (DNA sequence) in a genetic region called EPAS1.

The gene is highly selective and is the most important evidence of positive natural selection that Tibetans have adapted to high altitudes.

actually

These five SNPs are the result of the integration into humans of Denisovans—or Denisovan-derived individuals.

This is exactly why we decipher the gym

To understand history, to understand how the zynom went through the learning process over millions of years.

By analyzing genomes, we can learn a lot, like bugs in genomes, birth defects, single-gene diseases, and so on.

A drop of blood could tell you why you have a fever, what medicines to take and how much to take, when you're sick, especially when you have cancer.

A lot can be learned from research, but look at this: 30 years ago, China was still poor.

Only 0.67% of the adult population had diabetes

it is now 11%

Genes don't change in 30 years — just one generation.

there must be some other reason

Is it your diet?

environment?

Lifestyle?

Even identical twins develop very differently.

one is obese, the other is not

If one develops cancer, the other does not.

Not to mention the effects of living in a highly stressful environment.

I moved to Shenzhen ten years ago

Some of you may know why

Genes behave quite differently under stress.

life is a journey

Genes are just a starting point, not an end point.

you are at risk of certain diseases at birth

But every day we make different choices that increase or decrease the risk of certain diseases.

Do you know where you are on your curve?

What curves have you drawn in the past?

What choices do you make each day?

And what choices do you need to make to draw the right curve in your life?

What is it?

The only thing you can't change is time

the future may be possible

(Laughter) Now, once you make a choice, you can't change it. But what can you do?

Can I actually simulate multiple choices in my body and then predict the actual outcome and make the right choice based on that?

After all, we are the result of our choices.

That ladybug idea came to mind again.

Twenty-five years ago, I created a digital ladybug to simulate a real ladybug.

…simulate yourself

What if you made a digital me?

I think neural networks will become much more sophisticated and complex.

Why not create a "digital me" and try multiple scenarios and see what happens?

Then I would be living in multiple worlds at the same time,

the best scenario can be chosen

I have probably the most comprehensive "digital me" on the planet.

I invested a lot of money in it

And according to digital me, I have a genetic risk for gout.

it requires a different technique

Then proteins, genes, metabolites, antibodies, and the presence of bacteria and viruses on you or in your body.

And you have to use all your smart devices: smart cars, smart houses, smart tables, smart watches, smart phones, all of which track your activity.

The environment matters too All information matters Don't forget smart toilets

(Laughter) I'm wasting a lot.

A lot of valuable information is flushed down the toilet every day.

they are valuable information

All that information should be measured.

Everything around us must be measured and turned into data.

digital me told me i have a genetic defect

You are very likely to get gout

I have no symptoms and am still healthy.

But look at my uric acid level

twice the normal

And digitally, I search medical textbooks, and they tell me, "You might want to drink burdock tea."

And after drinking the tea for three months

my uric acid level is back to normal

it worked for me

It was the effect of thousands of years of wisdom.

i was lucky

But not everyone is lucky

It's impossible for all of this world's wisdom to be efficiently and personalizedly delivered to you.

The only way to realize that digital me is...

learning from yourself

You have to ask yourself a lot of questions "What if?" I'm standing here now with jet lag

you probably don't know

Eat less or—

What happens if you take metformin to live longer?

What if you climb Mount Everest?

it's a big deal

Or running a marathon?

Why don't you drink a bottle of Chinese liquor Maotai and get drunk?

The last time we were rehearsing, I was drunk and my speech was completely different.

(Laughter) What if I work less?

It should be less stressful, right?

I've been working a lot and I've been stressed every day, and I hope it gets better.

Early research showed that even though we ate the same banana, our blood sugar responses were completely different.

what about me

Which breakfast menu is right for me?

I have to do a two-week controlled experiment to see how my body reacts to every food ingredient.

But I don't know exactly what nutrition I should be eating.

I wanted to find a way to live a long and healthy life from ancient Chinese wisdom.

I tried

some things are really unfeasible

I did this once last October, without food for 7 days.

I fasted for seven days with six partners.

look at everyone

laughing alone

why is he smiling?

It's because I cheated

(Laughter) The data told me that he had a cup of coffee at night.

(Laughter) We measured all the data.

I tracked it down and learned a lot of things, like my immune system, just one example.

My immune system changed dramatically in the 24 hours I was there.

My antibodies regulated the protein and caused that dramatic change.

The change was happening in everyone's body

Even if everyone's bodies are basically completely different to begin with.

This will probably lead to treatments for things like cancer in the future.

very interesting prospects open

There are also treatments that you probably don't want to try, like drinking healthy people's faecal water to get healthy.

This is also ancient Chinese wisdom.

it must be amazing

1,700 years ago it was already written in a book.

I don't really like the smell

(Laughter) I'd like to figure out exactly how to do that.

i am also trying

It's unrealistic to try all the possibilities, even if you're trying so hard.

It's impossible to do all the experiments.

But there are 7 billion learning programs, or people, on the planet.

7 billion

And they're all running programs under different conditions, doing different experiments.

Can't we measure them all?

Seven years ago, I wrote an essay in Science magazine celebrating the 10th anniversary of the discovery of the human genome.

"Sequence yourself, for yourself and everyone else"

But now I say, "Let's digitize ourselves for ourselves and for everyone else."

When this digital me becomes the digital everyone When we create the Internet of Life When people learn from each other When people can learn from everyone's experiences and data

First, you need a “digital me”

that's what i want to suggest here

You too — join us, create a digital version of yourself, and learn more about yourself, about me, about us.

That would answer the opening question, "What is life?"

thank you

(Applause) Chris Anderson: Let me ask you a quick question.

great job

As we look forward to the potential of these amazing personalized medicine technologies, I'm sure you're wondering, in the short term, will they become affordable for a very small number of people?

It costs a lot of money to analyze the base sequence.

In a sense, isn't this going to lead to greater inequality?

Or do you think that knowledge from a small number of people analyzed early can spread quickly to benefit a wider population?

Jun Wang: Good question.

Seven years ago, when I was co-founding and serving as CEO of BGI, my only goal at the time was to drive down the cost of genetic analysis.

starting at $100 million per serving of human genome

Human gene analysis is now hundreds of dollars.

The goal is for more people to benefit from it.

Same thing with the "digital me"

Probably -- it costs a million dollars to digitize one person.

this should be $100

And it should be free for people who need it urgently.

this is our goal

I think that in the very near future -- three to five years from now -- it's going to become a reality as this integration of technologies happens.

And that's why I founded iCarbonX, my second company.

We focus on cost reduction and strive to make it available to everyone.

Chris: Well, the dream is not just elite health services, it's for everyone, and it's about making health care more cost-effective.

Chris: Jun, I can honestly say that you are one of the greatest scientists on the planet.

Jun: Thank you

(applause)

Locally, my friends call me things like "giant clam girl," "clam queen," and "mother clam."

(Laughter) I think it's because every time we meet, we talk about shellfish all the time, all day, every day.

Giant clams are large, colorful shelled marine animals, the largest of their kind.

Look at this shell!

The largest specimen is recorded at 140 centimeters and 250 kilograms.

About the weight of 3 baby elephants

South Pacific lore described them as giant man-eating clams that waited on the seafloor to catch unsuspecting divers.

There are even stories of divers having their legs eaten while trying to extract pearls from shellfish.

I thought, "Really?"

So out of curiosity, I used myself as bait and experimented.

(Laughter) I carefully put my hand in the mouth of the clam and waited.

Hmm...

my hands are like this

Rather than eat me, this gentle giant would run away to protect me.

It's just a man-eating clam legend

Unfortunately, the reality is that we are the giant clam threat.

In the waters of the western Pacific and Indian oceans, giant clams are delicacies and have traditionally been eaten.

Of particular interest to fishermen is the adductor muscle, the organ that holds two shells together like a hinge.

It was harvested to near extinction from the 1960s to the 1980s just for this adductor muscle.

Giant clam shells are very popular in the jewelry trade as jewelry and ornaments.

Fishermen in the South China Sea were excavating large areas of coral reefs to collect fossilized shells.

It was later carved and sold in China as so-called "ivory work."

Whether you live or die, you cannot escape from humans.

It's "Great Disaster Shellfish"! (Clam and calamity are multiplied)

(Laughter) (Applause) As much attention is given to charismatic marine animals like whales and coral reefs, it's easy to forget that other animals need help.

My fascination with giant clams led me to start conservation research to understand their unknown ecology and behavior.

One of the things we've learned is that giant clams can walk on the ocean floor.

You didn't hear me wrong. I can walk.

As part of my research, I put a lot of baby shells on a grid.

let's see what happened in 24 hours

Walking is important for escaping from predators and for finding mating partners.

It's hard to imagine these giant creatures moving, but individuals up to 180 kilograms can walk and just slow down.

During my PhD, I discovered many other secrets.

but there was something missing

I was asking myself, "Why should everyone care about protecting giant clams—except me?"

(Laughter) It turns out that giant clams actually have a lot to do with coral reefs.

This jack-of-all-trades clam does it all by itself as a nurturer for coral reefs, as a food factory, as a refuge for shrimp and crabs, as a water purifier.

In short, giant clams play a very important role as reef inhabitants, and their mere presence makes the reef healthy.

And because they can live up to 100 years, giant clams are an important indicator of reef health.

If giant clams start disappearing, it's going to alert scientists to watch out -- like the canary in a coal mine.

But giant clams are endangered.

This world's largest clam is endangered, and wild clams have plummeted by more than 50 percent.

The ecological benefits of giant clams to coral reefs only last if there are enough healthy individuals, so protecting giant clams is of paramount importance.

Today, I speak for the giant clam, because this wonderful animal means a lot to me and deserves to be cared for.

Let's get the giant clams out of their shells and let the world know they're heroes of the sea.

thank you

(applause)

Cities are like brothers and sisters in a polygamous family.

Each one has its own unique character and they go in different directions.

But they all share some degree of origin.

Sometimes I think that the former colonial cities are like the children of the two most hated wives, and they keep telling me, "Can't you be more like your sister?"

(Laughter) The "why" cities happen are pretty much the same everywhere: the strength of location to enable commerce and government, the potential for opportunities for both skilled and unskilled workers, the willingness of residents to embrace constant change and, of course, resilience.

But "how" cities work is a whole other story.

How will cities operate?

How will it grow?

How do you decide who is a resident of the city and who is not?

(Nigeria) Lagos is my hometown

The surest way to find a Nigerian is to keep up with the noise and dancing.

(Laughter) The city of Lagos, like any other major city, has a lot of things, and a lot of very contradictory things.

Public transport is so nonexistent that we use privately run bright yellow buses that often cause accidents.

Luxury car showrooms are located along roads that are poorly maintained and prone to flooding.

Street proselytizing is as active as harassment.

Some prostitutes have two degrees, work in banks, and hold executive positions in churches.

(Laughter) Any day there will be a party or a charred corpse in the middle of the road.

In Lagos, there are many things that are possible and many that are not possible.In many cases, the difference between what is possible and what is impossible is who you are, whether you are lucky or not, and who you are connected to.

Belonging to Lagos is a fluid concept, determined by ethnic origin, sexual orientation, gender, but the most obvious and often the most violent is social class.

Before the founding of Nigeria, fishermen from the inland creeks gradually migrated to the Lagos lagoon and established villages along the coast.

About 60 years later, my grandfather Ordotun Adekunle Kukoy also came to Lagos.

Like me, he was a graduate of the University of Ibadan and one of the educated young elite during the Independence era.

Gradually, he built a illustrious career as a land surveyor, mapping the now bustling areas when the grass was still waist-deep.

When I was nine years old my grandfather died

By that time, my family, like all fishermen's families, considered Lagos home.

We Yoruba have a saying, "Èkó gb'olè, ó gb'ọ̀lẹ," which translates to something like "Lagos welcomes everyone."

But this is becoming less and less true

Many Lagosians, including the descendants of fishermen who came long before my grandfather, are being forced out to create a new city called "New Dubai."

In this way, Lagos inspires even its leaders to dream big. Successive governments have vowed to build a poverty-free megacity.

Unfortunately, the central focus of the strategy was not to eradicate poverty, as you might expect, but to push the poor out.

Last October, the government announced a plan to demolish every single residential area along the coast of Lagos.

More than 40 indigenous communities exist throughout the city, and more than 300,000 people live there.

Otod Bame is a 100-year-old fisherman's village, with a population of about three-quarters of the size of the Principality of Monaco, and like Monaco, it has the potential to become a luxury coastal area.

The first time I heard about Otodo Bame was after the demolition began.

I met Magdalene Ayefoju during my visit in November 2016.

She lost her home Her last name means "the world is blind"

Magdalene's son Basil is one of more than 20 victims who were shot, drowned or presumed dead when their land was requisitioned.

Standing outside her shelter, there were two white-sand soccer fields where Basil was playing.

As far as the eye could see, there were abandoned schools, churches, primary care centers, shops, and thousands of homes.

Young children were eager to help build shelters, and more than 5,000 residents remained with nowhere else to go.

And in April, the state security officer came again.

Now they completely wiped out the community, beating them, shooting them, setting them on fire.

Construction crews are now preparing the beach at Otod Bame for the "multi-million dollar vista" crowd.

This new development is called "Periwinkle Estate"

Forced evictions are extremely violent and, of course, unconstitutional.

Nonetheless, displacement happens frequently in many cities, because the first thing we are taught to forget about the poor is that they are human.

We believe that everyone has an absolute right to own a house, but if the person is poor and the house is built in a certain way in the neighborhood, that right is denied.

But there's more than one definition of "home."

At the end of the day, slums are nothing more than a living reaction to severe housing shortages and income inequality.

And a shack is nothing more than a home built with your own hands against the odds.

Slums are not the perfect solution to the housing problem, but they are also paradigms of innovation, adaptability and resilience that lie at the foundation and heart of every functioning city.

Already Lagos doesn't have to be the new Dubai.

(Applause) We have our own identities, we have our own rhythms, and as anyone who knows Lagos will tell you, it's often the poor that define Lagos.

Without the poor, Lagos wouldn't be famous for its music, its boundless energy, and its ability to buy cold drinks and puppies from your car window.

(Laughter) The challenges that make a neighborhood a slum can be effectively remedied, but only if we recognize the humanity and agency of the people who live in that neighborhood.

In Lagos, public goods are rarely available to the general public, and slum dwellers often come up with inventive solutions.

After being cut off from the grid for months because the utility company couldn't figure out how to collect the money, one district came up with a system of collective bill payments that resulted in lower bills for all residents.

Another district devised a rehabilitation program and hired local delinquents as security guards.

Because they know all the tricks and hiding places, more bad guys are being seen and reported to the police, and fewer young people are turning to crime.

Yet another district recently installed a communal toilet system that is flood resistant and environmentally friendly.

Examples like this have been adopted all over Lagos.

It's wrong to call informal settlement a problem.

The real problem lies in the factors that create it: entrenched poverty, social exclusion, state failure.

When our governments label slums as threats and justify violent land seizures and forced evictions, they rely on people like us who live in regular homes to consent silently and unknowingly.

But we must remind ourselves that the purpose of government is to build luxury homes and serve not only the people who live in them, but also the people who clean and guard those homes.

We -- (Applause) We may live in different realities, but we have the same rights.

The Lagos state government, like many other governments on the African continent, claims to be inclusive, but in reality it acts as if development can only be achieved by sacrificing, ignoring, exploiting and excluding certain groups.

We will round up, intimidate and detain people with disabilities selling goods and begging on the streets of Lagos.

accuse and accuse women in low-income neighborhoods of prostitution, regardless of their actual occupation.

Blaming homosexuals to divert attention from the real political agenda.

But people, like cities, have a strong survival force, and no law, no threat, no amount of violence can completely eliminate someone.

The number of women working as prostitutes is still not zero, despite centuries of intense pressure.

African sexual minorities continue to exist, even today, when they are criminalized in most of Africa.

And I'm almost convinced that poor people don't usually disappear because they've been stripped of everything they have.

We are already here, and that is the answer to whether or not we belong in a city.

When the fishermen came down this Lagos lagoon in search of new homes, they never thought that the future city that would grow around them would label them outsiders.

I like to believe that by surveying the frontiers of Lagos, my grandfather was trying to open up a place where other people could be welcomed just like him.

On my way here, my grandmother called me and told me that she was proud of me, and that my grandfather and mother must be the same.

I made their dreams come true

But their dreams — and mine — are allowed to come true, but why should other people's dreams turn out to be nightmares?

And don't forget, for your dreams, you need at least a safe place to sleep.

It's too late for Basil now, but we'll make it in time for Magdalene, in time for the hundreds of thousands and millions of people who are terrorized in Lagos and other cities.

The world need not continue to ignore the suffering of people being denied their humanity; it need not continue to ignore the enormous potential for progress when all work is acknowledged and valued.

Our governments and ourselves must do our part to keep our urban commons safe for all, because a city worth building -- and a future worth dreaming of -- includes all of us, no matter who we are, no matter how we build our own homes.

thank you

(applause)

I teach college students about inequality in education and race, and I open my room to any student who wants to meet and talk to me.

A few semesters ago, one of my students, a jolly Mahari, came to see me and told me that he was black and felt a bit like an outsider.

He got a fellowship from a community college and moved to New York University (NYU), only to find out that only 5 percent of the students at NYU were black.

So I remembered, I know what it's like to feel like an outsider in your own community.

It's one of the reasons why I was drawn to my current job.

At my university, I'm one of the few faculty members of color. I also grew up experiencing a social displacement of my family.

I was 12 years old, and the kids around me were surprised that I didn't smell like curry.

(Laughter) Because school was in the morning and breakfast was waffles.

(laughs) Curry is dinner.

(Laughter) As Mahari was leaving the room, I asked him how he was coping with his feelings of isolation.

And he said that although he felt lonely, he had studied hard and developed a strategy that would harness his desire for success and perseverance.

One of my mentors is Dr. Angela Duckworth, a psychologist at the University of Pennsylvania who defined perseverance as "persistence and passion for long-term goals."

Angela's book became a bestseller, and schools across the country, especially charter schools, began calling grit a core value.

Especially when it comes to education, that alone isn't enough.

So when Mahari left the room, I thought maybe he needed something more concrete to face the challenges he told me about.

As a sociologist myself, I study achievement from a slightly different perspective.

I'm looking at students who have overcome immense barriers related to their backgrounds.

Students from low-income families, many of whom are single-parent families, students who may have been homeless, incarcerated, or unregistered aliens, students who struggled with substance abuse, students who live with violence or sexual trauma, and others.

Meet two of the toughest guys I've ever met

Tyreek grew up in a single-mother household, and after graduating from high school, he started hanging out with bad guys.

he was arrested for armed robbery

started studying hard in prison

When I got out of prison by taking college credit courses, I was able to get a master's degree, and now I'm a manager at a non-profit organization.

As a child, Vanessa moved from the Lower East Side to Staten Island to the Bronx.

She was raised mainly by relatives because her mother was a heroin addict.

And at the age of 15, Vanessa dropped out of school and gave birth to a son.

But she was able to go to a community college, got an associate's degree, and went to a good university for a bachelor's degree.

When you hear that story, some people will say, "Yeah, these two guys definitely have the power to pull through.

The two of them managed to survive on their own.”

But that's not enough. More importantly, the presence of factors in their lives that influenced their powers and specific abilities allowed them to overcome the barriers they faced and chart a course within the system in which they were placed.

So let me tell you more

In prison Tyreek was on Riker's Island at the age of 22 when older detainees singled him out.

I was aimless until I sought help in a youth program.

When I coached young people, I saw my own faults and possibilities in teenagers.

It was this experience that sparked my interest in credit courses.

After getting out of prison, he was offered a job by the Fortune Society, many of whose board members were former prisoners.

After that, he went on to earn a master's degree in social work, and now he's teaching prison improvement at Columbia University.

And Vanessa...

So after having my son, I stumbled across a program called the Vocational Foundation, where she got $20 every two weeks, a subway card, and the first opportunity to touch a computer.

These modest resources helped her obtain her GED, but at that time she suffered from severe kidney disease, a very difficult problem because she was born with only one kidney.

After 10 years of dialysis, I was able to receive a long-awaited kidney transplant.

After that, a community college tutor kept in touch with her, and she was able to go to college and enter an honors degree program.

That's what helped her get into one of the best women's colleges in America, earning her degree at age 36 and setting a great example for her young son.

Most of all, what this story shows is that teaching is social and benefits from social infrastructure.

Both of them had factors pushing them in this direction, but through personalized mentorship and opportunities, they were able to reflect on their circumstances and counteract the negative effects.

They've also developed simple skills like networking and asking for help, skills that many of us here sometimes forget or take for granted that we even need them.

When we think of these people, we should not think of them as "exceptions," but as "special efforts."

To treat them as an exception is to absolve them of their shared responsibility to help other students in the same situation.

Bush, Obama, and even President Trump have called education "a civic right of our time," and perhaps it should be treated as such.

If schools can think about their students' abilities and pick up on their problems when they pose them, what they learn becomes more relevant to their lives and can tap into the grit and temperament that they have built up within them.

As you can see, my student, Mahari, was accepted into law school on a scholarship, and I'm not proud to say that I wrote one of his letters of recommendation.

(Laughter) This achievement is clearly the result of his sincere efforts, but the other day I saw him finally speak up, and that as someone who is a bit shy and clumsy, he needs time and support.

So even though he relies a lot on his grit to get him through his first year of law school, I'll be here as his mentor, and I'll try to reach out to him from time to time.

(Laughter) So that he can continue to develop the ability to be more successful.

thank you

(applause)

Caitlin Quattromani (CQ): Something felt different in the 2016 election

Through political discussions with family and friends, I've learned that many people feel a degree of polarization that they've never experienced before.

The person I always thought was a reasonable, intelligent person seemed like a total stranger.

"I don't think you can think like that

You must be wise," I murmured in my mind.

Laurent Arledge (LA): Kaitlyn and I met in the summer of 2011, and as working mothers, we connected and bonded by raising a vibrant, growing boy so he didn't get bored.

As soon as we met, we realized we had most things in common.

We loved Colorado, we liked sushi, and we rarely disagreed.

Both of them also discovered a deep sense of pride in their country, and felt a responsibility to participate actively in political activism.

But nobody's perfect -- (Laughter) and over time, I developed two disappointments with Caitlin.

The first is that she hates camping.

CG: Camping sucks

LA: The possibility of joint camping trips is gone from our future.

Second, she was certainly politically active, but she was conservative.

CQ: I hate camping, but I love politics.

I listen to Conservative radio talk shows almost every day, and I volunteered in several Conservative election campaigns.

LA: I'd say my political views are slightly left-leaning, or rather, quite extreme left-leaning.

(Laughter) I've always been interested in politics.

I majored in political science in college, and I worked on community organizing committees and on campaigns for federal elections.

CQ: As Laurent and I became closer, we were right in the middle of the 2012 presidential election, and our early political debates were little more than jokes and banter.

For example, I replaced Laurent's computer screensaver with Republican Mitt Romney, or she put an Obama campaign badge on the back of my car.

(Laughter) LA: It's a car, not a minivan.

CQ: But as time went on, we started having serious discussions, and that turned into the foundation of our friendship.

Through the process, I've come to the realization that there's no topic that the two of us can't talk openly about, even if the topic cuts too far into the realm of friendship.

LA: For most people, political debate is a zero-sum game.

there are winners and there are losers

Attack and look for flaws in your opponent's arguments

The point is this: we tend to interpret every comment or opinion that is communicated as a slander against an individual's values ​​and beliefs.

But what if we change that interpretation?

What if, in the midst of this heated debate, we chose dialogue instead of debate?

Talking to each other flips the story

Self-esteem and a desire to win are replaced by curiosity, empathy and a willingness to learn.

You can be genuinely interested in other people's experiences, values ​​and concerns from a critical standpoint.

CQ: Laurent, it sounds so easy when I hear you say it.

It's hard to get to the point where you can have a real dialogue, and it's even harder when it comes to political debate.

It's easy to get emotionally swayed on a subject you're passionate about, and your self-esteem can get in the way and prevent you from hearing the other person's point of view.

Especially in the current insane political environment, unfortunately, boiling political debates have led to extreme consequences, even to the point of severing ties with the other party.

A Rasmussen poll released earlier this year found that 40 percent of those polled said the 2016 election had a negative impact on their personal relationships, and the journal Cognitive Neuroscience reported that people intuit beliefs instead of rational judgments, and that when reason and emotion collide, emotion almost always wins.

So it's no wonder that such discussions are difficult.

LA: We just happen to have very different opinions about politics and the role of government, like normal friends.

We've all been taught to avoid talking about politics, because it's disrespectful, but we need to talk about it, because it's important to us, and it's an important part of who we are.

CQ: That's why we avoided discussing politics and chose dialogue instead, and that's how we foster what we affectionately call "two-partisan joint friendships."

(Laughter) LA: This election and the silly fuss that followed it gave me a few opportunities to hone my craft.

(Laughter) First, the women's protest march in January.

Now that you've made it this far, you'll be able to guess which of the two participated.

(laughs) CQ: Speaking of "Women's March"

I felt uncomfortable and irritated all day that day, for two reasons.

The first reason is the name of the Women's March.

As a conservative woman, the purpose and the stated platform of the march did not reflect my views, and if that was all right, I could not accept that this was being advertised as a demonstration to defend the solidarity and unity of all women.

Another reason is the timing of this event, the day after the presidential inauguration.

If the new administration doesn't give us the chance to make a difference, for better or for worse, we don't feel the need to protest.

LA: Under normal circumstances, I would agree with Caitlin.

I think any government should be given room to make decisions.

But this time, it was a march intended to express my frustration at the election of a man with such a poor track record for women and other oppressed groups.

As a member of this joint statement, I wanted to send a clear message to the new president that he neither condoned nor condoned the attitudes and speeches he made during his campaign.

CQ: I'm already kind of pissed off about this when Laurent's Facebook post popped up in my social media feed.

(Laughter) Seeing Laurent's son on the march and holding up the signs roused my emotions, not in a good way, but aroused me. I knew her sons very well and cared deeply for them, but I didn't think they were old enough to understand the significance of the march.

I didn't understand why Laurent let them participate in that way, and I also speculated that they didn't choose to participate on their own terms.

But I also know Laurent well.

I knew you were a wonderful mother and would never take advantage of my sons, so I stopped thinking about it any further and held back my feelings.

I had to choose

The easiest choice was to quietly bear with my frustration without saying anything to her, or to ask her to tell me her motives.

LA: I told Caitlin that we had already been talking about the march for a few weeks before we went on the march.

My sons were curious as to why this event was being planned, and this led to some interesting family discussions.

In this country, anyone has the right and privilege to challenge what they disagree with, and my husband explained to the children why men should join women's marches.

And more importantly, the purpose of our participation as a family was to honor my parents.

Just as my parents spent their entire lives working to defend the rights of the most persecuted people in the world, and passed that belief on to me and my brothers, we want to pass it on to our sons as well.

CQ: After speaking with Laurent, not only did I truly understand the importance of the march she thought, but I also understood why she had her sons participate.

Frankly, my guess was wrong.

After a family discussion about the issue, they wanted their sons to march themselves.

What's important about the examples I've given here is to consider other possibilities.

If Laurent and I didn't talk to each other, I could feel annoyed with her and a vague sense of distrust between our friendship.

By confiding my doubts to Laurent, I was able to reach a real understanding through the dialogue that was born between the two of us.

Again, our conversation hasn't changed how I feel about the march, but it's changed my understanding of how she got her sons involved.

And for both of them, it was a conversation that allowed them to respect each other's opinions, even if they disagreed about the women's march.

LA: The next topic that tested our ability to have a dialogue between the two of us was that I needed to understand why Caitlyn supported Trump.

(Laughter) Caitlin is a capable career woman, caring, compassionate, and the Caitlin I know is not the kind of person who would shut up about what Trump said to women during the election.

I had a hard time reconciling these two facts.

What does it mean to miss his remarks?

CQ: I guess I'm not the only one who felt that last year's presidential candidates weren't on the best side.

(Laughter) The Republican candidate I supported didn't make it through the primary, and as Election Day approached, I had to make a decision.

It's true that during the Trump campaign, something terrible came to light, and I was so sympathetic to this that I even considered abstaining from voting for the presidency.

In the end, I voted for Donald Trump, but my vote was for the party, not for the candidate, and I felt the importance of voting, especially when you consider how the election of judges by the president has a huge impact on the nation's judiciary.

I confided in Laurent my struggles in the selection process, and I told him that it wasn't a decision I made lightly.

LA: So after we talked, I realized a few things.

First, I was a victim of my own prejudices.

I was so dominated by my own feelings about Trump that I thought all Trump supporters had the same attributes, which I thought was completely unacceptable.

(Laughter) But I knew Kaitlyn very well, so I decided to ask her a question.

What are Trump supporters worried about, after all?

What's going on under the surface of the confrontational debate?

What can we learn about ourselves and our country from this unrealistic situation?

I also learned that both of us were deeply disappointed with the outcome of this election and that there was growing suspicion of two-party politics.

What was even more important in their dialogue was the fact that they were able to communicate.

Without a candid and honest dialogue between us, this election would have been an awkward topic for the next four years as the "elephant in the room." I mean the elephant.

(Laughter) CQ: So -- (Applause) So -- I know it's going to take some effort, and you have to get past the difficult, frustrating, and emotional parts of things like "Women's March" and friends who endorse insufferable candidates to get to a healthy discussion.

That's why we need that dialogue

The ability for us to break through political debates and have genuine dialogue is an important skill that we should pay attention to right now, and that's why it's necessary because it's dialogue with people we care about the most.

LA: And defending this behavior isn't just for us adults.

It's also important for our children.

My sons have been flooded with information in this election.

I heard about the election on the morning news, and I was talking about it with my friends at school.

What worried me was that the Trump administration would be terrified by hearing the wrong news with extreme opinions.

But one day after the election, on the way to school, my younger son suddenly asked, "Mom, we don't know anyone who supported Trump."

(Laughter) I paused for a moment, took a deep breath, and said,

"I know."

(Laughs) "The Quattromani family is a supporter."

Then my son gave me this nice reply

While looking a little confused

"I still love them"

(Laughter) "Of course I do," I replied.

(Laughter) And he said, "Why did they vote for Trump?"

I remember having trouble answering, and I also thought it was really important how I answered this question.

Because while respecting our family values, we also need to be considerate of our friends and family.

So I ended up saying, "Because they thought it was important for the direction of the country."

Before I finish my answer, my son's head is full of soccer at recess.

CQ: That's life with boys (laughs)

CQ: So that's life with boys. (Laughter) What Laurent and I understood through our "two-party friendship," the possibilities in dialogue.

We chose to be genuinely curious about each other's thoughts and perspectives, and we chose to listen to each other even when we disagreed.

By letting go of self-esteem and preconceived notions, you've opened up endless possibilities for knowledge.

Most of all, in our relationship, we choose to commit deeply to each other, and to say that this friendship is much more than deciding who is right or winning a political debate.

So today I would like to ask everyone to

Try talking to people outside your party who question your views.

Make an effort to engage in conversations with people who would normally avoid discussing politics.

Remember, the goal is not to win, the goal is to listen, to understand, and to be open to new things.

LA: Now back to Election Night

As the voting deadline approached, it slowly became clear that Trump was going to be the new president, and I was devastated.

I was sad and confused and, to be honest, I was angry.

Then, just before midnight, I got a message on my cell phone from Caitlin.

"I know it's been a rough night for you guys.

We wanted to convey our thoughts, from the heart." Instead of weeks or months of unspoken animosity, it was these words: an offer of sympathy out of friendship.

In that moment, I was convinced that we could get through this experience.

CQ: If we are to move forward as a nation, we need to find ways to create meaningful dialogue. We don't have time to wait for elected representatives to elevate the national debate to meaningful dialogue.

LA: The challenge that awaits us requires that we all participate in deeper, more meaningful ways.

It starts with each of us building relationships through dialogue, in human relationships, in communities, and as nations.

thank you

(applause)

More than half of the world's population now lives in cities

Urbanization began in the late 1700s and has continued ever since.

It is predicted that by 2050, 66 percent of the population will live in cities, and the United Nations, the World Health Organization, and the World Economic Forum have warned that unless we prepare for increasing population densities, the problems of inequality, overcrowding, and crime in our cities will only get worse.

As a result, urban planners and developers are putting a lot of effort and creativity into designing the larger, more densely populated cities of the future.

but my opinion is different

In fact, I think the trend of urbanization is coming to an end, and people will start to move back to the countryside.

You may ask, "But what about trends now?"

Let me just say that socio-economic trends don't last forever.

12,000 years ago, people roamed the earth, hunted and gathered, and everyone was content.

And then the trend changed, and the new thing was to live on a farm and raise cattle, and then the trend changed again.

enter the industrial revolution

In fact, it is the beginning of the trend of urbanization.

What do you think triggered it?

Steam power, machinery, new chemical methods, in two words, innovation.

And I think this trend will end with technology.

I've been committed to innovation throughout my career

i love my job

My job allows me to work with drones, 3D printers, smart glasses, not just store-bought stuff, but prototypes.

it's a lot of fun sometimes

These technologies have the potential to dramatically change the way things were done in the past, and in a few years we may be able to enjoy the benefits of urban living wherever we live.

please think about it

What if you could live in a place with a lower crime rate, more space, a lower cost of living, less traffic? Of course, many people would want that, but they all feel like they can't help it.

I have no choice but to live in the city

In the past, people moved to cities, not because they liked the cities themselves, but because living in cities gave them more job opportunities, easier access to services and goods, and a richer social life.

Let's take a closer look

They say there are more jobs and career opportunities.

Is that still the case? Because people who work in offices are realizing that working in an office is not the same as being in an office.

More than 80% of the U.S. workforce wants to work from home, according to a Global Workplace Analytics study.

Do you know how much it costs for a company to have an office?

It costs $11,000 a year per employee.

If only half of that workforce could work from home for just 50 percent of the time, it would save America over $500 billion and cut 54 million tons of greenhouse gases.

That's the equivalent of taking 10 million cars off the road for a year.

But even though most people would like to work from home, with today's technology it's lonely.

if not comfortable

I lose my presence

But that's about to change with the convergence of two technologies: augmented reality and telepresence robots.

Thanks to AR, we can now take our office environment with us wherever we go.

All you need is a wearable computer and smart glasses, and you can take your email and spreadsheets with you wherever you go.

Video conferencing and video calling are now commonplace, but we still need to improve.

Because sometimes you can't even tell who's talking by looking at the little face on the flat screen.

There's already something much better than a fixed video call: a standard telepresence robot.

i call it a stick tablet

(Laughter) You can control this yourself, you can move around, you can control what you're looking at.

That's a lot of progress, but it's far from perfect.

As you know, the majority of human communication is nonverbal.

robots don't have it

it's like an alien

But advances in AR have made it easier to project beautiful holograms onto robots that look and move like real humans.

I'm sure it will

Elsewhere - Forget Robots

Everything will be VR (virtual reality) - everyone will meet in cyberspace

In a few years it will be so real that it will be indistinguishable from reality.

Now, what was the second reason people moved to cities?

Accessibility of services and goods

But now it's all online

A comScore study found that last year, more than half of all retail purchases were made online by Americans who shopped online, and the global e-commerce market is estimated at $2 trillion.

And it's on track to hit $2.38 trillion by the end of 2017, according to eMarketer.

From a logistical point of view, population density is good for deliveries.

Easy to supply supplies to commercial facilities

We're going to the store, we're going to ship it in big shipments, and people will come to the store and bring it home themselves.

In e-commerce, when you ship children's clothing, you have to deliver it to your home.

Delivery costs are expensive

It's the difference between, say, having 20 friends over for a birthday party, and delivering a piece of cake to each of the 20 people's homes.

But at least in cities, everyone lives close to each other.

Density is utilized

Now with e-commerce, we deliver to rural areas, and that takes a lot of time.

Sometimes the truck has to drive miles to the next address.

The most expensive delivery

But we already have a solution: drones.

It's a vehicle that carries drone troops.

Drones fly around from trucks while drivers are making deliveries.

This approach reduces the average cost of delivery, and voila, it makes e-commerce services affordable even in rural areas.

And -- the telecommuter's new home will probably have a pod for the drones in the yard.

When final door-to-door delivery is no longer an issue, we no longer need to be in the city to buy things.

that's the second

What is the third reason people move to cities?

rich social life

You may need to be in the city for that these days.

Because these days, people can make friends, chat, gossip, flirt - from the comfort of their couch at home.

(Laughter) Wear your favorite pajamas.

(Laughter) There are over two billion social media users in the world.

In a way, you can feel that people are connected everywhere.

but not quite

Sometimes you need real human contact

Ironically, densely populated cities aren't the best places for human contact.

In fact, the smaller the size, the stronger a social group becomes.

A recent study by the Office for National Statistics in the United Kingdom found that it was people living in the suburbs who reported the highest levels of life satisfaction.

People who settle in the countryside will buy local products, take advantage of fresh food, ingredients and maintenance services.

Handymen, small workshops and service companies flourish.

Urban industrial workers driven out by the wave of automation will likely find better alternative jobs in the countryside, and they will migrate as well.

What happens when people migrate to the countryside?

Equipped with solar panels, the autonomous off-grid homes also have wind turbines and waste recycling facilities, and the new homes generate their own electricity, which in turn powers their own cars.

Cities have been thought to be more energy efficient than the countryside, but let me tell you, relocating to the countryside is green too.

Right now, you're probably thinking about the good things about living in the country.

(Laughter) I emigrated myself.

Six years ago, my wife and I packed up and sold a small flat in Spain and bought a house with a garden for the same price, with birds chirping in the morning.

(Laughter) It's a very nice place.

We live in a small village, not so rural.

That's my next step, a renovated farmhouse, not too far from the city, not too close.

Don't forget where the drone landed.

(Laughter) But that's my story.

You don't have to, although it may sound like I'm trying to convince you to move to the countryside with me.

wrong

(Laughter) I don't want too many people coming.

(Laughter) I just think, if they knew they had the same advantages as in the city, they would all move to the countryside.

But if you don't like the countryside, there's good news.

the city won't go away

But as people move out, population densities fall, and better flows and balance return.

Anyway, I think you guys need to think about something now.

Do you think you still need to live in the city?

More importantly - do you want to live in a city?

thank you

(applause)

It was late October in the mountains of Austria.

I was on a field trip with some architecture students in Zurich.

When we arrived high above the valley, I surprised them by telling them that there was no hut to stay in, no hotel to stay the night.

It's not because of some mistake

Actually it was on purpose

The challenge was to build a temporary inn using whatever we could find.

In the end, everyone was able to weather the situation.

It was cold and certainly tough

It was a wonderful learning experience, discovering that nature provides us with so many materials for free.

and the creativity to use it

i have a similar experience

Thirteen years ago, when I was an architecture student, I went to Rudrapur, a remote village in Bangladesh, with the goal of designing and building a school for my graduation assignment.

When I was 19, I lived in that village as a volunteer for Dipshikha, a Bangladeshi NGO that helps with rural development.

What I learned then was that the most sustainable strategy for sustainable development is to use our resources and potential wisely and not become dependent on external factors.

I applied this experience to my architectural theory.

We didn't have to look far to find the right materials to build the school.

I found it under my feet - mud, dirt, soil, clay, whatever you call it -

And bamboo growing all around

Electricity is hard to reach in sparsely populated areas of Bangladesh, but we didn't need it.

We had manpower, people felt the joy of having a job.

Finding tools was also a challenge, but there was help, the water buffalo.

We tried it with normal cows, and the funny thing was that cows were too smart.

Put your feet again in the hollow that was made when you went around before

I don't try to mix mud and straw (Laughter), and sand and things like that are the materials that make up the walls.

Except for a small number of consultants, like my partner Eike Roswag, who helped me with the construction, and my cousin Emmanuel, who weaved the basket, it was all made by village craftsmen.

I'll show you the completed school METI in half a year.

(Applause) Thank you.

(Applause) Structural mud walls literally support the foundation of the school, and large structures made of bamboo bring light into the room.

This is the classroom on the first floor

connected to the "cave"

There you can read, lie comfortably, study alone, meditate, play.

and the classroom upstairs

Children wrote their names on the door in Bengali, and not only did they write their names, but they built a school together.

You've all touched mud and clay, haven't you?

It feels so good I love it

I loved all the kids

Imagine the excitement of a little boy or girl, or the feeling of an illiterate day laborer standing in front of a school and realizing that he's made it with his own hands, using only the bamboo that grows around him and the dirt that's under his feet?

It leads to a huge increase in trust and responsibility, both in ourselves and in our community.

And when it comes to materials

Mud isn't a material with a particularly good image.

Mud is associated with dirty soil, neither clean nor durable, and I want to change that image.

Right now, this school is in its 11th rainy season, and it's a very heavy, sideways monsoon rain, and yet the walls are standing still.

(Applause) For what reason?

The first law is a strong foundation, which protects the walls from the humidity of the ground, the second, a strong roof, protects the building from above, and the third is erosion control.

By putting a speed breaker in the mud wall, we reduce the speed of the raindrops running down the wall.The speed breaker can be lined with bamboo or put stones or straw in the mud.It's the same as having trees and rocks on a hill to prevent erosion.

a similar theory

People often ask me if I should mix the mud with cement, and the answer is no.

This wall doesn't need any stabilizer or topcoat, just the base.

Here's a close-up of the wall, after 10 rainy seasons, and just like I'm getting a little older, the wall is getting a little wrinkled.

The corners aren't as sharp as they originally were, but they still look pretty clean and if they need repair, they're easy to fix.

Remove the broken part, soak it in water, stick it back on the wall, and it will be as good as before.

I wish I could do the same simple fix.

(Laughter) Yes, and the great thing is, when you no longer need the dirt walls, you can put the dirt back into the ground you dug it up in the first place, back into your garden soil, or completely recycle it without any loss of quality.

There's no other material that can do that, and that's one of the biggest environmental advantages of soil.

What about in terms of economic sustainability?

During the construction of this school, I slept most of the time at the construction site, and at night I would go to the market with the construction workers, so I could see how they spent their money.

I bought vegetables from my neighborhood, got a haircut, and got a new blouse.

The school was not just a building, it was a huge contribution to the development of the local community, because a large part of the construction money was spent on using the skills of the craftsmen.

If we had designed a school out of cement and steel, the money would have flowed out of the way and would not have benefited the local people.

(Applause) At the time, the budget for construction was 35,000 euros -- it would cost twice as much today -- that's a lot of money for this area.

The main question in considering the economic sustainability of a project is Who will the profits go to? was that

Has anyone here ever lived in a mud house?

Chris Anderson I can't see your hands?

(laughs) you? I see

that's right

It's kind of out of our interest, but about three billion people on this planet still live in earthen houses today, and it's been used as a building material since time immemorial, just as in Europe as it is in Africa.

But the strange thing is that mud isn't supposed to be worth studying in a university.

So I took mud to Harvard University. (Laughter) I took 60 tons of mud to be exact in front of the Harvard Graduate School of Design building.

Students and faculty rolled up their sleeves and got their hands dirty as they transformed the front area into a place where people could gather and relax.

Children climbing this building, skaters sliding down the ramp, students taking their lunch break, the most interesting thing for me was the number of people touching the walls.

(Laughter) (Laughter) Of course, this was a small project, but I would say that it hit the right spot when it came to raising awareness and educating people.

Although this material can withstand traditional elements and hundreds of years of age, the fact that more and more countries are actually banning the construction of load-bearing earthen buildings is not because of the fragility of this material, but because there are no architects or engineers who can work with it.

Education at all levels - artisans, engineers, architects - is sorely needed.

Equally important is technology development, for example, the prefab technology developed by my colleague Martin Lauck, an Austrian artist and expert in earthen building construction.

He developed a technique called rammed earth, which uses earth as a building material and solidifies it, and prefabricated rammed earth material. It can be used for insulation, wall heating and cooling, and all kinds of electrical equipment, and can be stacked on top of each other in multi-storey buildings.

And finally, we need a challenging project that proves that we can use ancient building materials to create modern designs.

It's not so much about the traditionality of building materials, it's about the creativity of how we use them for our times.

For example, these three youth hostels were built in the village of Baoji in China, about six hours by bus from Shanghai.

The outer wall is made of woven bamboo, and the inner wall that supports it is made of stone and rammed earth.

This is an old building material

Much of the Great Wall of China was also built with rammed earth, but has recently been replaced with concrete.

This trend is gaining momentum

In the next few years, China's use of cement will exceed the amount used by the United States during the 20th century.

Replacing natural building materials with materials that require energy in the manufacturing process, are energy intensive and emit carbon dioxide, is clearly contributing to climate change.

There are alternative materials all around us. Mud, stone, wood, bamboo, soil, etc. are all viable alternatives with a wide range of uses.

For example, this is an office building we built in Austria for Omicron Electronics.

Mud is not only kind to the earth, but also kind to the human body.It is a low-tech material, but it has high-tech performance.

The earthen walls protect the highly sophisticated tools inside the building by naturally regulating humidity.

This wall in my house also works as a humidifier.

Our family loves our six-ton ​​mud house, not only is it healthy and sustainable.

Because the old-fashioned warmth warms you from the bottom of your heart

My dream is to build a mud skyscraper in Manhattan.

(Laughter) I seriously think so.

(Laughter) The dream isn't absurd either. Yemen's mud city of Shibam, built in the 16th century, is still going strong 500 years later.

If it was possible long ago, it should be possible today. We can apply all our technical know-how to ancient materials to make our needs and dreams come true.

Around us, right under our feet

There are wonderful natural materials

Then let's use

I believe that by doing so, our homes, our workplaces, our cities, will become healthier, more sustainable, more humane, more beautiful environments.

thank you

(applause)

At that time, what my mother was trying to tell me was about my grandmother and about our upbringing, but I couldn't hear her, because I was five years old and terrified.

I just saw "The Green Lady"

A week or so before that, I saw the movie "Godzilla," where giant lizard-like monsters storm big cities.

And yet, with my mother, on the edge of Lower Manhattan, I was just staring at The Green Woman, her horn, her muscles, all of it was terrifying to me.

I didn't know if she was a monster or a hero.

So I decided to ask Google back then, "Mom! Mom!"

(Laughter) My mother explained that the "green lady" was actually the Statue of Liberty, waving to immigrants to welcome them in.

There was a part of my mother's explanation that confused my young mind. She told me that long ago, the "green woman" was actually brown.

What's interesting about this fact is that knowing that the "woman in green" changed colors made me think about myself.

It all made sense, because as a first-generation American, I was surrounded by immigrants.

Indeed, in the social circle of people who have supported me and enriched my life, at least two are foreign-born.

As an American citizen, my life has been influenced by many newcomers, and probably yours as well.

America has over 40 million immigrants.

Census data shows that at least one in four children has a foreign-born parent.

I'm familiar with these statistics because I'm looking at patterns of international migration.

I'm a journalist, and for the last few years I've documented the lives of Americans who have been robbed of their peers by deportation.

the number is enormous

Between 2008 and 2016, more than three million people were ordered to be "deported," which is the technical term for deportation.

With this kind of deportation comes the economic, political and psychological toll, the moment the human link breaks.

I asked an American soldier, "Why did you volunteer for this war?"

She replied, "Because I'm proud to defend my country."

And I asked, "What does 'homeland' mean to you in that moment when you're at the base, the explosions are far away, and you see a badly wounded soldier coming home and you know you might be next?"

she looked at me

"My country is my wife, my family, my friends, my soldiers."

And what she was telling us was that "homeland" was a collection of these strong ties, social circles.

The weaker the social circle, the weaker the country itself.

When discussing immigration policy, it's easy to forget a very important point.

Rather than focusing on the individual, we should focus on the people around us, because they are the ones who will stay in America, vote, and pay their taxes, and they will be the ones who will suffer the loss of those closest to them.

Children of deported people aren't the only ones affected.

I have brothers and sisters separated by borders.

Classmates, teachers, police officers, engineers, scientists and doctors scramble to make sense of the new reality when the social circle to which they belong breaks down.

That's the reality behind the numbers that drive the immigration policy debate.

It's just that they tend to forget

i'm trying to change

This is one of the true stories that I have collected

still haunts me

I met Ramon and his son in 2016, the year they got their departure orders.

Ramon was deported to Latin America, and his son, who had worked as a sergeant in the U.S. Army, was assigned to the field.

father was deported

My son was dispatched overseas.

If you look only at Ramon, the depth of his ties to the United States would be unclear.

But think about my son, he's an American citizen defending the country that deported his father.

The important thing here is the social circle.

Here's another example that describes such a crucial bond.

Civil society groups in Philadelphia were worried about their jobs because the legal owner of the restaurant where they worked was an illegal immigrant, and the immigration department took him away.

the employees gathered to save him

An immigration lawyer argued that the owner was so important to the community that he should not be deported.

In the oral hearing, I even submitted a restaurant review article. It's a restaurant review article!

The immigration judge exercised "judicial discretion" and allowed him to stay in the country, but this was due to social circle considerations.

According to verifiable federal government data, there are 23 million non-U.S. citizens in the United States.

This number does not include illegal immigration, because the number of illegal immigrants is at best a conservative estimate.

Let's think with the numbers at hand

This social circle of 23 million people -- about 100 million people -- could be affected by deportation.

That conflict will slowly affect the entire population.

A 2017 UCLA poll of Los Angeles County residents found that 30 percent of Los Angeles County citizens feel deportation stressful—not because they themselves might be deported, but because their peers in their social circle are at risk.

I'm not saying nobody should be deported, don't get me wrong.

What I'm saying is that we should look at this issue from a broader perspective.

If you're within earshot of me, just close your eyes and ponder your own social circle.

Who are your foreign-born peers?

How would you feel if that ring were cut?

share your story

I've created a global archive of these stories, and I'm using mapping technology to link them together, so I can see exactly where these rings break, because this isn't just an American problem.

There are 250 million immigrants in the world who live, love and study in countries other than the one in which they were born.

I've been one of those people throughout my career and life, when I've been in China and Africa and Europe.

As a foreigner, every time I'm one of those strange-looking people in a new land, I'm reminded of those days, decades ago, when my mother and I were in Lower Manhattan, when I saw that green woman and was terrified.

I've seen all those questions that I've been thinking about ever since I saw what she looked like, replicas of her when she was clearly brown and new, paintings of her when she wasn't green at all in the first place. Or are you a hero?

thank you

(applause)

Most of you probably don't know this, but when I was in high school, when I applied to college, I knew that I wanted to be a sculptor.

I grew up in a pretty privileged environment, and I was very lucky.

My family was wealthy, and my father's educational policy was to give me all the education I wanted.

When I told him I was going to Paris to become a sculptor

My smart dad said, "Okay, but you did good math on the SAT, didn't you?"

Sure, I got 800 points in math, but I was good at art, and I loved it.

I got accepted to MIT early on, so my dad said, "I'll pay your tuition each year while you're at MIT undergraduate and graduate school, so you can go as long as you want, and then I'll pay you for the same number of years in Paris."

I accepted it immediately because it was an excellent condition.

So I decided that since I'm good at both art and math, I'd like to major in architecture, which is a combination of the two.

I went to report to the high school principal

Architecture is the fusion of art and mathematics, so I told him that I wanted to study architecture at university.

The principal said something I didn't understand.

“I like gray suits and striped suits, but I hate gray striped suits.”

I went to MIT thinking, "Aren't you stupid?"

After studying architecture for two years, I quickly realized that architecture is not the fusion of art and science.

It was, in fact, a computer, and this is the very place of fusion where I've enjoyed my career.

On the scale of Jim Citrine, we spent 100 percent of our time creating an environment where others could be creative.

I've been working on this for years, and after I handed over the head of the Media Lab, I thought,

"Maybe it's time to use this privilege to do something important."

At the Media Lab, I got to know a lot of people, I got to know the executives, I got to know the rich, and I don't have to worry about my career anymore.

I've done enough in my career

don't worry about money

You don't have to worry about what other people think

I decided, "Let's use this privilege to do something." So I thought, if I could help children, create an environment where they could use computers, and let them use them in their education, that's what I should do.

This is the first public photo, so it could be sued.

It was taken at 3 in the morning without permission from the company.

It's been two weeks since it's done. Here it is.

(Applause) As you can see in the picture, they're stacked.

There is a conveyor belt that goes around

This is part of the conveyor belt where computers flow.

I put software in flash memory and put it through a few hours of testing.

You have to keep flowing on the production line that doesn't stop

That's why the computer is also flowing above

This realization was a great turning point, but it was a long time ago.

This is a picture taken just before IBM unveiled the PC in 1982

Seymour Papert and I brought computers, which were still rare, to schools and developing countries.

And what I found was that kids were very quickly hooked on computers, just like kids in America.

When someone asks, "Who trains teachers?"

I can't help but think, 'Which star did this guy come from?'

I don't know how knowledgeable you all are, but I'm sure most of you would give a young person a computer or a cell phone and have them fix it.

Any Elder Needs Help

This is Seymour 25 years ago. He took a brief observation in 1968 and published it in 1970 on April 11th, under the title "Teaching Children to Think."

These observations show that children who write programs think differently than those who don't, and that when debugging, they experience learning to learn.

It's very important, but I haven't had the chance to experience it recently.

I don't have enough programming experience.I really want my kids to learn to program.

It's very important, you can use applications, but you need to teach programming.

I started with three languages: squeak, logo, and a third language I had never heard of.

It is characterized by greatly enhanced programming functions.

Here's a much more recent and significant picture.

Sometime between 2000 and 2003, I also have a son, Dimitri, when we built a school in Cambodia, and when the internet got connected, as you know, Dimitri started running the school.

Kids got laptops, and this vision, and the influence of Joe and others, was the impetus for "One Laptop for Each Child."

This is a picture of this village about two months ago.

Kids test 7,000 like pros, and it's definitely important that it's non-profit

Everyone has been saying non-profits are bad, but they're wrong.

There are two essential reasons why I think nonprofits are important.

There are many, but there are two that are important: the first is a clear purpose, a clear moral purpose.

You can meet all the heads of state and high-ranking officials all the time, because you don't sell laptops, you don't have shareholders.

It doesn't matter if you sell or not

Clarity of purpose is important, and the second reason, counter-intuitive, is to attract the best talent in the world.

We do professional services like research, telecommunications, legal, banking, all for free, but not to save money.

Banks have money because they have good people.

There are people who do this work with a sense of mission, believing that they are suitable for the job.

I can't afford to pay a finance officer's salary, so I recruited without pay and was inundated with applicants.

If it was for profit, the UN wouldn't have thought of working with us. It was a privilege to be able to co-publish this with Secretary-General Kofi Annan.

It's kind of a silly design, but in retrospect, it contributed a lot.

Everyone remembers the thin yellow L-shaped handle

It's so distinctive that no one will ever forget this handle.

It's a weird way of powering it, it's childish.

This handle became a problem and I changed it, but it would certainly be strange if it was attached

Some of the press didn't seem to get it, but I didn't remove it because I didn't like the direction.

It's better to remove it like an AC adapter

It's not here, but it's easier to use if you remove it from the main unit.

There are so many things I want to say, but let me narrow it down to four.

And keep in mind, folks, even Bill Gates said, "Wow, that's just a real computer."

This computer is completely different from conventional products.I will list four differences among them.They may not be familiar with them.First of all, low power consumption is important.

The reason I want it to be "less than 2 watts" is because that's the amount of power your upper body can produce.

The "two-way display" that uses sunlight is also wonderful

I tried using it today at noon, but the stronger the sunlight, the better.

A "mesh network" that will eventually spread is essential

And of course it's "robust"

I didn't place importance on design because I wanted to be an artist.

By the way, when I graduated from MIT, living in Paris for six years seemed like the worst, stupidest choice, so I didn't, but design is important for a couple of reasons.

The number one reason is that it's the best way to make a product cheaply.

Usually, in an attempt to keep manufacturing costs down, they lower their design fees, buy cheaper labor and parts, and make cheaper laptops.

In English, the word "cheap" has a hidden meaning, and it fits perfectly: it's not just cheap, it's cheesy.

But if you look at it in a different way, and you're going to integrate at scale, and you're going to use cutting-edge materials and cutting-edge manufacturing equipment, you put in the materials, and you have an iPod, and you get a cool product, and that's what I wanted to do.

Let's skip this slide.

He will announce it, so I don't have to explain it.

In any case, design is of great strategic importance.

It's not just because you want to look cute, but because good design is important.

this is one of the generators

Mesh networks, in a nutshell, are laptops that communicate with each other in the most remote and impoverished regions of the world. It's not just multiple laptops.

It was also necessary to install a satellite dish and a generator.

These things running behind the scenes can communicate with each other.

In the desert, you can communicate even if you're two kilometers away.

In the jungle, it's about 500 meters, so when the kids go out on their bikes or walk a few kilometers, they're out of the mesh.

So I don't have another laptop nearby, so I'm going to put this in a tree and let it relay.

Build your own network without asking a telecommunications company

And it's the user interface that matters.

The keyboard has 18 languages, and English is in the minority.

Latin is also a relatively minority.

I'm sure there are languages ​​that you don't know.

Anyone outside of the OLPC project know the language of this keyboard? You seem to be the only one, so please

That's right, it's Amharic. It's the language of Ethiopia. Until now, there was no keyboard in Ethiopia.

There was no market, so there was no keyboard standard.

So this makes a big difference

Because it is non-profit, children are subject to a mission, not a market

So I helped build a keyboard in Ethiopia.

This should be the standard Ethiopian keyboard

Finally, I'd like to talk about what we're doing to scale up the project.

In fact, the strategy was completely different from when I started. It was a pretty good decision in the beginning, but unlike now, I was visiting six countries.

They are big countries. One country is not big, but it is rich.

These are the six countries, and when I visited these countries, every leader was supportive and said they would buy a million units.

Libya's Colonel Gaddafi promised 1.2 million units

We thought this was the right strategy, and we thought that if we did this, smaller countries would follow suit.

So I've visited these six countries at least six times, and I've met their leaders two or three times.

I always met with the minister and considered various things.

At this time, I was flying around the world 330 days a year.

I wouldn't envy you, and you wouldn't even want to try it.

I had a lot of fun when I talked with Colonel Gaddafi in the tent.

But the smell of camels was strong

It was 45 degrees Celsius, so it's definitely not a cool experience. None of the countries I've dealt with before ended the summer with a purchase.

So we decided to go around smaller countries, including Uruguay.

It's a small country and it's not very rich, but the president says he'll do it

You really did it, without telling me what you can see in the sun, or mesh networking, or low power consumption, just by suggesting a laptop.

They accepted me without hesitation.

OLPC suddenly received an order for 100,000 units after announcing that it would be provided to all children in Uruguay.

The next day, or less than 24 hours later, the president came from Peru saying, "250,000 units." It's a chain reaction.

The president of Rwanda came and said let's do it.

The president of Ethiopia also said he would do it.

It's getting bigger and bigger, so is the president of Mongolia.

It's starting to happen in these countries, but it's still not enough.

I felt that even with all these achievements, it was still not enough, so I thought, "Let's launch something in the United States."

It was perfect for the presentation

Started November 12th

It was a short schedule until the 26th, but it has been extended until the 31st.

This "give one get one" event has gotten a lot of attention and has been very successful.

The first day was already a blast, so they came up with the idea: "Get lots of them. Instead of 'give one and get one,' let's get 100 or 1,000."

I don't want people to pay $400 to buy it.

It's not enough for everyone in this room to order one, it's useless even if it's 300 people.

I want you to do something different

I'm not asking you to buy 100 or 1,000 units.

Advertise! I need to make a boom

Take advantage of your awesome mailing list

Invite them to your "give one, get one" project

It would be great if each person informed 300 or 400 people

I don't care about price

When you're doing "give one, get one," a lot of the press will say, "You couldn't afford $100, $188."

Two years later, it's $100, and it's going down further.

We're going to lower the price without adding features.

For all sorts of reasons, the countries that bought it wanted it to be more expensive, so that's what I did.

Lastly, this photo was taken less than 24 hours ago, maybe 24 hours ago.

The laptops arrived for the first time for the kids, by sea, and this week we sent 7,000 to 8,000 at once.

We delivered it to Uruguay, Peru, Mexico.

It's a slow start, only 5,000 units a week, but hopefully sometime in the middle of next year, we'll get to 1 million units a month.

1 billion mobile phones sold this year

But for laptops, one million units a month is a lot.

Right now, the world is making five million laptops a month, and now, let me tell you, sometime next year, we'll be producing 20 percent of the world.

If it can be realized, the smiles of children should be spread all over the world.

I don't know if it's two years from now, but when this EG happens, I'm still alive and I'm sure I'll be invited.

thank you

(applause)

We humans are becoming urban creatures. Cities are our natural habitat.

is our home

In 2014, more than 54 percent of the world's population lived in cities. I assure you, many of us have wondered, how would I change things?

"What kind of city do I dream of?"

And what is that tool — this is what we developed

Two years ago, my team and I released a game called Cities: Skylines.

This is a city planning game

I've always been interested in cities as systems.

there is great interest

But to my surprise, I wasn't the only one.

people love cities

interested and have ideas

This game was an instant hit

Over 3.5 million people have played so far

This game is not just for playing

It also has a really nice sharing system.

Users create cities in games, share their creations, and showcase their creations.

What you're going to see are some of the cities that our users have created.

This game is about self-expression, about making things, and not just about overcoming the challenges that simulation presents.

It's about expressing what your city looks like.

I will show you 2 or 3 videos.

It's a YouTube video

Some of the most interesting urban design I've seen.

Each one is different, but I think you'll like it.

This work is "The Netherlands"

By user Silvarret

When you start the game, you'll get an empty land.

This land can be based on a real-world land, or handcrafted in a map editing kit, or of course, you can download a city that someone else has built and play in it.

Now, what Silvarret created — what Silvarret wanted to create was not a real city.

This is an imaginary city, although it looks real.

I wanted to create an imaginary city that might be in Holland.

So he took a look at Dutch cities and combined some of their characteristics to create this.

This is a city, but it's not a real city.

It looks exactly like the real Netherlands

The towns are all very densely populated.

So what's essential is the highways, the railroads, everything that connects the core of each community.

There are a lot of people and a lot of movement, so transportation is key here.

Now turn to the more imaginative side

let's see the future

this is one of my favorite

This kind of city design is my favorite

It's a tiered city by user Conflictnerd, and the basic idea is concentric roads.

The city is a big circle, with many smaller circles inside.

The point here is to put all the governmental and public facilities in the center of the city, and in the outer circle is where the real life of the citizen is.

And yet, government and public services are very close at hand.

Government offices are centrally located

this is the point of the game

What the player needs to understand is what ordinary people living in the city want and need? is

What you need to know is where to put those things

For example, just having a hospital is not enough.

Ease of access required

Citizens must be able to access

this is one solution

Maybe one day we'll have a city like this

Let's look at a more futuristic example

User Yuttho's "Astergea (Planet Earth)"

Yuttho is a YouTuber and a game player.

What he's done here is a 12-part video series about building this city.

He plays this game, records it, and walks you through what he's doing and why.

As part of this series, he's interviewing a real-life urban planner, and that's Jeff Speck.

SPEC is an expert in the concept of "walkability"

The basic idea is that if you want people to walk in your city, and walking is a good way to go, it's imperative that you position walking as a viable mode of transportation.

Must be a good way to get around

So Yuttho put a commentary on this concept, asked specs to explain it, and then applied the concept of walkability to the city he was building.

What we're seeing now is Yuttho's vision of the future: lots of public transport, sidewalks, squares, connecting skyscrapers.

Perhaps the future might look something like this

And the game system works really well for this purpose.

This game can be applied in the real world

City planners sometimes use the game as a sketching tool. It's not a perfect fit for the real world, but the simulation is realistic enough that what works in the game has a very good chance of working in the real world, so you can experiment and decide if a given highway junction is appropriate for a given situation.

"Would building a new road help?"

You can do that in this game

There was an interesting competition organized by the city of Hameenlinna, Finland.

What the city has done is create new neighborhoods within the city that they want to develop.

The city created an existing city map for the game, blanked out the districts they wanted to develop, and shared the map.

Anyone can download this map, build this district in the game, and submit their work to the city council.

Nothing has been built yet, but the city may take one of the game-generated concepts and actually build it.

The video you saw — you saw a bunch of new solutions being invented.

the city continues to grow

It is expected to expand over time and increase the proportion of the urban population.

We need solutions, and gamers are trying different solutions.

Some of them may be very important

What we're seeing here is a dream city that might one day come true.

So this may not be just a game

This game may decide our fate

thank you

(applause)

I have something to share with you today, but first I would like to ask you a few questions.

Do any of you have children?

So who is confident in raising their children the absolutely right way?

(Laughter) You didn't raise your hand much to the second question, but I'm not sure either.

I have three boys, ages 3, 9 and 12.

Like you and most parents, the truth is that I don't really know what I'm doing.

I want my children to live happy, healthy lives, but I don't know what I can do to make it happen.

There are tons of books out there with all sorts of conflicting advice, and it's overwhelming.

So I've always tried to reach out to children in a groping way.

But something changed me a few years ago when I stumbled upon a little trick in England.

It gave me more confidence in how I was raising my children, and it showed me the many ways society can help all children.

I'm going to tell you the secret today.

For the past 70 years, British scientists have followed the lives of thousands of children as part of an extraordinary study.

You can't find anything like that anywhere in the world

Collecting information on thousands of children really makes sense, because we're going to compare the people who said they did well in school and said they were healthy, happy and wealthy as adults to those who didn't, and then we looked at all the information we gathered and figured out why those people's lives were so different.

This British study is, in fact, reckless.

It goes back to 1946, just months after the end of the war, when scientists wanted to know what it meant for a woman to have a baby.

A large-scale survey of mothers has resulted in recording the birth of almost every baby born in a week in England, Scotland and Wales.

They numbered about 14,000.

The questions asked of women are very different from those asked today.

very old fashioned

It was something like, "Did you drink enough of the extra rations during your pregnancy?"

“How much did you spend on smocks, corsets, sleepwear, pants and bras?”

I like this question, "Who looked after your husband when you were sleeping with your baby?"

(Laughter) Now, this wartime investigation was so successful that it was decided to do it again.

Thousands of baby births were recorded in 1958 and even 1970.

The survey was done again in the early 1990s, and again around 2000.

In total, more than 70,000 children across five generations participated in this series of studies.

It's called the British Birth Cohort, and scientists keep track of all these people every few years, accumulating new information.

The amount of information that has been collected about these people is absolutely incredible.

It contains thousands of written questionnaires and vast amounts of computer data.

Scientists have also created a huge repository of tissue samples, including strands of hair, clipped nails, baby teeth and DNA.

We've collected up to 9,000 placentas from multiple births, and they're now securely stored in plastic buckets in vaults.

This whole project is unique, yes, no other country in the world tracks children in such detail across generations.

These children are among the most studied people in the world, and their data are invaluable to scientists, contributing to well over 6,000 scientific papers and publications.

But today, I'd like to highlight just one of the findings, and it's probably the most important one to come out of this amazing study.

And it resonated with me, too, because it's about how we can use science to do what's best for our children.

Let's get the bad news out of the way first.

The biggest message from this incredible study is this: "Don't be born into poverty or into a disadvantaged background, because if you do, you're much more likely to have a difficult life."

Many of the children in this study were born into poor, cramped, troubled, working-class families, and it turns out that these disadvantaged children struggle in just about every way.

They tend to do poorly in school and end up not getting good jobs and earning less.

That might seem obvious, but there are some really surprising findings: Children who struggle at the beginning of life are more likely to have poor health in adulthood.

They are more likely to be obese and hypertensive, and decades later they are more likely to have poor memory, poor health, and even premature death.

Now, we've talked about what happens in the future, but some of these differences are surprisingly early in life.

One study found that by the age of three, children who grew up in poverty were already about a year behind their more economically-advanced children in learning, based on achievement test results.

These disparities repeat themselves across generations.

In other words, the environment in childhood has a great influence on the rest of one's life.

And figuring out why is one of the challenges we face today.

now you know

Ladies and Gentlemen, the first lesson of a successful life is this: Choose your parents carefully.

(Laughter) Don't be born poor or disadvantaged.

I think you've noticed a small problem here.

You can't choose your parents or their income, but this British study is optimistic because it shows that not everyone born into a disadvantaged background ends up in a disadvantaged situation.

As you know, there are many people who were born into less privileged backgrounds but who ultimately succeed, and this study is beginning to explain why.

The second lesson is this: "Parents really matter."

This study found that children who have caring, engaged parents, and who have ambitions for the future are more likely to escape difficult circumstances.

Parents and what they do is considered very important, especially in the first few years of life.

I'll give you an example

In one study, scientists looked at about 17,000 children born in 1970.

I combed through the data I had collected in an attempt to unravel the mystery of why children who had a difficult start in life managed to persevere and succeed in school despite the adverse circumstances.

It's all about what kind of child overcomes adversity.

The data showed that the most important thing was the parents.

In the first few years of life, there was a close relationship between a parent's interest and commitment to their child and the child's success in school.

In fact, it's the very small things that parents do that lead to positive outcomes for their children.

Talk with your child Listen to your child Give a warm reply Teach letters and numbers Take him on a trip

Reading to children every day also seems to be very important.

One study found that children who had parents who read to them every day when they were five years old and who showed an interest in educating their children at age 10 were significantly less likely to fall into poverty by age 30 than those whose parents did not.

Now, this kind of science is very difficult to interpret.

All these studies show is that there's a correlation between parental behavior and a child's success, but it doesn't necessarily mean that parental behavior leads to positive outcomes, or whether other factors are at play.

For example, you have to take genes into account, and that's a whole other issue.

But the scientists who study this are working really hard to find out why.

This study looked at the sleeping habits of about 10,000 children born at the turn of the century.

Did the children go to bed at the same time on weekdays, or did they go to bed at different times?

The data showed that children who went to bed at different times were more likely to have behavioral problems, and those who switched to regular, consistent sleep were often shown to improve their behavior.

There are still studies worth noting

In this study, scientists looked at children who read for recreation.

That is, when children choose their own magazines, picture books, stories.

Data show that, between the ages of five and 10, children who read for enjoyment tend to do better in school, on average, and do better later.

And not only did they excel on reading tests, they also excelled in spelling and math.

In this study, controlled for external influences as much as possible, and looked at children of similar intelligence and social class upbringing, it appeared that the children's success in school and later in their exams was largely due to their ability to read.

In the beginning, I said, the first lesson from this study is that children shouldn't be born into poverty or disadvantage, because it will lead to a more difficult life for their children.

But on the other hand, I also said that parental involvement in parenting is important, and that "good parenting" helps children overcome adversity and overcome the negatives of early childhood.

Think about it for a minute, so isn't poverty an important factor after all?

You might say that it doesn't matter if a child is born in poverty and raised by good parents.

I do not think so

This study shows the importance of both poverty and parenting.

One study actually came up with that exact number, looking at how well children who grew up in long-term poverty-stricken families did in school.

The data show that even if parents do everything right -- even if they put their children to bed on time and read every day -- there's a limit.

Good parenting can only reduce the educational gap between poor and wealthy families by up to about 50 percent.

That means that poverty leaves really deep and indelible scars, and if we really want to ensure the success and well-being of future generations, it becomes very important that we address child poverty.

Now what does that mean for us?

Are there any lessons that anyone can practice at home?

As a scientist and journalist, I want to bring science to my parenting...

When you're yelling at your kids to go to bed on time, it's a great relief to have scientific research on your side.

(Laughs) Don't you think it's amazing when you think about it like this? To raise happy, successful children, all you have to do is talk to them, care about their future, put them to bed at the same time, and give them books.

So that's the end of the parent's job.

But as you can imagine, the answer is not so simple.

One of the reasons is that this study looks at the average of what happened to thousands of children, and it doesn't necessarily work for each child, not mine or yours.

Ultimately, each of our children will be on their own path, dictated to some extent by the genes they inherited and, of course, everything they experience in their lives, including their relationship with us, our parents.

After learning all this, let me tell you what I did.

I'm a little embarrassed

I've been so busy with work and, ironically, with research and writing about this incredible study of British children, that I found myself having days when I barely even spoke to my child.

So we introduced chat time at home, which is just 15 minutes at the end of the day, and that's when we talk to our sons.

I desperately want to hear what they did that day, and I try to tell them that I approve of what they did at school.

Of course, I always make sure I have a book I'm reading.

Tell them that you have high hopes for their future, that they can be happy and that they can do great things.

I don't know if that will change anything, but I'm sure it won't hurt them, and maybe it will help them.

After all, if we want our children to be happy, all we parents can do is listen to science and, of course, listen to our children.

thank you

We live in a time of fear, and our response to fear is either to cower and try to protect ourselves, or to reach out and support each other and face it together.

Which one would you choose?

Which one do you see more often in the world?

The problem with the former approach is that you separate yourself from others in your growing isolation.

Isolation deepens, because our imagination of disconnected people and places becomes inert.

The sense of strangeness increases and the ability to empathize diminishes.

Today I want to talk to you about a group that is fighting against the global problem of terrorism by creating a space where strangers can come together.

Ever since I was a child, I've always been concerned about this irrational division.

As a fourth-generation Kenyan Indian Muslim, what has bothered me is that, for four generations, my family has never married outside of a narrow religious community.

I wondered why

Is it because of fear?

Is it because of racism?

Is it to protect culture?

Does it have something to do with colonial rule?

Certainly we weren't sharing public places with others.

This division is very disturbing and has affected my career choices.

When I was 20, the American embassies in Kenya and Tanzania were bombed.

A year later, I went to the Middle East to study conflict resolution.

Since then, I've had no shortage of precarious environments to work in, because the world is changing so rapidly that we're entering an era of terrorism.

I was in Washington, D.C. when 9/11 happened, and then I returned to my homeland of Kenya to help refugees, and then I went to work in Pakistan and Afghanistan.

What I've discovered in these places is the importance of physical space in order to feel safe, to feel at ease, to feel at home.

I returned to Nairobi from Afghanistan in 2013.

Al-Shabaab fighters laid siege to the Westgate commercial complex, killing 67 people in one horrific day.

Shortly after that, I could see that Nairobi began to change, moving closer and closer to the kind of terror, terrorism, and war-torn city that I had been working with.

Nairobi was changing towards being driven by fear.

More walls, barricades and checkpoints

And like the rest of the world, the connections between people have become weaker.

Religious conflicts are deepening, and we are increasingly questioning whether we have anything in common.

We are at a crossroads, and it's time to regain our confidence in humanity and come together boldly and visibly.

In 2014, in Nairobi, I gathered people - intellectuals, diplomats, artists, development workers - to figure out what to do.

The challenge that this group has identified is threefold: first, take cities out of the context of terrorism and put them back in the hands of the people who live there; second, introduce a language that transcends race, ethnicity and religion to help overcome differences; and third, take action to restore empathy, dialogue and trust.

Among this group was the artist and architect Yasmani Arboleda.

I've worked with him for many years in other parts of the world.

He's had a track record of intervening in urban environments and connecting others with each other in wonderfully beautiful and spectacular ways.

he had an idea

To bring people of different faiths together, they would have them paint the walls of each other's chapels -- mosques, temples, synagogues, churches -- in the name of love, by painting them yellow.

By focusing on the symbols of our faith, we have an opportunity to revisit the shared values ​​of kindness, tolerance, and friendship that are at the core of our faith.

By creating traffic between different chapels, we create a "island of stability" that can withstand threats within a single district -- a bond of people.

By holding a paintbrush with your neighbors, you can move your hands and connect with your heart without being overwhelmed.

And the colored buildings become sculptures in the landscape, showing people from so many different backgrounds coming together to support each other.

I named the project "Colors of Faith."

I liked the idea, and I immediately contacted dozens of places of worship: churches, temples, mosques, synagogues.

From door to door, I visited over 60 rabbis, imams, pastors and monks.

As you can imagine, bringing these communities together is no easy task at a time when prejudice is fueled by global fear.

it was a complicated matter

We also faced hierarchy in decision-making within religious groups.

For example, I was told that in the Catholic Church, the archbishop must make decisions.

So I wrote a letter to the archbishop

I also wrote a letter to the Vatican City

no reply yet

(Laughter) In other chapels, I've been told that the patrons make the decisions, the people who pay for the building, the construction, the painting.

It came face-to-face with a long-standing tradition of relying on evangelists and donations that stifled unconditional civic action, and this was a painful experience.

One community asked me to thank them every time I had a dialogue with them.

So I kept coming back and thanking them, and of course, if I hadn't thanked them, I wouldn't be here to talk to you.

Later, unfortunately, I found out that the word "thank you" was a jargon for "if you pay, you will participate."

So we confronted them and asked them straight up, "How much will it cost?

How much should I pay?

Can faith that costs money be called faith? "and

This project started with the question, "Where is your faith?"

And the question that actually ended up being asked was, "What is your faith?"

But the most difficult problem was the fear of glaring risk.

One synagogue refused to participate outright from the beginning, fearing that they would be the target of attention.

Some of the mosques also feared being targeted.

These fears are understandable

Still, 25 chapels pledged to attend.

(Applause) These bold leaders took action and found meaning for themselves.

Some wanted to tell the world they weren't terrorists.

Some have thought of opening the door and welcoming people who want to ask questions.

Some wanted to bridge the generation gap between the older and the younger, a challenge that many faiths grapple with.

Some simply wanted to unite with their neighborhoods before the expected election-related violence occurred.

When asked why it was yellow, an imam gave me a beautiful answer: "Yellow is the color of the sun.

the sun shines equally on everyone

The sunlight doesn't discriminate."

He and other leaders spread the word at rallies and on the radio.

City officials volunteered to help issue permits and convene civil society groups.

The paint company donated 1,000 liters of specially formulated yellow paint, now called optimistic yellow.

(Laughter) (Applause) Poetry organizations, in collaboration with universities, sent out a series of tweets asking questions of faith across the country, not just in the context of religion, but also about politicians, ethnicity, nationality, the beliefs of the older generation, and the younger generation.

The Color of Faith kicked off with a gallery event that brought together a wide range of guests, from gallery regulars to religious leaders, artists and business people.

Before we even picked up the brush, we were already able to create a lot of the kind of dialogue and connection that we wanted.

and started painting the walls

Muslims, Christians, atheists, agnostics, Hindus, side by side, painted mosques yellow.

And then we all got together again, this time we painted the church yellow, and another mosque, another church.

Poets and musicians performed during the painting process.

I painted a wall in Nairobi, I painted a wall in Mombasa.

Local and international press outlets covered "the color of faith" in English, French, Swahili, Spanish and Somali.

"House of Faith" is a way to bring communities together, reported CNN

Our social media has also worked to connect more people.

These neighbors keep in touch with each other

Some of them want to go into politics for peace dialogue. Communities from as far away as Argentina and the United States to as close as Mali and Rwanda are asking us for help.

I would love to help

Our dream is to spread this project and idea around the world, with or without help.

"Color of Faith" is the practice of literally making the owner of a conscience stand out in yellow.

The Color of Faith binds neighborhoods together, and may they unite together, when threat strikes, sifting truth from rumor.

We've proven that humanity, together as a family, can support each other and send messages that are much brighter and more powerful than the voices of those who seek to harm us.

It shows that fear is contagious, but so is hope.

thank you

(applause)

Before I started this microsculpture project, I was a photographer for 18 years.

At the time, I traveled the world photographing global advertising campaigns and photographing icons of the era.

I'd gotten where I wanted to be in my career, but for some reason, there was something a little unsatisfying about it.

The wonderful things I've photographed and experienced have become mundane.

At the same time, I became curious about the value of disposable photographs in this digital world, and I wanted to capture images that really had value.

I needed a subject that felt special.

I thought I had the eyes of a child

I mean, I wanted to see the world the way I did when I was a kid.

As we grow older, we fear that experience will dull and wear away our curiosity.

As a visual artist, one of the challenges is to take the mundane in a new and compelling way.

Fortunately, I have two children who are curious about the world.

One of them, Sebastian, picked ground beetles from his garden in the spring of 2014.

Ground beetles are common insects, and there's nothing special about them.

My son was curious about it, so he brought it to me, and we decided to look at it under a microscope.

My son had gotten a little science set for Christmas.

this is what we saw

i was overwhelmed

This is the back of a ground beetle

looked like a galaxy

This thing was outside the window the whole time.

I was looking for such a special subject, and Sebastian's eyes and curiosity brought this to me.

This is a photo I took for him.

I asked myself two simple questions

The first is whether I can apply my knowledge and skills in photographic lighting to such a 5mm subject.

The other is whether it is possible to be creative with the lighting even for a subject of that size.

I practiced with other specimens and contacted the Natural History Museum at the University of Oxford asking if I could use the museum's collection for a project.

I showed them the photos that I had taken at the meeting, and I showed them how much detail I could capture.

I don't think I've ever seen anything quite like this before, and since then I've been given permission to access the entire collection and the cooperation of entomologist Dr. James Hogan.

In the two and a half years since then, I've photographed 37 species of insects from my collection.

As a work flow, I divided an insect into multiple parts, and each part was photographed as a stand-alone still life.

For example, when shooting a smooth domed eye, you might use a large, soft area light source that doesn't create an unsightly bright spot on the surface.

For hairy legs, change the lighting completely.

So, you can photograph one small area as beautifully as possible, and then photograph the whole insect, and then you'll end up with 20 to 25 parts.

Shallow depth of field is a problem when shooting at high magnification.

To solve that problem, we put the camera on a rail and automatically advanced it by 10 microns with each shot.

That distance is one-seventh the thickness of a hair.

This will give you a series of images

Every image has a small part that was in focus.

You can combine them to create a single image of the whole body in focus from near to far.

And that's how you end up with 25 parts that are all in focus and beautifully lit.

A single work is made up of about 8,000 to 10,000 photographs.

Each piece takes about three and a half weeks to make, and the file size is about four gigabytes.

There's a lot of information, so you can experiment when you print.

You can display a print about 3 meters long at an exhibition.

Two weeks ago, at an exhibition in Milan, there was a print that was nine meters long.

But these works also need to be usable in the digital world.

Because there's no point in putting all your heart and soul into these images if you can only show them 500 pixels on the screen.

With the help of Rob Chandler and Will Cookson, we've set up a site where viewers can immerse themselves in a four-gigabyte world where they can see details under a microscope.

If you have time, please visit microsculpture.net and give it a try.

It is fun

The work was first exhibited in Oxford and then moved to the Middle East.

Back in Europe, next tour around Copenhagen.

the reaction is very big

I received emails from all over the world, and even from teachers who use the site at school.

Even from a child looking at the site on a tablet.

I've expanded it to include art and biology classes.

I didn't even imagine

It was a nice accidental result.

In fact, one of the things I enjoy most about exhibiting in museums is seeing the reactions of children.

I thought you might be scared in front of an insect as tall as 3 meters.

It wasn't like that, everyone was curious.

This kid just sat there and watched for five minutes.

(Laughter) Every day after closing, we had to wipe off all the hand marks on the underside of the artwork.

There's one last thing I want to show you

It's about Charles Darwin

this is a picture i took recently

It's not a cat, it's an insect in a box.

This is a stink bug that Charles Darwin collected from Australia on his Beagle in 1836.

I took it home and stared at it in the kitchen for about 20 minutes.

I couldn't believe I was holding this beautiful insect.

I thought this was proof that the plan had come true.

The museum took a risk and entrusted me with the specimen, which is proof of the non-consumable value of my photographs.

this is the picture i took

When I see this, I think, what would Darwin think of this picture?

Will he like this stinkbug photo?

I hope so. (Cheers) Sometimes it feels strange.

I'm a visual creator, but it still takes a child's eyes to find a particular subject.

because it was actually

At this point, I have to say thank you to Sebastian, for which I am deeply grateful.

thank you

(Cheers)

More than 100 years ago, in 1915, Einstein published his general theory of relativity, which has a rather odd name, but is a theory that explains gravity.

The theory is that the mass of any object or planet itself attracts other masses, not because of the momentary gravitational force that Newton proposed, but because all objects, including humans and planets, cause distortions in the flexible fabric of space-time.

Space-time is the place in which we live and the framework that makes everything relate to each other.

It's like when you lie on a mattress, it distorts its shape.

Things with mass move—not because they obey Newton's laws, but because space-time is distorted and moves along slightly curved surfaces, like your bedmate cuddling up to you when your mattress sinks.

(Laughter) A year later, in 1916, Einstein came up with his theory that gravitational waves exist, and that gravitational waves are produced when something with mass moves, for example, when two stars orbit each other and take the energy out of the system, creating a distortion of space-time that causes the stars to move closer together.

But he also thought that this effect was so small that it would never be measured.

What I'm going to tell you is how we've been working in many countries -- hundreds of scientists, decades of work -- and very recently, in 2015, we got to see gravitational waves for the first time.

It's a long story

begins 1.3 billion years ago

Once upon a time in a galaxy far, far away... (Laughter) Two black holes were orbiting each other, and they were "dancing the tango."

Slow at first, but as they emitted gravitational waves, they got closer to each other, picked up speed, and when they began to orbit at almost the speed of light, they coalesced into a single black hole that was 60 times the mass of the Sun, crammed into 360 square kilometers of space.

It's the size of Louisiana where I live It's the size of Louisiana where I live

This amazing effect created gravitational waves that carried the message of the galactic "embrace" throughout the universe.

It took us a long time to develop a method to detect the effects of gravitational waves, because we use a method that detects changes in distance, because we use methods that detect changes in distance.

to measure vertical distance

When the gravitational waves passed the Earth in 2015 When the gravitational waves passed the Earth in 2015, it affected every distance, the distance between you and each other, the distance between you and me, our height, every single one of us stretched and shrunk just a little bit.

The prediction was that the effect was proportional to the distance.

It's so small that it has negligible effect at distances much greater than my height.

For example, the distance between the Earth and the Sun only changed by about the diameter of one atom.

How can it be measured?

How should I measure it?

Fifty years ago, visionary physicists at Caltech and MIT, Kip Thorne, Ronald Draver, and Rainer Weiss, thought they could use lasers to measure the distance between mirrors several kilometers apart.

Over the years, many scientists have researched and developed techniques and ideas.

And 20 years from now, almost 30 years from now, they started building two gravitational wave detectors in America -- the interferometric gravitational wave detector in America.

Each is four kilometers long, one in the beautiful woods of Livingston, Louisiana, and the other in Hanford, Washington, in the middle of the desert.

An interferometric gravitational-wave detector has a laser that travels four kilometers through the vacuum from the center of the facility, then reflects off a mirror and comes back.

Measure the distance difference between two arms Measure the distance difference between two arms

These detectors are extremely sensitive, they are the most accurate instruments in the world.

why did you make two

The signal we want to measure is coming from space, but apart from that, the mirror is constantly moving, so we need to distinguish the astrophysical effect -- the effect of gravitational waves -- which should show up on both detectors, so it can only appear on one detector or the other.

In September of 2015, we were in the process of installing our second-generation detectors, and at that time we still hadn't reached the optimal sensitivity we were looking for.

I didn't expect to find anything, but I was ready to collect several months' worth of data.

then we were naturally amazed

On September 14, 2015, both detectors detected gravitational waves.

Both detectors were observed to repeat, increasing and decreasing amplitude and frequency.

Both detectors observed the same

it was a gravitational wave

Not only that, but when we analyzed the shape of this wave, we found that it was the result of a coalescence of black holes more than a billion years ago.

It's -- (Applause) I'm impressed.

We couldn't believe it at first

We were all surprised because we never imagined we would be able to detect it so quickly.

It took me months to confirm that this was a genuine signal, because I didn't want to leave any room for the possibility that it was a mistake.

But it was real. As if to clear the suspicion, the detector picked up a similar signal in December of this year, and it saw a gravitational wave that was smaller than the first one.

The first gravitational waves caused changes in the size of 1/4000 of a proton over a distance of four kilometers.

Yes, the signal we picked up a second time was even weaker, but by our standards, it was plausible.

In reality, these signals aren't sound waves, they're ripples in space-time, but I'd like to have these signals blare speakers.

We call this "cosmic music."

the first two notes

Listen to me (sounds like birdsong) (sounds like birdsong) The second short sound was made by the two black holes in their final moments, and within that moment they released an enormous amount of energy, a huge amount of energy that is equivalent to the mass of three suns converted according to that famous formula: E = mc2.

Remember this?

I want to start dancing to this beloved music

let's listen again

(sounds like birdsong) (sounds like birdsong) This is cosmic music!

(Applause) People started asking me, "What are gravitational waves good for?

Now that you've found it, is there anything left to discover?"

What are gravitational waves useful for?

When I asked Borges, "What is poetry good for?"

He asked back, "What is the dawn good for?

What are caresses for?

What is the smell of coffee for? ”

His answer was, "The purpose of poetry is joy. It's for feeling. It's for living."

There's a parallel between this and understanding the universe, the human curiosity to know how the world works.

From unrecorded antiquity, humans, when we were all children, looked up at the sky for the first time and saw the stars and wondered, "What are stars?"

curiosity is human

that's science

Gravitational waves now have a purpose Gravitational waves now have a purpose because we have a new way to explore the universe

Until now, we've only seen starlight through electromagnetic waves.

But now we can hear cosmic sounds that don't emit light, like gravitational waves.

(Applause) Thank you.

(Applause) But is this going to do anything?

Could gravitational waves lead to new technologies?

maybe you can

but it will take time

We've developed technology to detect gravitational waves, but it may be 100 years before we find a way to use the waves themselves.

It takes time to turn science into technology, and that's not our goal.

All technology comes from science, but we do science because it's fun, we do science because it's fun.

What is left after this?

a lot of things

this is just the beginning

The more sensitive our detectors are, the more work we'll have to do. We'll find new black holes, and we'll be able to make a list and keep track of how many of them there are, where they're located, how big they are, and we'll be able to observe different types of objects.

where neutron stars merge to form a black hole

will be able to witness

In our galaxy, we could observe two stars orbiting each other emitting a sine wave.

We may even be able to observe supernova explosions in our galaxy.

We'll be able to observe all kinds of astronomical phenomena that were previously unknown.

We think that the human body seems to have acquired another new sense, the ability to hear in addition to seeing.

This is a revolution in astronomy, like when Galileo invented the telescope,

It's kind of like when you add sound to a silent movie.

this is just the beginning

I think that the journey of science is very long, fun, but really long, and it's like we're building a highway to space, with researchers of many different nationalities from this international community of scientists working together as a team, blazing a path, lighting this path, sometimes taking detours.

thank you

(applause)

Billy Pilgrim couldn't sleep because he knew in an hour he would be abducted by aliens.

He knows the aliens are coming because he's been "unleashed" in time and has become a time traveler.

In Kurt Vonnegut's "Slaughterhouse 5," Billy travels back and forth between his boyhood trips to the Grand Canyon, his midlife career as an optometrist, his imprisonment in an intergalactic zoo, and the humiliation he endured as a prisoner of war.

The title and content of "Slaughterhouse 5" is based on Vonnegut's own experiences during World War II.

Imprisoned as a prisoner of war in the former Slaughterhouse of Dresden, he took refuge in an underground bunker when Allied forces bombed the city.

When I finally made it to the surface with my fellow POWs, the city of Dresden was in ruins.

After the war, Vonnegut tried to understand human behavior by studying the eccentric side of cultural anthropology, and he insisted that the shape of the story should be interesting, like the shape of a vase or an arrowhead.

To find that shape, I graphed the fate of the protagonist from the beginning to the end of the story.

This strange wave he created represents fairy tales and myths that are common in many cultures.

But this may be the most interesting form

In a story like this, it's impossible to tell if the characters are lucky or unlucky.

Vonnegut thought stories like this were the most faithful representations of real life, in which we are all victims of a series of chance events, and it's impossible to predict the long-term effects of chance events.

Finding a satisfying arc in which many surreal stories are juxtaposed, he decided to explore the ambiguity between good and bad luck in his work.

Vonnegut threw away a clearly unfolding destiny and abandoned even simple chronological descriptions.

Instead of telling the story in order from beginning to end, he decided that "any time - past, present, future - always exists and continues to exist."

To them, "the sky is full of thin, glowing spaghetti because they know where every star has been and where it's going."

Tralfamadorians lack the power to change things and are calm, but humans struggle to do something about it.

In "Spirit of the Titans," they search the vastness of the universe for meaning in life, only to find "an empty heroism, a vulgar farce, a meaningless death." From a vantage point within the "time-curvature funnel," a man and his dog learn of the dire fate of their home planet, but they can't change it.

There's no easy answer, but he gradually comes to believe that the purpose of life is to love everyone in order to be loved.In "The Cat's Cradle," the characters turn to another meaning: Bokononism, a religion whose doctrine is harmless lies that all of its followers recognize as lies.

Even though the believers are aware of the lies of Bokononism, by living a life based on these doctrines, they will lead to their true hope, even if only slightly.

They join an endlessly connected group of people with a common purpose, called Kalas, who seem to be random but are actually chosen.

This clearly distinguishes it from Granfaloon, a group of people who are bound together by the same hometown, political affiliation, nationality, and other meaningless ties.

Although Vonnegut despaired of the human condition, he was a firm believer that people can help each other achieve anything.

It may be disgusting and depressing, but Vonnegut leaves behind not just a grim view, but more than a glimmer of hope.

Kilgore Trout, the alternate persona he created, describes two yeasts as "consuming sugar and choking on their own gases, debating the meaning of life.

Yeast's wisdom is so limited that it's hard to imagine that we're making champagne." Although humans are all idle beings and worry about the fate of human existence, Vonnegut never gave up hope, albeit faintly, that humans would eventually produce good things.

If this is not happiness, what is it?

When I got my phone, I accidentally became a celebrity

(Laughter) I was just talking about my interests, one click, one inflammatory viral video, and overnight stardom.

"Overnight" is literally what I meant when I woke up the next morning with a ton of notifications on my phone and thought I had overslept, oblivious to the national tragedy.

(Laughter) To my surprise, my influence and name recognition literally skyrocketed.

So I made more videos, the subject of my video is one of the most divisive subjects in American life, and I've been criticized online for being outspoken about racial issues.

I myself was the victim of police violence, and my childhood friend Alonzo Ashley died at the hands of the police, so I just wanted to say something.

This was in the middle of the "Black Lives Matter" human rights turmoil, and I felt like people were looking to me to get their point across, and honestly, I was a little overwhelmed.

The Internet has an interesting property

In a way, the world was completely connected, and my childhood memories were peppered with utopian propaganda that made me wonder just how much the world wide web could expand the reach of people on the planet.

But in the end I found out that people are people

(Laughter) This magical highway, on the other hand, captured the demons of humanity and gave them a Ferrari.

(Laughter) Technology is a lot like money.

Draw out and amplify what is already inside a person

So I quickly encountered a phenomenon called "net trolls."

They're living under the magic highway overpass. (Laughter) They don't care about internet age enlightenment.

I'll never forget Using the anonymity of the internet as a cover, I was called by people who advocated white supremacy with all sorts of racist words.

Some of them were pretty creative, but others were pretty aggressive, especially when I was traumatized as a victim of police brutality, in the heat of the Black Lives Matter movement, and my timeline was full of police victims.

I'm not human to internet trolls

Thoughts and objects were caricatures

It's true that racial issues are fraught with discord.

I'm an innately curious person, and I just drew my sword and tried to fight the epic battles in the comments section.

These supposed idiots were engaged in what seemed to be their own ideas, but I thought, as far as I know, they're terribly mistaken.

Where are you getting this argument from?

Do alternative facts exist in some alternative world?

(Laughter) (Applause) Isn't there history and gravity there by default?

I wanted to know if I really didn't know

As it turns out, I didn't understand the internet's echo chamber phenomenon.

Using the same algorithm of target marketing, we distribute more and more information about products that people are likely to buy, and more and more news that they seem to have heard.

The online space I lived in was just a reflection of my worldview.

my timeline was pretty liberal

Breitbart, InfoWars, FOX News, etc. No right-wing news

All the news from MSNBC, Daily Show, CNN, theGrio

But the trolls cross the dimensional door How the hell did they do it? !

(Laughter) So I decided to trick Facebook's algorithms into publishing news that I didn't necessarily agree with. This worked for a while, but it wasn't enough, because my online history had already established a pattern of what I liked.

So, using the anonymity of the internet, I embarked on an undercover investigation.

(Laughter) I messed up by creating a fake profile.

On a practical level it was easy, but emotionally it was a bit tough, especially being exposed to vile racist remarks.

But I don't think I would have reacted like this a few months ago, when trolls were vaccinated and I was getting thicker and immune to opinions I didn't necessarily agree with.

kept going there

Realizing that it could be applied to YouTube, I made up an ID, white supremacist Lucious25 (Laughter), and began an online infiltration of the infamous alt-right movement.

My alter ego is E.R. Burroughs' character John Carter (Laughter) former Confederate sci-fi hero.

In the old days, acting training, special makeup, and fake IDs would have been necessary.

Now all I have to do is infiltrate the net

Starting with InfoWars from the Trump administration, it branched out from the white nationalist American Renaissance to sites like the National Vanguard Alliance, and started commenting on videos, criticizing human rights activist Al Sharpton and black protesters.

I mirrored the anti-black sentiment directed at me by lamenting Eric Holder and Obama for racism.

It was exhilarating to tell you the truth

(Laughter) I spent days clicking through new racist profiles.

(Laughter) I've also looked at the pages of people who have been vandalized before, and many of them are just normal people: outdoor enthusiasts, hunters, computer geeks, fathers who post family videos.

You might be lurking in this venue too, right?

(Laughter) As a result of my undercover investigations, I've learned about a lot of different people, such as Milo Yiannopoulos, Richard Spencer, David Duke.

They were all thought leaders in their own right, but in time the alt-right used their information to fuel their own movement.

What else has fueled the alt-right movement is the left's sweeping assumption that white men are evil.

Fair-skinned penis holders are devils!

(Laughter) Can you believe that some people find this offensive?

And -- (Laughter) I mean -- in fact, millennials are learning the low-calorie version of history for the rest of their lives.

In other words, America is desperately trying to get away with the darker parts of history with simplified textbooks.

It's an act of taking racial issues and the anger that accompanies them out of context, making it fertile ground for alternative facts to flourish.

Add in a rough internet environment, and it's easy to sell a rehash of "Mein Kampf" to a generation of public school dropouts.

Many of these ideas can be easily disproved

Alternative facts are of the nature that

But one message hidden in all these arguments has been to me, "Why should I be hated for something that I was born with and cannot change?"

That resonated with me as a black man in America.

I've fought back for years against attacks that try to demonize me, against attacks that make me feel indebted for being who I am, by calling me a badass or a gangster who isn't who I really am, an enemy of society.

Unexpected sympathy!

Wow!

It's true—the historical trajectories of how black men and white men became demonized are very different.

That's why everyone will be surprised at this kind of view I'm surprised too

I thought I'd never sympathize with those who really hated me

Even if I sympathize, it's not like I want to be friends

I don't want to see black people

But I can sympathize with how you arrived at that idea.

To be honest, some points made sense.

One of them is that liberals are inclusive of everyone, except those with conservative views.

(Laughs) No faith or patriotism! right?

The other thing they talk about is a kind of fear, what they call the genocide of white people - they fear that the push for diversity will be the driving force behind wiping out white people.

I know you're worried about the fate of your race

Drugs, AIDS, gang fights, mass incarceration, evictions, police shootings, black people have so much anxiety that they can't sleep at night.

But diversity is the law of nature, and if you try to resist it, you have no chance of winning.

(Laughter) (Applause) Nature doesn't care about race, race is a man-made concept.

Nature cares about healthy organisms, and for that purpose it doesn't care about racial traits.

If you forget about racism and regain your humanity, the problem will be solved in no time

(Applause) There are races that will never go extinct.

The water here is not good

Rising water temperatures are also a problem... but that's another TED Talk

(Laughter) To reach this far, you have to put an end to fear and be curious. Sadly, many people don't venture to see the world from the other side.

And honestly, it's not just progressives, it's the same with right-wingers and conservatives.

Some of the issues are legitimate, but they're still trapped in a world that echoes in their own voice, reusing outdated views, refusing to consider diversity, refusing to embrace an inclusive worldview.

They don't listen to specific anti-racism or political views like Tim Wise, Michelle Alexander, Joy DeGruy, Boyce Watkins, Tariq Nasheed.

Activists' voices are the answers to the questions they ask, but unfortunately they are overwhelmed by the echoes of their own voices, and their voices are not heard.

We must overcome conflicts in the digital world, because as technology advances, the consequences of exclusivism become more dangerous.

What I've learned from this whole experience is that machines won't save us.

High-tech devices can only control the external world, not the internal world.

Only IQ and no Emotional Quotient

dangerous imbalance

Where does emotional intelligence come from? Virtues such as character building, patience, perseverance, and compassion? These virtues ensure that even the most advanced devices bring benefits, not calamities.

It seems to me that humanity itself needs an upgrade.

(Applause) It's a difficult task, of course, but I don't think there's a monster you can't beat.

Every giant has an Achilles tendon

I think the best way to overcome this problem is to have the courage to have conversations with difficult people, people who see things differently than you do.

Yes, conversation may just be the key to the upgrade, because language was the first virtual reality.

Language is literally a symbolic representation of the physical world, and with the device of language we transform the physical world.

Remember, conversations stop violence Conversations start nations Conversation builds bridges And when it comes down to it Conversation is the last resort mankind has before guns are in their hands

I'm definitely not talking about safe online conversations that you join from your computer.

I'm talking about face-to-face conversations with real people.

To me, it's just like running Shop Talk Live, a community forum.

Are there any experienced participants at the venue?

Shop Talk Live has life-changing conversations

Go out into the community to check gang fights in real time, help find jobs, and nurture homeless youth.

The reason this is necessary is because within the black community, there was a lack of trust left over from the violence of the cocaine epidemic.

I had to take the initiative and solve the problem without relying on others.

From the mayor to the criminals, they all go to that barber shop, it's true

We were just organizing what was already happening.

What I've started doing is digging out alternative opinions from the alternative digital universe, deconstructing them, analyzing them, and turning them into focal points for discussion.

So I decided to use my phone to rummage through the internet, and I streamed these conversations live to my followers.

Inspired by that, they left the safety of their computers and came to have a direct conversation with us, real, flesh-and-blood people.

thank you

(Applause) Sometimes I wonder about the paradox that we're trying to solve our own problems within our communities.

It's time to stop the exchange of simulated experiences.

can't avoid each other

stop looking for escape

(Applause) You gotta understand this

We all want the same things, we have to get along with each other to get them

Build a bridge with courageous conversation

It's time to start seeing people as people. Let's stop seeing certain concepts as projections and rejecting them.

Humans are not barriers, they are gateways to what they seek

This is a collective, conscious evolution

My journey began with a popular video and the death of a friend.

Your Journey Starts Here

Join us in regenerating human connections

It's about moving on with or without you

My suggestion is to pick a topic, start a community dialogue, and get back to reality.

to meet people around me

All I can say is that if you cheat the algorithms of your existence, you can experience diversity.

Let's grow up, everyone

If you do it without saying what if, you'll know that the key to this upgrade has always existed in our inner world, not in the devices we make Now is the gateway to experience it, let's all stay connected

thank you

(applause)

What are you going to do on this stage? In front of many people-

(laughs) Run away!

(Laughter) Get away now.

Anxiety speaks to an inner voice

Even when there's nothing wrong with me, sometimes I have this overwhelming sense of doom, as if danger was just around the corner.

So a few years ago, I was diagnosed with generalized anxiety disorder and depression, and these two symptoms often come together.

There was a time when I didn't tell anyone about it, especially in front of a lot of people-

To succeed as a black woman, I had to develop extraordinary perseverance.

Like others in my community, I had the misconception that depression was a sign of weakness and character flaws.

I was not weak I did things well

I got a master's degree in media studies and did a string of high-profile jobs in the film and television industry.

He won two Emmy Awards for his hard work.

Of course, I was exhausted. I lost interest in the things I used to enjoy. I had very little appetite. I suffered from insomnia.

But depressed?

No, I can't-

It took me weeks to admit it, but my doctor was right, I was depressed.

I hadn't told anyone about the diagnosis yet.

I was so embarrassed

I thought I couldn't be depressed

He had a successful career and lived a privileged life with his beloved family.

The shame deepened as I realized that I was in a better situation than the unspeakable terror that my ancestors experienced in this country.

Because I respected the achievements of my predecessors

i can't let them down

I looked up and smiled and didn't tell anyone

July 4, 2013 My world crashed

That same day, my mother called me to tell me that my 22-year-old nephew, Paul, had taken his own life after battling depression and anxiety for several years.

The feeling of being overwhelmed at that time cannot be expressed in words.

We were very close, but I didn't know his suffering.

We never shared our suffering with each other.

The idea of ​​shame and stigma brought silence on both sides.

When I'm in trouble, I face it head-on.I spent the next two years researching depression and anxiety disorders, and I found something amazing.

The WHO reports that depression is a leading cause of disease and disability worldwide.

Although the exact cause of depression is not clear, research suggests that most mental illnesses are at least partly due to chemical imbalances in the brain and/or genetic factors.

That's why I can't shake it off easily

For black Americans, stressors such as racism and socioeconomic imbalances increase the risk of developing mental illness by 20 percent, yet only about half as many black Americans seek mental health care as white Americans.

One reason is stigma: 63 percent of black people mistake depression for weakness.

Unfortunately, black child suicide rates have doubled in the last 20 years.

Now, the good news is that 70 percent of people who suffer from depression say their symptoms improve with therapy, treatment, and medication.

After hearing this information, I made a decision to stop being silent.

With the encouragement of my family, I would like to share our story in the hope that it will spark a nationwide dialogue.

My friend Kerry Pierre-Lewis said, "Trying to be strong wears you out."

she's right

We must move away from the boring, archaic notion of strong black women and hyper-masculine black men.

Having feelings is not a sign of weakness

Emotions are what make us human

When we deny our humanity, we're left with a void inside, and we seek medicine to fill that void.

My medicine was to do things well.

These days, I'm telling my story openly, and I'm hearing from other people.

I believe that by doing so, I can help those who are suffering alone, and let them know that they are not alone in their suffering, and that with help, they can heal.

Now, I'm still having symptoms, especially with an anxiety disorder, but I've managed to stay normal with daily meditation, yoga, and a relatively healthy diet.

(Laughter) When I feel like things are starting to go wrong, I make an appointment with my therapist. Dawn Armstrong, an energetic black woman.

I always regret not being able to take my nephew there.

But my sincere desire is to give hope to others from what I have learned.

life is wonderful

It can be uncomfortable at times, and it's always unpredictable.

But as long as you have a system to support you all the way, everything will be fine.

If your burden becomes too heavy, please ask for a helping hand.

thank you

(applause)

I'm going to start today with a story and end with a revolution.

(laughs) Are you ready?

Crowd: Yes!

Let's start with the story

I've always dreamed of being an actress

From a very young age, I felt the magical power of stories and wanted to be involved in them.

So when I turned 21 and graduated from drama school in New York, I was full of hope and ready to be the next Meryl Streep.

The photo is of my grandmother, not Meryl.

(Laughter) The important background to this story is that my parents were staunch feminists.

For example, when I was five or six years old, I was hooked on the Sound of Music, and I was running around and singing the song, "I'm almost 17," almost every day.

I'm not saying you shouldn't sing that song, but if you do, I want you to understand just how sexist that song is."

(Laughter) I grew up in a family like that.

So to be honest, I never thought that being a woman would get in the way of what I wanted to do.

I graduated from school

I started auditioning, and little by little I got the job.

But I started to realize that all the female roles were terrible.

I became an actress to play smart, free, deep, funny, complex, confident women.

like merrill

And then suddenly, I found myself competing with 300 other gorgeous, talented actresses for this role.

"[Woman] No lines

The actors just stand on the balcony and come back into the house looking lonely

Only partial nudity

(Laughter) "[Sarah] Brian's crush

Attractive, cute, and suggestive, she's the ideal girl that Brian pursues throughout the story."

"[Mother] A beautiful native Southern woman who believes her only purpose in life is to serve her husband."

"[Abby] has a non-explicit gang rape scene and also does a 19th century dance."

(Laughter) These are actual casting descriptions.

I told my agent one day, "I don't feel like I'm getting a role that I can enjoy playing."

And he said, "Yeah, I don't know what to do

You're too smart to play the role of a woman in her twenties, and you're not pretty enough to play a sexy role.

(laughs) "That's surprising.

When I turned 35, I thought I'd passed the peak as an actress and was just playing roles like the mother of a 20-year-old child."

He said, "Yeah (Laughter) because that's how it is."

About a year later, when I had lunch with an actress friend, we started talking about how strange this situation was.

We decided, better yet, to make our own movie.

I decided to draw two complicated women.

executed

For the production of the film, it just so happened that an all-female production team was put together.

Not long after that, I was told in the office of a famous male producer,

"You guys know that one day we're going to have to have a male producer on the team, right?

So that everyone can entrust their money to you with peace of mind."

People said to me over and over again, "People aren't that interested in movies about women. Why don't you make something else?

Because that's what it is."

But I made the movie anyway

In the end, we scraped together $80,000 to make a movie that did very well.

I was invited to various film festivals, won many prizes, and was thrilled by the impact.

But the experience of discrimination against women kept me stuck.

So we started talking about it, starting with question-and-answer sessions after film screenings, and then gradually being invited to be panelists at conferences.

First and foremost, what really surprised me was that when I told this story to the audience, to people coming into the film industry, everyone was like, "This is terrible! What should we do?"

But when I had a big meeting to attend, an Academy Award nominee said out of the blue, "I agree with everything you say.

You should be really careful where you say it."

Also, one female producer said that using the female trump card was not a good idea.

because that's how it is

So in 2016, isn't there still sexism going on?

Most of the time, sexism happens casually, sometimes even unconsciously.

Sexism happens by trying to fit in with the existing system.

It may come from a genuine desire to teach young women that the world is the way it is.

The problem is that if we don't do something about the status quo, the world will stay like this forever.

then why this problem

Do I have to think about it?

It doesn't matter if I don't get a job or if you watch Transformers 17.

(Laughter) Think about it, the year "Jaws" came out, Americans suddenly started picking sharks as their top 10 most scary things.

In 1995, BMW paid $3 million to the James Bond series to replace the Aston Martin with the BMW Z3.

That alone got a lot of people to buy the car, and BMW made $240 million in pre-sales alone.

In the year "Merida and the Horror Forest" and "The Hunger Games" were released, the number of women doing archery increased by 105 percent.

(Laughter) Studies show that the movies you watch don't just affect your tastes, they affect your career choices, your emotions, your sense of identity, your relationships, your mental state, even your marital status.

Think about it, if most of the movies you've ever seen were American movies, 95 percent of the movies you've seen were directed by men.

About 80 to 90 percent of the time, the movies you've seen have male protagonists.

In the last five years alone, 55 percent of the women you see in movies are either naked or bare.

the movie is everyone

affect society as a whole

In fact, this situation is so prevalent that we can't even imagine the extent of its impact.

Storytelling -- movies are the modern version of storytelling -- is not just entertainment.

It's a mechanism for learning how to live.

It's a place to understand the world and where you stand in it.

It is a place to cultivate the ability to empathize with people who have had experiences different from your own.

But now, these experiences are created from only one perspective.

There's nothing wrong with that perspective, but aren't we entitled to see other things as well?

How would the world change if stories were told from different perspectives?

what should we do?

For many of you, this is probably the first time you've heard this, but over the years in the film industry, many people have been speaking and doing panels and writing and doing research much longer than I have, and they've been crying out for Hollywood to do better.

I literally cried

Yet according to recent schedules from Paramount and Fox, none of the 47 films coming out through 2018 will be directed by a woman.

I began to think that waiting for Hollywood's conscience to spring up was not a good idea.

It seems that for the few in power, the people who hold all the money, all the power, all the resources, it's not fun to let them go.

Asking them won't change it, screaming is useless

A revolution is needed to bring about change

Please don't worry, I promise you the death toll here today should be pretty low.

(Laughter) So before I give you my four-point plan for the revolution -- yes, I have a four-point plan -- I'd like to give you two nice and important pieces of news.

Good news number one: female filmmakers do exist.

(applause) That would be great!

(Applause) It's real!

The male to female ratio at film school graduation is actually 50/50.

Women make up 50% of graduates

Unfortunately, only 18 percent of low-budget films, even very small films, are directed by women.

It drops even further to 12 percent for the larger films, indie films with budgets of $1 million to $5 million.

That's only 5% of Hollywood movie size.

I'm sure some of you saw this and thought to yourself, "Aren't women just not cut out to be filmmakers?"

it's not a funny question

Because you want to believe that the movie industry is a meritocracy.

Hahahaha (laughs) But look at this transition

Do you accept that women are only 5% as capable as men? - I don't think so, or do you perceive that there are serious structural problems that hinder women's empowerment?

But luckily, women aren't zero, and there's a lot of untapped potential here.

Good news number two, this is really good news. Women's films about women do well at the box office.

That's right! It's true!

(Applause) It's true.

A recent Washington Post study found that films about women earn 23 cents more on the dollar than those that don't.

In addition, my colleagues and I commissioned a study to look at 1,700 films made in the last five years and look at the average return on investment, how much money a film makes, for each role played by a man and a woman, for directing, producing, writing, and starring.

Across all roles, women have a higher return on investment.

In fact, 51 percent of movie ticket buyers are women.

Women's films made by women do well at the box office.

And of course there must be more than a few men who like women. (Laughter) "Women's films" aren't just for women.

Yet Hollywood classifies only 18 percent of all films as "women's films."

So it's not meeting the needs of a very large audience and has untapped monetization potential.

female creators do exist

I have so many stories to tell

There are people who want to see it, even if they say a lot about it.

The root of all evil -- let's call it "Hollywood." (Laughter) Just kidding.

So I'm going to share with you a four-point plan for revolution, and we need your help, men and women, in this room, and all over the world.

This isn't just a revolution for women.

The same principle applies to those who have been disenfranchised, or who have been unable to tell the stories they want to tell.

4 items plan

Number one: watch a movie

A good revolution, right?

(Laughter) First of all, I want to say to those who watch the movie.

Who watches movies in this place?

wonderful!

Would you like to watch one movie a month made by a woman?

first of all it's okay

If you don't know which movie you're looking for, search moviesbyher.com, an easy-to-find database of movies made by women.

And when you watch a movie, watch carefully about the female characters.

How many women will appear?

what are you wearing

Or are you not wearing it?

Is it a cool role? Are you just there to support men emotionally?

Once you start worrying about this, you can't ignore it

And once you realize it, your viewing habits change.

And that opens up an already big enough market.

Second: make a movie

To all the women involved in filmmaking, we need your great courage.

It's harder for you to make movies than it is for men.

In fact, the entire industry will constantly downplay your story.

But I want you to make it without hesitation

Only 18% of low-budget films are women Let's change this demographic

waiting for someone's permission

Don't wait for someone to find you, because 95% of people don't want to find it.

crowdfunding or

Writing a letter to a stranger relative

It's a painful way to go, but now you need to make feature films, not short films.

There's an audience waiting for your movie.

Third: Invest in each other

Women in filmmaking, why don't you stop wasting your energy on a system that doesn't need us?

We need to find our audience and invest in growing our audience.

If we can find a way to make a movie and get it to an audience that wants to see it, it's ours.

It's that kind of game

Systems in between become less important.

Audience please invest in us

Help me make the movies you want to see

For example, if you could crowdfund a female creator with $25, that would be great.

More serious investment, if you can help us get over the million dollar barrier, please do.

Invest in the other half of the untold story

Fourth: Make a change in your business

business people entrepreneurs

This doesn't happen very often in the world, but right now we're in a unique situation where you can make a big social difference and make a profit.

It's time for the Hollywood system to collapse.

The old way of funding and distribution is crumbling. Please join us and break it down.

give an example

Now I'm launching The 51 Fund with some amazing women.

A venture capital firm that finances films written, directed and directed by women, targeting between $1 million and $5 million.

We're trying to give millions of female filmmakers the opportunity to make films and bring them to audiences who are waiting.

It's about being both for social equality and for business.

But this is just one example

there is more room for change

So let me tell you, Hollywood is missing out on a lucrative opportunity.

please come and grab me

(Applause) It may seem like a big deal, but it's actually quite doable.

An entrenched system doesn't change by asking who's responsible for it. Change happens when everyone who doesn't get what they want stands up.

don't you want to try?

I'd love to see how the 51% of people who watch the movie react.

I would love to see a movie that teaches me about people who are different from me.

I'd love to see a movie about the imperfect female body.

I want to give boys the opportunity to empathize with female roles and grow into better people.

And most of all, I want to show girls, who may not have role models in real life, a movie about women who can do whatever they want to make their dreams come true.

This is not about making one industry better.

It's about making the world a better place

Can you help me?

the wait is over

The revolution is about to begin

(Applause)

A few months ago, I was in a traffic jam while visiting this city in East Africa.

A saleswoman with an alphabet chart, half visible, suddenly approached the train window.

When I looked at the alphabet chart, I thought of my daughter, and I thought it would be cool to spread it out on the floor, so she could learn the alphabet while playing with me.

When the car started to move a little bit, I bought a quick part and the car moved on.

When I unfolded the alphabet chart and looked at the details, I realized that this was not something my daughter could use to learn.

regretted buying

Why you ask?

When I was looking at the alphabet chart, I realized the fact that the curriculum in Africa hasn't changed for a long time.

I learned from a similar alphabet chart decades ago.

Thanks for all the years of hard work

It's a struggle to reconcile the reality of my surroundings with what I learned formally in my school.

I had an identity crisis

look down on the reality around you

Looking back at my ancestors, I looked down on even my own lineage.

I felt like I couldn't stand what life was throwing at me.

Why you ask?

"A is for apple"

"A is Apple's A"

"A is Apple's A." It's for kids in countries where apples are plentiful, and you're in your lunchbox, and you go to the grocery store with your mom, and you see red, green, yellow, apples of all colors, shapes, and sizes.

There, the introduction of alphabet charts like this into a child's education fulfills one of its primary roles, which is to develop learners' curiosity to make sense of what's around them and add more value to them.

I grew up in Africa, but apples were exotic fruits.

Two or three times a year it was edible, but it was yellowish with brown spots, meaning it had been transported thousands of miles and stored in warehouses.

I was raised in the city by very well-off parents, so my day-to-day reality is dignified, but for apples not to be considered a part of it is no more than cassava fufu and ugali don't grace the tables of Americans, Chinese and Indians as part of their regular diet.

So by bringing "A is Apple's A" into education, education became abstract for me.

It was something that was beyond my reach. It was a foreign concept, and if I had to constantly and continuously check that the phenomena being dealt with corresponded to the attribution of the phenomena, I would not be able to make any progress using the subject matter.

It was hard for the child, but it would be hard for anyone.

As I grew up and learned more and more, the reality around me became more and more disconnected from my education.

In history class, we learned that Scottish explorer Mungo Park discovered the Niger River.

that annoyed me

My great-great-grandparents grew up right by the Niger River.

(Laughter) Somebody traveled thousands of miles from Europe to discover a river right at their doorstep?

(laughs) No!

(Applause, cheers) What do you think your ancestors were doing then?

(Laughter) Did you play board games, bake yams, and fight tribal wars?

What I'm trying to say is that the purpose of my education was to go somewhere else, gain experience there, and use it there.

I realized it was useless where I grew up.

This state continued

During my studies in Africa, my view of education was mostly like this.

Through experiencing and learning so much, my way of thinking began to change.

I'd like to share with you a couple of great things that I've learned.

During my PhD in Washington, D.C., I worked as a consultant for the World Bank Africa region.

One day, I was having a conversation with my boss about a project, and he mentioned a World Bank project about a large, multi-million dollar, failed irrigation project in the Republic of Niger.

I explained that this project would be difficult to sustain, and that it was bothering the people who came up with the whole plan.

But then he mentioned a project that used traditional irrigation methods with great success in the same Republic of Niger where the World Bank project failed.

this made me think

I did some more research and came across something called Thassa.

Thassa is a traditional irrigation method in which pits 20 to 30 centimeters wide and 20 to 30 centimeters deep are dug all over the cultivated land.

Build a small dam around the cropland and plant seedlings all over the surface of the cropland.

When it rains, water accumulates in the pits, replenishing the water needs of the crops.

Crops can absorb as much water as they need until it's time to harvest.

Seventy-five percent of Niger is covered in scorching desert, a life-or-death environment for plants that has been exploited for hundreds of years.

An experiment was conducted, using two similar plots, one plot without Thassa's method.

Both have similar divisions

On the other plot, we applied the Thassa method.

And I planted the same type of millet seeds in both plots.

At harvest time, 11 kg per hectare were harvested from those who did not apply Tassa.

553 kg per hectare from those who applied Thassa.

(Applause) I turned to this research and my past and said,

"I've been studying agriculture for 12 years, from 1st grade to 3rd grade - in West Africa we call it SS3 or 12th grade.

No one gave me knowledge of traditional African farming and harvesting methods, which should work in this day and age, and in places where Western technology struggles, it does."

That's when I realized the challenge of tackling the African curriculum, and thus began my lifelong quest to explore and study Africa's unique body of knowledge as my life's work.

I heard another story at the World Bank, and I think that's what dictated the direction I was going in. It wasn't very profitable research, but it was exactly what I believed.

One day, my boss told me that he liked going to Africa to negotiate loans from the World Bank and to work on World Bank projects.

I was intrigued and asked him why

He replied, "In Africa, it's easy.

All you have to do is fill out the loan paperwork and the project proposal in Washington, then go to Africa and you're all set.

You can win the most desirable contract terms and come back here.

Even my boss will praise me."

On the other hand, he also said, "I don't want to go to Asia."

I've named one particular country in Asia and a few countries.

"Hold me back to get the best conditions for your country.

and win it

You say, 'This clause doesn't fit our environment.

That's not realistic, it's too Western.' And they say, 'We have enough experts to do it well.

you lack the expertise

We understand our purpose.” Everything goes like this

By the time they're done talking, it's the terms they want, and I'm too exhausted to get the best terms for the World Bank, because it's a business."

"Really?"

I was specially invited to attend a negotiating table in an African country.

Because I was a PhD student, I was entrusted with the role of consultant for the summer.

I left with the World Bank team as part of an administrative assistant.

But when we enter into negotiations

Most of the people there are Westerners from Washington.

On the faces of my fellow Africans across the table

I can see that you are scared

They don't believe they have a bargaining chip against the great-great-great-grandchildren of Mungo Park, the people who invented "A is the A for apples."

They just sit and stare and say, 'Give me the contract, I'll sign it.

you know and you understand everything

where do i sign I'll show it to you quickly and sign it."

I didn't make any claims, I didn't believe in myself

sorry

And I've been doing this for 10 years

I've been researching the African system of knowledge, a true traditional knowledge with its own origins.

Some traditional practices have been implemented in Africa with spectacular success.

Reminds me of Gachacha

Gachacha was applied in Rwanda's traditional court system after the genocide.

When the genocide ended in 1994, Rwanda's national justice system was dysfunctional, with no judges or lawyers to judge hundreds of thousands of genocide cases.

So what the Rwandan government came up with was the revival of the traditional judicial system called gachacha.

Gachacha is a communal court system in which members of a community come together to select men and women of proven integrity to try crimes committed within the community.

By the time Gachacha finished its genocide trial in 2012, there were about 1.2 million cases in 12,000 communities.

it's a record

(Applause) Most importantly, Gachacha emphasized Rwandan's traditional philosophies of reconciliation and reunification.

I don't want to say it's better or worse, I just want to say that it emphasized the lines of Rwanda's traditional philosophies.

Former Tanzanian President Mwalim Julius Nyerere said (Applause) "It is impossible to enlighten the people.

It is up to the people to enlighten themselves," he said.

i think mwalim is right

I can confidently say that further reform and progress in Africa will depend on acknowledging, demonstrating and mainstreaming the traditional, authentic and indigenous knowledge that originated in Africa, in all areas of education, research and policy-making.

It's not going to be an easy road for Africa.

It's not an easy road for someone who has been instructed in how to think, how to act, how to work -- someone who has for many years looked to others for intellectual guidance and direction. Others are colonial rulers, supporting industries, international media outlets.

But progress must be made by ourselves.

I was encouraged by the words of Joseph Shabalala, founder of the South African chorus group Ladysmith Black Mambazo.

"No matter what kind of trials await us, there is nothing we cannot overcome with the power we hide within."

we should be able

You can stop self-deprecating behavior

We can learn to value the reality around us and our own knowledge.

thank you

(Swahili) Thank you very much

(Applause) Thank you, thank you.

(applause)

"Lobham Kubat Bolan" The classical dance of the Khmer dynasty has a history of more than a thousand years.

This dance is a sign of prosperity in an agricultural society, and was born out of prayers for rain and fertility.

Dancers, male and female, were dedicated to temples, bridges between heaven and earth.

The dancing body of the dancer conveyed the people's prayers to the gods, and the will of the gods was conveyed to the people and the land through the dancer's body.

Khmer classical dance has many curves.

Arch your back, bend your knees, lift your toes, bend your elbows as far as you can, and bend your fingers back.

These curves create the impression of a snake, which is very important because, before the introduction of major religions, the Khmer people, and all over the world, believed that everything was inhabited by spirits.

Snakes play an important role in this belief because their supple, flowing movements are reminiscent of flowing water.

So to express the impression of a snake with a dancing body is to express the image of a river flowing through the earth, conjuring the flow of water, the source of life.

So when you think about it, Khmer classical dance is a metamorphosis of nature, both the physical world that surrounds us and the inner world that surrounds us.

Since there are four main hand movements,

Shall we do it together?

Sounds good?

This stands for "tree"

As trees grow, leaves grow

After the leaves grow thick the flowers open After the flowers open the fruits

When the fruit falls, a new tree sprouts

These four movements represent the cycle of life.

Using these four movements, the dancer creates a language in which to express themselves.

So, for example, we usually say "I" with this gesture.

"I"

This is how dance works

"I"

or like this

Saying "You there, come over here"

This is how dance works

"Come over here" or "Go over there"

(laughs) "Go."

can represent anything

love

Sadness, and (stomping) anger, all of these things can be expressed in dance.

There's something magical at work that filters things, transforms them, puts them together, and creates endless possibilities for art.

The root of the Khmer word for art, silapat, means "magic."

Artists, the masculine Shirapakkar and the feminine Shirapakkarani, are practically magicians.

I'm proud to say that I'm part of a lineage of many magicians, including my mentor Sopirin Team Shapiro, the stars of the court who were their teachers, the ancient dancers of the Angkor dynasty, and the ancient villagers who gave rise to the art of dance.

That said, our most important cultural heritage was once on the verge of disappearing.

If you wear glasses, please stand up.

Please stand if you speak more than one language

If you have light skin, please stand.

Wearing glasses meant I could afford treatment.

The second or third language you speak is the mark of an elite education.

Light skin color meant that he didn't have to work in the sun.

Under the Khmer Rouge, who ruled Cambodia from 1975 to 1979, you would have been killed because you were considered privileged.

You see, the Khmer Rouge looked to Cambodia and saw centuries of inequality.

The king and a small elite around him monopolized the world's pleasures and comforts, while the majority endured hard labor and severe poverty.

You don't have to look in a history textbook to see that this is true.

The Khmer word for 'I' or 'myself' is 'Knyom'.

The word can also mean "slave," and the dancer is "kunyom preah lobam," meaning "slave of the sacred dance."

The Khmer Rouge tried to end slavery in Cambodia, turning everyone into slaves in the process.

They have fallen into the very oppression they were trying to end.

They drove people out of the capital and forced them to work in camps.

Families were torn apart, children were brainwashed to go against their parents' ideas.

All over the country, people were dying and being killed for reasons like disease, overwork, the death penalty, and starvation.

As a result, Cambodia lost a third of its total population in less than four years, including 90 percent of the Khmer dancers.

In other words, nine out of 10 people lost their traditions and their way of thinking about the future.

But fortunately, my master's masters -- Chia Sammy and Sotsum Ong Cheng Pong -- sought to revive an art form from the ashes of war and genocide, starting by teaching one disciple one movement, one dance.

We wrote the love, the magic, the beauty, the history and the philosophy of our traditions into the bodies of the next generation.

After nearly 40 years, Khmer classical dance has revived to new heights.

But we're still in a vulnerable environment.

The destruction of war still haunts the Khmer people.

It's etched into our bodies, in the form of post-traumatic stress disorder, the vicious cycle of poverty faced by families, the great cultural rifts, the language barriers.

But beauty is a very strong thing

Beauty can grow anywhere, anywhere, anytime

Beauty connects people beyond time and place.

beauty is freedom from suffering

As Khmer artists reclaimed their homeland and culture, they realized that there were many paths to the future.

Traditions don't reveal much of it.The names of the dancers, who they are, how they live, and what they feel.Let me suggest, with a frank and open mind, that we take a step beyond geun-nyeom.

From Kunyeom as a slave to Kunyeom as a devoted service

Kunyeom "I" "Myself" "Blossoming"

I am Pronsodun Auk

I am Khmer and American.

Children of refugees, creators, healers, and bridge builders.

I was my master's first male apprentice. This tradition has been carried on by many women.I founded Cambodia's first gay dance company.

I embody the beauty, dreams and power of my predecessors.

The past and the present, the future, the individual and the collective, are intertwined.

Please allow me to play a role that is old but never rusts.As a messenger and as an artist, let me tell you in Chen Pong's words, "A garden with only one kind of flower, a garden with only one color of flowers is not good."

These words remind us that our strength, our growth, our survival, our very existence, is made up of diversity.

It's also an encouraging word.

A flower can bloom without anyone's permission

Born to give its existence to the world

I was born with fearless love

thank you

(applause)

I'd like to start by thinking about this device that's in your pocket right now, your smartphone.

Over 40% of Americans check their phones within five minutes of waking up each morning.

Then, during the day, I do another 50 checks.

Adults consider this device a must-have.

But if you imagine this in the hands of a three-year-old, you all get nervous.

Parents are very worried that this machine will interfere with their children's social development, that it will prevent them from getting out of bed and physically active, and that it will ruin their childhood.

I would like to challenge this attitude

I can envision a future where I'm excited to see preschoolers face smartphones.

Smartphones encourage children to be more active

We know more about what kids are learning through smartphones than through standardized tests.

It's a really weird way of thinking, but I believe that the screen of a smartphone has the power to facilitate real-life conversations between children and parents.

I was never the type to defend this claim.

I studied children's literature because I wanted to do something about children and books.

But about 20 years ago, I had an experience that changed my interests.

I help with research studies on preschoolers and websites.

I was put in charge of a three-year-old named Maria.

she had never seen a computer before

I had to teach her how to move the mouse first, and when I opened the screen, she moved the mouse and paused on a character called Owl X.

As she did so, the owl lifted its wings and waved at her.

Maria dropped her mouse, pushed the table aside, jumped up, and frantically waved back at the owl.

The connection between her and the owls was instinctive.

it's not a passive on-screen experience

it was a human experience

It was just like a three-year-old

I've been with PBS Kids for over 15 years, and my work is focused on empowering technology in children's lives.

I think society is missing a big opportunity.

It's the fear and suspicion that we have about these devices that keep us from seeing their potential in our children's lives.

Anxiety about children and technology isn't new, it's been around for a long time.

More than 50 years ago, the new controversial media dominance was television.

It's about that box in the living room.

It might be the thing that separates children from each other.

It may be something that keeps children away from the outside world.

But then Fred Rogers, the longtime host of "Minster Rogers' Neighborhood," persuaded society to see television as an emotional vehicle.

Here's what he did: From the TV, he had conversations as if he were asking each child how they're feeling.

And he took a break, giving the kids time to think.

Now you can see his influence in all media, but at the time it was revolutionary.

It's changed the way we look at television that's relevant to our children's lives.

Today it's not just TV

Children are surrounded by devices.

I'm a parent too, and I understand your anxiety.

But I want to take a look at three common fears that parents have, and look at the opportunities that lie within each of them.

let's go

Anxiety #1: “The screen is a passive object.

Because of that, the children will not move their bodies.

Chris and Martin Kratz are brothers who are zoologists and hosts an animal show called "Wildcratz."

They made a proposal to the PBS team, "Every device has a camera, can we do something with it?"

Can this camera capture the natural play patterns of children imitating animals? ”

The first thing I mentioned was bats

When the kids went inside to play this game, they were overjoyed to see themselves with wings on the screen.

But my favorite part is this part, when the game is over and we erase the image.

the children remain bats

It flies right and left around the room to catch mosquitoes.

The children remembered the important things

Bats fly around at night

And when I went to sleep, I remembered to fold my wings and hang upside down.

This game suddenly made the children move around actively.

Not only that, but when they go outside, they look at the birds and think, "What's the difference between me flying as a bat and how a real bird flies?"

Digital technology has enabled children to have tangible learning experiences that they can apply to the real world.

Anxiety #2: "Playing games on a TV screen is just a waste of time.

Children will stop studying because of games."

Game developers know that they can learn a lot about a player's skill by looking at the backend data. Where did the player pause?

Where did I go wrong before I found the right answer?

The team wanted to apply it to school learning.

A producer at the Boston Public Broadcasting Station created a series of "Curious George" games with a math theme.

Researchers stepped in and had 80 preschoolers play the game.

All 80 of those preschoolers then took a standardized math test.

Early on, we realized that this game could help children develop some important skills.

But my collaborators at UCLA wanted to dig deeper.

Focused on data analysis and assessment of children.

We took back-end data from the game to see if we could use it to predict children's math scores.

We created a neural network, and we fundamentally trained a computer to use this data, and here are the results.

Here are the scores on the children's standardized math tests.

And here are the computer-predicted scores for the children based on the results of the "Curious George" game.

The predictions are surprisingly accurate, especially considering the fact that this game wasn't made for evaluation.

The team that conducted this study believes that games like this are a better predictor of cognitive learning in children than standardized tests.

What if games could reduce the amount of time spent testing in the classroom?

What if a game could relieve students' test anxiety?

How can games give teachers insight to help them focus more on individualized learning?

And the third fear I want to mention is what I often think is my greatest fear.

Here it is: "Screens keep my kids away from me."

Let's look at a scenario

Let's say you're a parent and you don't want to be interrupted for 25 minutes while you prepare dinner.

So you hand your three-year-old a tablet.

Now, this is the moment when you really feel guilty about what you did.

But imagine 20 minutes later, on your phone, which is always in your hand.

You will receive 1 message

It read, "Alex is playing a word game.

Say let's do it together

Can't think of a word with the same rhythm as cat?

how about a ball ”

Our research shows that parents feel pushed when they receive these little cues.

Parents are so excited to play games with their children at the dinner table.

Children will be happy to do it

Not only does it feel magical for parents to know what their kids are playing, but kids love playing games with their parents.

The very act of parents talking to their children about the media can be incredibly powerful.

Last summer, Texas Tech University released a study that found that a show called "Daniel Tiger's Neighborhood" could promote the development of empathy among children.

But there's a very important takeaway from this study, which is that the biggest impact is only when parents talk to their kids about the shows they've seen.

It wasn't enough just to look, it wasn't enough to talk, it was the combination that mattered.

So when I read this study, I started to think that parents of preschoolers actually rarely talk about what their children are playing or watching.

So I decided to try and talk to my four-year-old.

I said, "Were you playing a car game earlier?"

And Benjamin cheerfully says, "Yes! Did you see the car made out of a cucumber?

It was very difficult to open the trunk."

(Laughter) We had this hilarious conversation about what was fun about the game and how it worked all the way to kindergarten that morning.

I'm not saying that all digital media are beneficial to children.

We have good reason to be concerned about the current state of children's content.

It's natural for us to think about balance -- how can our devices help us with all the things our children need to learn and grow?

But when we worry too much, we miss the real point: children live in a world where adults check their phones more than 50 times a day.

Screens are part of children's lives.

If we pretend otherwise, if we become overwhelmed with anxiety, our children will never learn why or how to use it.

Why don't we expect more from this medium?

Why not have regular conversations with your children about the content of the media?

Why don't we start looking for the positive impact of this technology in our children's lives?

That's when the potential of this tool can become a reality.

thank you

(applause)

There's been a lot of concern lately, and rightly so, that technology is getting smarter and smarter, and that jobs will disappear in the future.

Self-driving cars are a prime example.

Self-driving cars will be great for many reasons.

But in 29 of the 50 states in the United States, the most employed occupation is "drivers."

What would these jobs look like if humans stopped driving, cooking, and even diagnosing illness?

A recent study by Forrester Research even predicted that as many as 25 million jobs could disappear over the next decade.

In the big picture, we're going to lose three times as many jobs as we lost in the financial crisis.

And it's not just physical labor jobs either.

On Wall Street and in Silicon Valley, machine learning has dramatically improved the quality of analysis and decision-making.

Even people with the best minds and the highest salaries will be affected by this change.

What's clear is that any job, if not all, will be replaced by robots and software in the next few years.

That's why people like Mark Zuckerberg and Bill Gates keep saying, "Governments should have basic income security."

But politicians can't even make decisions about health care or school lunches.

So those of us in industry should take the lead.

We have to anticipate the changes that lie ahead and start creating new forms of work that will work in the robot age.

Fortunately, we've survived two mass job extinctions in the past.

Between 1870 and 1970, the share of farm workers in the total American workforce dropped by 90 percent, and between 1950 and 2010, the share of factory workers dropped by 75 percent.

But the challenge we face now is a race against time.

We've spent 100 years moving from farms to factories and 60 years building a service economy.

But if we look at the current rate of change, we may only have 10 or 15 years to adapt. If we don't act quickly, by the time today's elementary school students are in college, we may live in a world filled with robots, massive unemployment, and a deep recession.

But it wasn't decided

I specialize in innovation, and part of my job is designing how large companies can adopt new technologies.

Of course, some of these technologies are designed to replace human workers.

But I believe that if we take action now to change the way work is done, we can not only create an environment that makes going to work a pleasure, but we can also spark the innovation needed to fill the millions of jobs that technology will take over.

The key to avoiding a jobless future for us is to rediscover what makes us human and create the next generation of human-centered jobs so that we can unlock our hidden talents and passions through the work we do every day.

But before that, it's also important to recognize that we are the cause of this problem.

It's not just because you're the one making the robots.

Even though a lot of work went out of the factory decades ago, we're still stuck with the factory mentality of standardization and simplification.

Even today, most of the work is routine work, and you are paid for the time you complete the work.

We're creating narrow job roles, like cashiers, loan officers, taxi drivers, and so on, and have them build their careers around that one task.

These choices have two dangerous side effects.

One is that these narrow jobs are the first to be replaced by robots, because robots that specialize in one task are the easiest to create.

And the second, incidentally, is that it's forcing millions of workers around the world to have incredibly boring work lives.

(Laughter) Let's take a call center operator as an example.

Over the last few decades, there has been a lot of talk about lowering operating costs, but that's also the result of systematization in which workers have almost no time to use their brains.

Operators spend most of their day manipulating screens and reading manuscripts.

more like a machine than a human

And unfortunately, in the next few years, as technology becomes more advanced, operator jobs, like clerks and bookkeepers, will all but disappear.

To counter this, we have to create new jobs, new jobs that are less focused on the work that people do, but more on the skills that people are dedicated to.

For example, robots are good at repetitive and highly specified tasks, but humans have an amazing ability to use their creativity and their own dexterity to deal with the first problems they face.

Every day, when little unexpected things happen, we've created jobs for humans, not robots.

Entrepreneurs and engineers already work in that world, as do nurses, plumbers and therapists.

How many companies and organizations are there that just come to work and do what they're told to do?

But if a robot can do a better job or an AI can make better decisions, what will happen?

Managers, let's start identifying the tasks that will become obsolete in the next few years as real problems, and start thinking about alternative, more meaningful, higher-value jobs.

We must create an environment where humans and robots co-prosper.

So let's give robots more jobs, starting with the jobs we hate.

Hey, Mr. Robot, please handle this useless report properly.

(Laughter) Also, put this box away.

(Laughter) As a human being, I think we should follow this advice from Harry Davis at the University of Chicago.

“Don’t put too much of yourself in the trunk of your car.”

Humans shine on weekends

Think about what people you know are doing on Saturdays

You'll be an artist, a carpenter, a chef, an athlete.

But on Monday, you're a Junior Human Resources Specialist, a Systems Analyst 3.

(Laughter) These narrow job titles not only sound boring, but they also indirectly make the person with that title feel like they're okay with narrow, boring contributions.

But I've seen with my own eyes that if you encourage people to play a bigger role, you can do amazing things.

A few years ago, the big bank I worked for was trying to innovate more in its corporate culture.

So we organized a prototype contest and asked everyone to build something they'd love to have.

What I wanted to do here was determine whether the biggest bottleneck to innovation was a lack of ideas or a lack of talent, and the answer was neither.

It was whether I could freely demonstrate my abilities in the workplace.

The results of this program have been spectacular.

We started by asking the participants to reimagine what they could contribute to the team.

This contest was an opportunity not only to make what I wanted, but also to be who I wanted to be.

When people were no longer tied down by their day-to-day job titles, they were free to use their various skills and talents to solve problems.

Engineers are designing, marketing is building, and even accounting is telling jokes.

(Laughter) We've done this program twice, and each time, more than 400 people have shown their unexpected talents at work and solved problems that have been plaguing them for years.

In aggregate, we've created millions of dollars in value. We've built better phone equipment for call centers, we've built easier software for branches, we've built a culture of handing out thank you cards, and we've laid the groundwork for transforming the work experience for our employees.

Over the course of eight weeks, I used muscles I never dreamed I'd use at work.

Participants learned new skills and met new people. On the final day, one of the participants pulled me aside and said, "I just wanted to tell you that these past few weeks have been the most intense and hard work I've ever done in my life, and not one second of it felt like work."

that's the miso

Over the past few weeks, participants have become creators and innovators.

For many years they had dreamed of a solution to a problem that had plagued them, and this was their chance to turn that dream into a reality.

And this dreaming is the big difference between machines and humans.

So far, the machines we've built can't be irritating, not offensive, let alone conceivable.

But we humans feel pain, we feel frustration.

And it's when frustration and curiosity reach their peak that we're motivated to dig deeper and make change.

Our imagination is the source of new products and services, and even creates new industries.

The jobs of the future will be conceived by what we now call analysts and specialists, but they must have the freedom and the protection to grow so they can explore and invent.

If we really don't want robots to take our jobs, we as leaders need to change the way we think. We should stop telling people what problems they want to solve and what talents they want to use at work.

If we can be Saturdays at work on Wednesdays, we'll look forward to Mondays more, and the longing for Mondays is what makes us human.

As we redesign work for the age of intelligent machines, I invite you to join me in bringing more humanity into our daily work.

thank you

(applause)

I recently read an article in the Harvard Business Review about what young people want in a job.

What struck me was that he wasn't just talking about it, he was actually trying to make an impact.

I'm a little older than you -- well, maybe a lot older than you -- but the goals I had in college were exactly the same.

I wanted to make an impact in my own way on people who were being treated unfairly, and that's why I became a documentary reporter, and for the same reason I was detained in North Korea for 140 days.

It was March 17th, 2009.

For all of you, it's St. Patrick's Day, but that day my life changed 180 degrees.

At that time, we were making a documentary about the North Korean defectors in China, who could not even live a normal life.

we were at the border

It's the last day of shooting.

There was no barbed wire, no fences, nothing to mark the border, but it was an escape route used by many North Korean defectors.

It was still winter and the river was frozen

We were standing in the middle of a frozen river, filming what kind of cold and environment the North Koreans had to face to find their freedom.

Suddenly, one of the crew members yelled, "Soldiers!"

I turned around to see two little soldiers in green uniforms with rifles chasing them.

we ran at full speed

Please don't shoot me in the head

At the same time, I thought that if I could set both feet on the Chinese side of the country, I would be safe.

I managed to get into China

I saw my colleague Laura Lynn fall off her knees.

For a moment I didn't know what to do, but when I heard Laura say that I couldn't leave her, I said, "Yuna, I can't feel my legs."

In no time we were surrounded by two North Korean soldiers.

The North Korean soldiers were about the same size as us, but they were trying to take them to an army base.

I begged and cried for some help, hoping someone from the Chinese side would show up.

I found myself bravely challenging trained soldiers with guns.

I looked into the soldier's eyes

he was still a child

At that moment, he brandished his rifle and tried to hit me, but I could see his hesitation.

Eyes wiggle, rifle still in the air.

I shouted, "Okay, I'll walk with you."

i got up

When I arrived at the army base, I was doing my best to prepare for the worst, and what my colleague said didn't help.

"We are enemies," he said.

That's right, we were enemies

And I should have been trembling with fear the whole time

But strange things continued

This time, an official gave me his coat to keep me warm, because I had lost it while fighting one of the soldiers on the frozen river.

let me tell you why this is weird

in korea where i grew up

North Korea has always been an enemy, even before I was born.

North and South have been in a truce for 63 years since the end of the Korean War.

Growing up in South Korea in the '80s and '90s, we were indoctrinated with propaganda against North Korea.

I've also heard a lot of graphic stories about how a little boy was brutally murdered by North Korean spies just for saying, "I don't like communists."

I also saw an animated show about a South Korean boy beating up a plump red pig, which represented North Korea's first supreme leader at the time.

"The enemy" is the word planted in young minds by hearing these terrifying stories over and over again.

At some point, I stopped thinking of them as human beings and began to identify with the people of North Korea as the North Korean government.

Now back to when I was detained.

That was the second day in solitary confinement.

I haven't slept since I crossed the border.

A young jailer came and handed me a small boiled egg and said, "This will give you strength."

do you know how it feels? Receiving small kindnesses in the hands of the enemy

Every time someone showed kindness to me, I thought that after this kindness, the worst was waiting.

The official, noticing that I was nervous, said,

"You think we're all like that red pig?"

I'm talking about the anime I showed you earlier.

I was forced into a mental battle every day.

The interrogators sat me down at a desk and made me write about my itineraries and jobs six days a week, over and over, until I wrote the testimony they wanted.

After three months of detention, a North Korean court ruled and sentenced him to 12 years of reform through labor.

I was just sitting in my room waiting to be transported.

At the time, I was really doing nothing, watching the two female guards closely and listening to their conversation.

Guard A, the older one, seemed to be studying English.

Coming from a wealthy family

She used to wear dresses in pretty colors to show off.

Another young guard, B, was a very good singer.

My favorite song is Celine Dion's "My Heart Will Go On", and I sometimes sing it to the point of disgust.

He was good at torturing me unintentionally.

(Laughter) This jailer spent a lot of time putting on makeup in the morning, just like any other young girl.

And then they both loved the higher quality of the show, the Chinese dramas.

One day, Jailer B said, "If you watch this, you won't feel like watching your own country's TV program."

They were yelling at me, telling me I shouldn't belittle my country's TV shows.

Guard B was more free-thinking than guard A, who was older than him, and would often get angry with guard A when he said his own thoughts.

One day, they gathered all their female colleagues -- I don't know where they're from -- and they came to the detention center where I was.

(Laughter) This is a country where young men and women are not even allowed to hold hands in public.

I don't know where they got this information from, but before I even said anything, they were giggling shyly.

Everyone seemed to forget that I was a prisoner, and I felt like I was back in my high school classroom.

And these kids also grew up watching the same cartoons, just the propaganda directed at South Korea and the United States.

I'm starting to understand where the anger of people here is coming from.

If these children are raised to be taught that we are the enemy, they will naturally hate us, just like I am afraid of them.

But that one time, we were just girls talking about the same things, and we were beyond the ideologies that kept us apart.

After returning home, I spoke to my then boss at Current TV about this experience.

The first thing I was told when I opened the door was, "Do you know Stockholm Syndrome?"

Yes, I know, and I clearly remember that fear, the feeling of being threatened, and the tension that builds with the interrogator, that was always the case when it came to politics.

There was a wall there that we couldn't overcome

But there was certainly time for us to be human, to talk about family, about our daily lives, about the importance of our children's futures.

1 month before returning to Japan

I'm terribly sick

Jailer B came to the room to say goodbye, she was leaving the prison.

She made sure no one was watching and no one was listening, and she said quietly, "I hope you feel better and can go back to your family soon."

These are the people -- the official who gave me my coat, the guard who gave me the boiled egg, the female guard who asked me about my love life in America. These are the people I think of when I think of North Korea.

North Koreans and I are not ambassadors, but I believe we were representing humanity.

Now I'm home and back to my normal life

The memory of the people I spoke to faded over time.

And when I'm here, I see and hear about North Korea taunting America.

It's easy to think of them as enemies again.

So I remember when I was in that place, and what I saw in the eyes of my enemies was more humanity than hate.

thank you

(applause)

Rest assured, I'm not talking about my own tragedy, but someone else's tragedy.

We can be a little optimistic about other people's tragedies, and we want to keep the spirit of this conference alive, if the press reports are true.

Virginia Postrell said being a drug dealer at the height of the crack cocaine epidemic was a very glamorous life.

Gold, drugs, pistols, women, flashy jewelry, you can get anything

What I'm going to share with you today is based on 10 years of real-life research, where I had the rare opportunity to step inside a gang and see what their financial records were really like, and I've learned that life in a gang isn't all that glamorous.

In fact, more realistically, being a gangster and selling drugs for gangsters is probably the worst job in America.

I will convince you of that today.

tell three stories

First, I'll explain why crack has had such a profound effect on the city's gangs.

Second, I'll tell you how someone like me could see inside the gang.

I think it's an interesting story, and the third is to surface some of the things we learn from actually looking at the gang's financial records.

But before that, one caveat: this presentation has been rated R by the Motion Picture Association of America.

Contains adult themes and expressions

Well, if you look at me, you'll see that there's no nudity.

(Laughter) Now let's talk about crack and how it changed gangs.

Pre-crack cocaine, from the perspective of a gang leader in the early '80s.

Mid 80's Being a gang leader in the inner city isn't bad In the early 80's --

With great power and violence against people--a lot of fame and a lot of respect

but i wasn't rich

Gangs have no way to make money

Can't collect from minions - they have no money

Marijuana doesn't make money because it was too cheap

don't make money

Cocaine doesn't sell. Powdered cocaine is a great product, but it only sells to rich white people.

Most inner-city gang members have no white acquaintances and cannot enter the market.

Petty crime doesn't make a living

resulting in

Gang leaders have power and a good life, but they live at home with their mothers.

and it's not a real job

No matter how much power and influence you have, you can't be with your mother...

That's where crack comes in.

In the words of Malcolm Gladwell, crack was tomato sauce with chunks of tomatoes for the inner city. (Laughter)

crack was an amazing innovation

I don't have time to talk about this, but if you think about it, of all the inventions and innovations in America in the last 25 years, crack cocaine has had the greatest impact on the well-being of inner-city residents.

bad influence, not good

big impact on life

So what is the appeal of crack?

the best way to get high

Unlike powdered cocaine, you can smoke crack cocaine, which gets you high more efficiently than snorting it.

Crack spread quickly even though it wasn't wanted

It was perfect for selling, you can get it for one dollar and sell it for five dollars.

Highly addictive -- very short time high

I feel great for 15 minutes, then I feel depressed and wish I could be high again.

the best market

It seemed like the best way to make money, even to those who ran gangs.

at least at the top

this is where we come in

Actually, I'm just a small part, co-author

Starring Sudhir Venkatesh

He was a good-natured fellow who had majored in mathematics in college and decided to pursue a PhD in sociology and came to the University of Chicago.

Three months before coming to Chicago, I was in the band group Grateful Dead.

He's chasing, and in his own words, he looks like a madman.

he's south asian -- very dark south asian

He's a big man, and his hair, as he puts it, "reaches his ass."

Challenging all boundaries Black or white? man or woman?

he was a rare "person"

He showed up at the University of Chicago, and the famous sociologist William J. Wilson was working on a book about surveying residents all over Chicago.

After seeing Sudhir, who was set to conduct an investigation for him, he chose the perfect location for his investigation, one of the most lawless and notorious public estates, not just in Chicago, but across the United States.

Sudhir was from the suburbs and had little connection to the city center, but he took a serious clipboard and went to this public housing estate, and he made it to the first building.

first building? no one there

But I heard voices coming from the top of the stairwell, so I climbed up the stairs, and around the corner I saw a group of young African-American men playing dice.

Around 1990, it was the height of the crack epidemic.

Gangsters are a dangerous business – they hate to be surprised.

It's not nice to be suddenly surprised from a corner

Shoot first, ask questions later is my motto.

Sudhir was lucky because he's so weird -- clipboards saved his life because gangs don't come and attack with clipboards. (Laughter)

They didn't welcome it, but they said, why don't we listen to that investigation?

No kidding, the first question for the survey was, "In America,

How does it feel to be poor and black? (laughs) A scholar is

(Laughter) The possible answers are: very good, very good, bad, very bad.

he was held hostage all night in the stairwell

There were many shots fired, and I had philosophical discussions with the members.

At dawn, the leader examined Sudhir and ruled him out as a threat.

Sudhir at home taking a shower and a nap

If you or I met something like this, you'd probably think, "Let's do our graduation thesis on the Grateful Dead. We've been chasing it for three months." (Laughter)

Sudhir, on the other hand, quickly returned to the public housing, went upstairs, and said, "Hello, I had a great time last night. Can I do it again tonight?"

It was the beginning of a beautiful friendship, and Sudhir was in and out of public housing for a decade, hanging out in crack stalls, being in jail with gangsters, having his car windows shot, police breaking into his apartment and stealing computer disks, you name it.

In the end, the story had a happy ending, and he became one of America's most respected sociologists.

I opened my excel in the office and waited for him to get a ton of updates from the gang, especially to me-

(Laughter) I was honored to be the beneficiary.

What did we find? What have we learned from gangs? let me say one thing

we meet all the gang

Observed from the bottom to the top inside

They trusted Sudhir -- no scholar ever -- or anyone outside -- until he showed me the books, the financial records, which were most interesting to me.

We borrowed books, looked them up, asked questions, and concluded what we had learned from the gang.

If I had to sum it up very quickly, if I were to put gangs in parallel with other organizations, the gangs would be McDonald's.

First of all -- it's not very exciting, but let's look at how it's organized, the hierarchy of the gang.

Do you know your organization chart? If you break down and simplify the McDonald's org chart, you get exactly the same org chart.

Surprisingly, gang leaders just call themselves "Board Members."

(Laughter) Sudhir said, "It's not because they're educated about American corporations, but because they've watched movies like Wall Street and learned about the real world."

Under that board of directors are basically regional VPs -- who run the south and west sides of Chicago, so to speak.

Sudhir befriends someone who's unfortunate enough to be appointed to take a franchise in Iowa (Laughter), and that's what black gangsters have been contracted to do.

(Laughter) But the similarities between gangsters and McDonald's are in the way they franchise.

The local gangs that run it run the four blocks, and they're kind of McDonald's managers.

I am an entrepreneur

with special property rights for drug trafficking

Promote and market in the name of the gang behind it

They're basically the ones who make money or lose money depending on how they run their business.

Now what I really want you to think about is the foot soldiers at the bottom.

Mainly teenagers selling drugs on street corners --

very dangerous

It's important that almost every organization has a significant percentage at the bottom, yes, it's like McDonald's.

Infantrymen are like the people who take orders at McDonald's, and it's no coincidence that they look alike.

We're the same person in this neighborhood.

Most of the kids who work for gangs also work part-time at places like McDonald's.

What I said earlier is proof that gangs don't make money.

If gangsters were a great and lucrative job, would you take a part-time job at McDonald's?

How much is your income? don't be surprised

Actually talk to them, look at their records, what is their income?

$3.50 an hour for infantry

Are you below minimum wage? can be documented

It can also be easily read from consumption patterns

It's not a fiction, it's a fact

Gangs aren't rich, especially at the bottom.

If you can become a community leader, you're on par with a McDonald's manager, earning $100,000 a year.

That's the best job you can expect, if you're a black man who grew up in those neighborhoods.

If you make it to the top, you can expect $200,000 to $400,000.

said to be successful

What's deplorable about the many impacts of crack is that the most capable individuals in these communities strive for it.

They don't try to succeed in a legal way, they can't get out of it

this is the best way out

And actually this would be the right choice

Look, my relationship with McDonald's falls apart here.

Income looks the same

why is it such a tough job?

Because it's always attacked with a gun

What is the mortality rate?

In the gangs we investigated -- this was an unusual situation -- there were violent clashes and gang wars -- and this gang was quite successful, but at a cost.

Our mortality rate -- including the arrest rate, the prison rate, the injury rate -- is 7 percent per person per year.

Four years into a gang, you have a 25% chance of dying.

this is almost the maximum

For comparison, let's look at other ways of living.

Murderers who are likely to die are convicted and sent to death row.

The death rate from all causes, including death row executions, is 2% per year.

(Laughter) Being on death row is safer than selling drugs on the street.

This will make those who believe the death penalty deter crime reconsider.

I'm not trying to highlight the bad side of things, but just how bad the crack age downtown is -- and that's another story -- if you take a random look at the mortality rate among black men growing up in the US downtown -- it's about 1 percent in the crack age.

this is very expensive

Unnatural death rate, unbelievable numbers.

In the big picture, for example, in the Iraq war, the mortality rate for soldiers currently fighting is 0.5%.

Literally, young black men growing up in this country are living on the front lines just like soldiers fighting in the Iraq War.

You're tempted to ask, who sells drugs for $3.50 an hour with a 25% mortality rate in four years?

why would they do that? there are two reasons

I think the first reason is that it is swayed by history.

The fact that gangs were a rite of passage The young men who run gangs quit gangs when they reach a certain age.

So what happened was that the right person at the right time happened to be running a gang in the late '80s and got very rich.

The logical idea is that the next generation will say, "When they get older, they will eventually retire, and the next generation will take over and inherit their wealth."

Amazingly similar to the internet boom, isn't it?

Silicon Valley's first group got pretty rich

And all of my friends say, "Maybe I should do the same."

They take jobs with low salaries and don't get the wealth they hoped for.

In a way, for those who want to start at the bottom of the gang

It's exactly the same thing that happened. Like a low-ranking lawyer in a law firm, you go through your first year, working 80 hours a week at a low wage to become a partner.

In fact, the rules have changed and you can't be a manager.

The same people who ran the big gangs in the late 1980s still run Chicago today.

We won't give away our fortunes, so we're all stuck in $3.5 an hour jobs, and it's hard.

Marketing and fraud are what gangs are good at

For example, what gangs do - Bosses with lots of entourages, drive fancy cars and wear flashy accessories.

What Sudhir found, working with them, was that the gang didn't own these cars, they were borrowing them - they couldn't afford to buy fancy cars.

All gold jewelry is gold plated

Fake authentic versus genuine authentic

Using all tricks to convince young people that gang life is good

For example, they let a 14-year-old hold a rolled-up wad of money.

The kid says to his friend, "I got it from the gang."

It's not his money until he spends it... and it becomes debt, and he's indentured for a while.

I have a few more minutes

Finally, I'd like to talk about some general economics that I've learned from researching gangs.

Economists speak in jargon

Theories often conflict with the data, but what's really interesting about this setting is that the theories of economics that didn't apply to the real economy do so well in the drag economy, because, in a way, it's pure capitalism.

to the principles of economics

One of the basic ideas of labor economics is the compensation gap.

Basically, by overpaying the workers, you're bringing the two jobs closer together and compensating for the unpleasant jobs.

Garbage collectors are paid more than park workers --

A gang member's story speaks for itself.

I guess I got a little too ahead of the time, gangs pay infantry double the amount during a fight.

exactly the same concept

I hate being in danger

Gangs put it this way: "Can you stand up during this crazy shootout?"

And if they say it will cost me my life, I have to get a deposit."

By nature, gangsters say more about what's going on than economists. (Laughter)

in another example

Economists Say There's a Nash Equilibrium in Two-Player Games

In the words of a gang member

The reason they decided not to shoot guns is - one of the gang's best business tactics, if you shoot guns in the air in other gang territory, people are afraid to go there to buy drugs.

But they don't because they say, "What if we start shooting at their stripes? Try that.

It would be terrible if they came here and shot." (laughs)

It's exactly the same concept, but sometimes economists get it wrong.

One thing I've learned from looking at the data is that gang leaders always have income.

I always pay myself, no matter how bad the economy is.

Because there are theories of cash flow and lack of access to capital markets,

When I asked a gang member, "Why do I always get paid and my men don't?"

"They're all aiming for my position. If I admit defeat, I'll be underestimated."

I thought, "CEOs often give themselves million-dollar bonuses, even if the company is losing big.

But the importance of the thought of being "underestimated" is

I don't think so." But to be "underestimated" means

It might be an important hypothesis to analyze further. Thank you.

A long time ago, I was working in animation production.

(music) [Eric Dier] [animator] [compositor] I was making my own experimental films at night.

(Music) I spent more and more time working in front of a screen, and when I started making works that were projected onto the screen, my desire to return to work that I could directly touch with my hands grew.

Back in the days before "The Simpsons," "Gumby," and "Betty Boop," there weren't any movies or television, and this form of animation was very popular.

this is a zoetrope

If you rotate the drum and look inside through the slit, you can see the painting in motion.

Because this is an animation in the form of a concrete object, maybe I can take the piece back into my own hands—

With that in mind, I went to Denmark.

I got a Fulbright Scholarship, and my family was with me.

this is my daughter mia

I rode my bike around the city, photographing all the interesting moving things in Copenhagen: the people rowing on the canals, the bright colors in spring, the love of free city bike rentals, the surface textures, the healthy food (Laughter).

And he invented a new type of zoetrope, got rid of the drum, and replaced the slit with a video camera.

It was a very exciting process, to create something tangible and then make a film out of it.

this is me on my bike

(Laughter) I made about 25 paper objects, each about the size of a bicycle wheel.

We took it into the studio, spun it, and the movie that came out was "Copenhagen Cycles."

(Music) This project not only allowed me to take back my work, but it also gave me back my life.

Instead of spending 12 or 15 hours a day with my face glued to a screen, having a little adventure with my new family and capturing it on video became a kind of symbiosis between art and life.

I think it's true that the original meaning of the zoetrope is the "wheel of life."

(Music) But in movies and videos, the objects become flat, so I tried to envision a way to experience the objects in motion, to make them fully immersed in the moving sculpture.

And that's where I came up with the zoetrope tunnel.

You can walk inside with a strobe in your hand, point the light at a certain point, and the object will come to life.

My plan is that it will take 30-40 years to complete.

(Laughter) Still, I built a prototype in half scale.

The inside is covered with hook-and-loop fasteners, and you lie down on the board you give me, and stick a series of objects on the inner wall to check the movement.

People often say it's like an MRI machine.

These medical associations have a special meaning to me, because at the age of 14, I was diagnosed with retinal degenerative disease, which was slowly robbing me of my sight, but I had never addressed it in my work.

So we decided to call this device "Implant."

It's a hugely enlarged work of an imaginary medical device that you wear around your optic nerve.

The audience experiences this work in a kind of scaled-down way.

A hand-held strobe illuminates each part of the work, and you see thousands of cell-sized robots bustling about, popping in and out of your optic nerve, doing their job of repairing your retina.

It's a sci-fi fantasy that cures my incurable disease.

(Machine noise) In the real world, there's gene therapy and research into it, where viruses are used to deliver healthy genes to diseased cells.

It's colorful and full of comforting hope, but it also raises the chilling idea that viruses might become invaders in your body.

My poor eyesight freed me from the things that separated me from the world.

Instead of being isolated in a car, I started riding bikes, taking buses and trains, and walking a lot.

Instead of working in the studio, where I'm just focusing on my vision, I'm getting out and about a lot and engaging my five senses.

This is the view about two hours east of San Diego, California.

my brother lives there

We camped together for 4 days.

I set up my camera and walked through the canyon

There's no movement here, it looks quiet, but I tried to imagine what kind of movement might emerge.

I think it's the quietest place I've ever seen.

It was my movements, walking around, that created the animation.

it's a change of sight movement

I made a piece called "Mud Caves" out of these photos.

You can think of it as a flattened version of the zoetrope, with many layers of printed images.

This is my own panorama of the western landscape.

Next to the printed photo, there's a video monitor where you can see the animation hidden in the print.

The best thing about this project for me was that I got to walk a lot with my brother who lives 4,000 kilometers away.

The two of us sat and talked in the seemingly eternal scenery carved by the flowing water over hundreds of years.

We talked about our children growing up, our parents walking slowly, our father suffering from leukemia, memory loss and infections.

And it suddenly occurred to me that although each person is finite, we as a family are in constant motion -- like the wheel of life.

Now, before I say goodbye, I would like to thank my mentor.

My teacher who taught me the importance of physical presence and that play is not a luxury but a necessity.

It's a pixie, our family's dog.

i love to jump

(dog barking) (dog barking and spring popping) This new kind of zoetrope was developed by me at the UMBC Imaging Research Center in Baltimore.

We call it "real-time zoetrope"

(Dog barking) (Dog barking and bouncing springs) Thank you

(applause)

Office romance is difficult, isn't it?

(music) Series How to work How to separate private life and work?

How can we resolve gender imbalances and power relations?

Workplace romance has many gray areas

I'd like to take a moment to answer some of your most frequently asked questions.

Question 1: Should I date my co-worker?

well it depends

Want to date a colleague for a little fun?

Because you want to spend the night together?

Then you should use Tinder

If the reason you want to date someone is because you're really in love with them, or if you think you could have a long and fruitful relationship, then dating might be a good idea.

Studies show that when a colleague notices your interest and feels that you both genuinely care about each other, they're usually more aggressive.

Relationships fall apart when you find out there are likely other reasons.

Question 2: Should I date my boss?

In almost all cases, no. You shouldn't date your boss because there's power involved.

When bosses and subordinates are romantically involved, they generate a lot of negative emotions, and most of the negative emotions are directed toward subordinates.

It can also provoke resentment from those around you who think you're being favoritism or that you're sharing inside information.

A study published last year found that dating your boss can negatively impact your career.

Assume that the researchers are conducting third-party evaluations online and working for a law firm.

We asked which employees we would recommend for special training programs and which we wanted to promote as partners.

If the biographies of fictitious employees indicated that they were dating or romantically involved with their bosses, raters were less likely to select them for training or promotions, even though they had the same backgrounds as the employees who hadn't dated their bosses.

The evaluators also instantly dismissed their track record.

Question 3: Can I go on a date with my subordinate?

I say no to that too

You may think that you are not what you would call a boss.

But you're actually the boss, and there's a dynamic there, which other couples don't have.

If you feel there's a genuinely honest human relationship there that's long-lasting and meaningful, then one of you might need to move, but not necessarily your subordinate.

Question 4 I started dating a colleague

how should i behave?

this question is a lot

"Are those two dating? Not dating?"

no secrets

It doesn't have to be a big deal, but secrets can be bittersweet.

Couples in office relationships are often seen as coalitions or lumped together. Make it clear to your co-workers that you're not the same person.

Question 5 Why are co-workers more likely to be attracted to each other?

The simple answer is that people are more attracted to each other the more time they spend together.

But that's not all. What I find most appealing is when there's a task that requires close collaboration.

Imagine that you have a big group project with a tight deadline, and you're brainstorming ideas late into the night.

Suppose you look up and your colleague across the street has the best idea.

whatever you feel is natural

Task interdependence—

I am easily attracted to others

A second reason that colleagues in the workplace are attracted to each other is that they often have similarities.

Here are two old sayings: "Like attracts like" and "Opposites attract."

Well, according to psychology research,

Like birds of the same feather flock together, we like people who are like us.

Question 6: A colleague is flirting

I'm in trouble. What should I do?

Researchers say that flirting in the workplace is good and boosts creativity.

But according to my research, it's not so for those who witness or receive it.

Awkward, right?

When you witness something like that at work, you don't know what the rules are, you don't really know what's going on, and you feel like you've seen something you shouldn't have seen.

People who frequently encounter such situations at work report feeling less satisfied with their jobs and less appreciated by their employers.

They are more likely to rate the work environment negatively and may even consider quitting.

The correlation is stronger for women

These results are true even if you think flirting doesn't bother you.

Even if you think you're having fun, it is.

After all, floating environments can be very toxic.

Question 7: Do we need rules about workplace romance?

When it comes to sexual harassment, it's definitely necessary, and I'm sure many HR departments recognize that.

But the kind of consensual behavior we've been talking about is a little different.

Many HR employees would like to wave a magic wand and say, "Don't fall in love at work," but that's not realistic.

Humans have emotional ties and sexuality.

I want you to change your mind a little.

People in HR should be more open-minded. It's not necessarily their job to extinguish workplace romances, because that's not realistic.

The bigger question is, how do you make sure people are valued and respected?

I've spent the last few months thinking about what to say in this place.

There's no bigger stage than TED, so I feel it's more important than ever to get the message across right now.

I spent days thinking about it, trying to figure out how to construct words.

In my head, I felt that there was something lacking in the words I wanted to share about Me Too, and what I wanted to share about Me Too, and the movement I founded, in a bulleted list of things I wanted to share.

I want to put my all into this moment and tell you why even the possibility of healing and stopping sexual violence is worth standing up and fighting for.

I would like to wake you all up with an uplifting speech about this important mission to fight for the dignity and humanity of victims -

i don't know if i can

Because after the Supreme Court nomination process, the attacks from the White House, the massive misidentification, the online harassment, the rallies and marches, and the heartbreaking testimonies, I'm facing my own harsh reality.

i don't feel anything

no surprise

As I travel around the world giving talks, like clockwork, each time, multiple people come to me and privately share their experiences.

I always try to reassure

We talk about the support that's available on the ground, and gently encourage you that you're not alone, you're part of the movement.

I used to tell them that together we can be stronger, and that this is a movement of victims and advocates, large and small, taking action every day.

And more and more people are joining the movement every day.

this is clear

People are pushing themselves to their limits and saying, "Enough is enough."

so why do i feel this way

that is…

There's a man who has a credible accusation of sexual assault who has been confirmed by the U.S. Supreme Court, and yet again.

Even when the president of the United States is taped saying that he can rape a woman's body anywhere he pleases, the crowd roars at rallies calling the victim a liar.

In every corner of the world where Me Too has become active -- in Australia, France, Sweden, China, and now India -- victims of sexual violence are being heard and vilified at the same time.

There is no end to the articles lamenting the current situation

Wealthy white men would land peacefully in golden parachutes, even after their worst deeds were discovered.

And we are asked to consider the future of the perpetrator's side.

What about the victims?

While this movement has always been described as a watershed moment or even a judgment call, there were days when I woke up feeling like all the signs were pointing in the wrong direction.

it's harder to keep the feeling

Some of you may feel numb.

but let me tell you something else

When you hear the word numb, you think of a state of emptiness, a state of no emotion, a state of inability to feel.

not necessarily

Numbness can also come from memories that pop up in your head and you can't control, memories that stick in your head in the middle of the night.

Sometimes it wells up from the tears that you don't like to cry and keep in your eyes

My numbness hits me when I look into the faces of my victims, when I know what to say, but I have nothing to give.

They are measuring the magnitude of the task that looms before them against their wavering minds.

Numbness doesn't mean numbness

It is also called the accumulation of emotions.

As victims, we often harbor real experiences in our hearts.

Now, regardless of our intentions, we all carry something on our minds.

Colleagues are stepping up and speaking out, the industry is re-examining the work environment across the board, family and friends are talking about their inner truths and things that are hard to talk about.

everyone is affected

There is also severe recoil

I also hear

"The Me Too movement is a witch hunt"

Right?

"It breaks due process"

"I created a gender war"

A flurry of media headlines has consistently framed the movement in ways that have stifled our efforts, and conservative pundits and critics have shifted the point far from the victims.

The movement, which started to help victims of sexual violence, is being described as a tactic of revenge against men.

It's like "What?"

(Laughter) How did this happen?

Now, this movement is so far from what it was when it started a decade ago, even the purpose of the hashtag, which started exactly a year ago.

But to be clear, this movement is a response to the fact that 1 in 4 girls and 1 in 6 boys each year are sexually assaulted and enter adulthood with scars.

84% of transgender women are sexually assaulted annually, and indigenous women are 3.5 times more likely to be sexually assaulted than any other group.

or people with disabilities are seven times more likely to be sexually assaulted

Sixty percent of black girls like me experienced sexual violence before the age of 18, and millions of underpaid workers are being sexually harassed at work at this very moment and can't afford to quit.

It's a movement of empathy on a grand scale.

Countless people raised their hands to say "me too" a year ago and are still raising their hands, but the media is desperate to drown it out, and elected politicians are turning their backs on solutions.

I know that this one-of-a-kind historic moment of politics is an emotional roller coaster that leaves many people numb.

This accumulation of emotions that many of us experience together around the world is collective trauma.

but

It's also the first step towards actively building the world we want right now.

The evidence that the actions we take on what we have now is much more than the transient.

It's confirmation that we're in the midst of a movement.

The most powerful movements have always been built around what's possible, not just advocating for the current state of affairs.

Trauma robs us of possibilities

MOVEMENT INSPIRES POTENTIAL

In the words of Theodore Parker, famously quoted by Dr. King, "The arc of the moral universe is long, and it curves toward justice."

everyone has heard

someone has to bend this arc

The possibilities that we've created in this movement are the weight that will bend this arc in the right direction.

Movements create possibilities and are built on visions.

My vision of the Me Too movement is part of a broadly shared vision of a world without sexual violence, and I believe we can build that world.

put an end to

But to get there, we need to dramatically change the culture that pervades an idea that sees "vulnerability" as synonymous with "permission" and that doesn't see bodily autonomy as a basic human right.

In other words, we must dismantle the root cause of sexual violence: power and privilege.

What we often hear about the Me Too movement is that it's about bad-behaving individuals and individual degenerate behavior. What's overlooked is that anyone in a position of power has privileges that make those who don't have that power even more vulnerable.

Teachers and students, coaches and athletes, law enforcement and citizens, parents and children are all relationships that can lead to massive power imbalances.

But by creating a collective voice against that imbalance, and a space to speak truth to power, we correct that imbalance.

We have to re-educate ourselves and our children and understand that power and privilege don't necessarily destroy and exploit, they can serve and build.

And beyond all doubt, we must re-educate ourselves to understand that every human being has the right to live life without degrading his humanity.

Part of the Me Too movement is about reclaiming the humanity of victims, because violence isn't just about what you do.

Violence remains a trauma even afterward.

Remember, trauma kills possibilities.

Trauma causes blockage, stagnation, confusion, and even death.

We're rethinking how we deal with trauma.

For example, victims shouldn't always talk about their experiences in great detail.

You don't have to relive painful experiences over and over again in order to be recognized by people.

We're trying to teach victims to embrace the joy of life's choices instead of trauma.

If you haven't found joy, create it and accept it.

But finding joy can be incredibly difficult when trauma has wrecked your life.

Imagine -- while you try to accomplish this challenge, world leaders question your memory, the media keep drowning out your experience, and the public continues to torment you.

MOVEMENT INSPIRES POTENTIAL

In black families like mine, there's a story that's been passed down, and it's about my great-great-grandfather, Lawrence Ware.

Born a slave and his parents were enslaved, it would have been inconceivable that a black man in America would ever think of escaping slavery before his death.

Still, legend has it that when he was released, his great-great-grandfather walked from Georgia to South Carolina to find his estranged wife and children.

Every time I hear this story, I always think, "How did this happen?

Didn't you think you were afraid of being taken prisoner and killed by white vigilantes and that your wife and children were dead? ”

So one day, I asked my grandmother why she thought my great-great-grandfather made this trip, and she said, "You had to believe you could do it."

I've been driven by possibilities for most of my life.

I am here because someone in my ancestors believed in my potential.

Twelve years ago, in 2006, I was lying on a mattress in my studio apartment, frustrated by all the sexual violence I saw in my community.

I pulled out a piece of paper and wrote "Me Too" on the top of it and wrote out an action plan to start a movement based on the empathy of the victims, something that makes us feel like we can be healed and that what happened to us isn't everything.

Possibility is a gift

Possibilities create new worlds, create visions

Some of you may be sick of it, and I'm sick of it too.

I'm exhausted and I don't feel anything

Our predecessors didn't win every battle, but they didn't lose their vision.

I used it as food

That's why I can't stop it, and I hope you don't stop it either.

We owe it to the next generation to create a world free of sexual violence.

I believe that such a world can be built

do you believe

thank you

(applause)

Along the rugged coastlines of the Pacific Northwest, pods of killer whales live in frigid waters.

Each family survives in large part because of one of the best hunters, the granny killer whale.

Patriarchs live for 80 years or more, but most male killer whales live only 30 years or so.

Killer whales live in all major oceans, but until recently, little was known about them.

The detailed biology of killer whales wasn't known until 1976, when a group called the Center for Whale Research began studying a pod near Washington and British Columbia.

Thanks to their continued research, we've learned a lot about the colony of killer whales known as the "Dwellers of the South."

The more I learn, the more I focus on the important role of the older killer whales in the colony.

Each granny orca begins life as a baby orca born in a maternal or matrilineal family.

Families do everything together, feeding, playing, and even communicating by their own signals.

Both sons and daughters spend their entire lives with their mother's side of the family.

Young killer whales aren't the only ones who interact with their female relatives.

In addition to herd-specific signals, matriarchal herds interact regularly, sharing conversations with other herds living nearby.

When female killer whales are about 15 years old, these interactions give them the opportunity to mate with males from other groups.

The interaction doesn't go beyond mating: the female and her baby stay with the female's family, and the male killer whale returns to his mother.

On average, females give birth every six years until they're about 40.

Then the female goes through menopause, which is almost unheard of in the rest of the animal kingdom.

In fact, humans, killer whales, and a few other species of whales are the only species that survive long after females have stopped reproducing.

After menopause, the granny killer whale becomes a fishing leader for salmon, the main food source for Southerners.

For most of the winter, they catch salmon offshore and catch other fish as a supplement.

But when the salmon move closer to the shoreline to spawn, the killer whales follow them.

The patriarch tells the young killer whales where the salmon are most abundant.

Grandma killer whales share up to 90% of the salmon they catch with their families.

With each passing year, the granny killer whale's contribution becomes more important: overfishing and habitat destruction reduce salmon populations and put them at risk of chronic starvation.

Grandmother Orca's superior knowledge can mean the difference between life and death for a family, so why do they stop having babies?

It is usually advantageous for females to continue to reproduce, even if they are already looking after children and grandchildren.

Some unique circumstances change this condition.

The fact that both sons and daughters never leave their biological families is extremely rare. In almost all animal species, one or both sexes live separately.

At the age of a female killer whale, her distant relatives die out, so her children and grandchildren make up a high proportion of her family.

Older females are more associated with the group than younger females, so they do their best to take care of the whole family, and young females concentrate on reproduction.

In a killer whale environment, each new baby means more family members to share their limited food with.

Older females can leave their genes without burdening the family by supporting sons whose babies will be raised by other families.

This may be why females evolved to stop reproducing completely in middle age.

Despite the contributions of granny killer whales, the "dweller of the south" killer whales are in danger of extinction.

We urgently need to invest in restoring salmon populations to save killer whales and extinction.

In the long term, further research such as the Center for Whale Research is needed

What we learn from the "Southerners" may not apply to other herds.

By scrutinizing other herds, we may be able to discover additional surprising adaptations and predict vulnerability to human interference before their survival is at stake.

Roald Amundsen spent nearly two years preparing for his Arctic expedition.

Funded by the Norwegian King, we've handpicked a reliable crew.

I was also blessed by the famous explorer Fridtjof Nansen, who gave me the right to use his ice-strength ship Fram.

After setting sail, Amundsen announced his final destination to the crew and headed for Antarctica, the opposite direction of the North Pole.

By the early 20th century, there were very few unexplored, unmapped places on Earth, and there were only two major places left: the North Pole, where the Arctic Ocean was deeply frozen, and the South Pole, recessed on a recently discovered icy continent surrounded by the vast Antarctic Ocean.

As a veteran of several expeditions, Amundsen had long dreamed of reaching the North Pole.

In 1909, while preparing for the North Pole expedition, we heard news that American explorers Frederick Cook and Robert Peary had each claimed to reach the North Pole.

Amundsen canceled his Arctic expedition and rerouted it to the South Pole, which he called "the last hurdle."

British naval officer Robert F. Scott was already there, leading his own expedition to the South Pole.

When Scott's ship Terra Nova arrived in Melbourne in 1910, we heard on the news that Amundsen was also heading to Antarctica.

Reluctantly, Scott ended up competing with the Norwegians in what the newspapers called "a race to the poles," but it was a strange thing to call a race.

The expeditions were different times, different places, and completely different expedition plans.

Amundsen focused only on reaching the poles

Based on my own expedition to the Arctic, I used the experiences of the Inuit and the Norwegians to land with a platoon and over a hundred dogs.

Amundsen's party wore sealskin and fur clothing, with custom skis and boots.

Scott's expedition, on the other hand, was more complicated.

To carry out an extensive scientific expedition, more than three times the number of Amundsen's expeditions, more than 30 dogs, 19 Siberian horses, and three state-of-the-art motorized sleds.

But when the ship was hit by an Antarctic storm, additional equipment, personnel and animals became a burden.

And when it came time to load, I realized that neither horses nor motorized sleds would work in the harsh ice and snow.

In the spring of 1911, waiting for the long Antarctic dawn, the two parties began their march south.

Scott's party crossed the Birdmore Glacier and followed the same course Ernest Shackleton once made to the South Pole.

Although documented in the literature, it only proved a long and difficult course.

On the other hand, although the departure was unsuccessful, the five members of Amundsen's party also traverse the Transantarctic Mountains - making good progress on an unexplored route.

We were the first to reach our desolate destination on December 14th, ahead of Scott's party.

To avoid ambiguities like Cook and Peary's claim to reach the North Pole, Amundsen's team traversed an area within the grid to make sure they covered the location of the South Pole.

In addition to flags and tent markers, I left Scott with a letter that was finally found a month later.

But when Scott's party finally reached the South Pole, losing the race was a minor issue.

On the way back to camp, two of the five died from frostbite, starvation and exhaustion.

The surviving team members wanted to meet the dispatch team from the base at the place they had previously arranged, but due to bad luck, misjudgments, and lack of communication, the rescue team never came.

In the spring, we found Scott's diary and other artifacts.

Scientists from many different countries currently live and work at Antarctic research stations.

The expeditions of the early explorers have not been forgotten.

Though fate may be different, it will forever be imprinted in history and in the name of the observatory that marks the location of the South Pole.

When I was a 17-year-old high school student, I graduated from high school in Decatur, Georgia, on behalf of the graduates, and I was very proud.

I'm from a low-income community in Mississippi, and I moved to Georgia so my parents could pursue a degree to become a minister in the United Methodist Church.

We were poor, but my parents chose to stay poor because that wasn't enough.

(Laughter) While my parents were attending Emory University, I went to Avondale High School and was the alumni representative.

One of the perks of being a graduate representative in Georgia is being invited by the state governor.

I was kind of interested

I think you look cool

I was more interested in the governor living in a mansion, because I used to watch "General Hospital" and "Dynasty" on TV when I was a kid.

(Laughter) I woke up that morning and prepared to visit the governor.

My father and mother were also invited, so we all went outside.

But I didn't get in the car

A car is essential in the South

Not much public transport, limited choice

If you're lucky enough to live in a community and don't have a car, your only option is public transportation.

that's the way we took it

It's basically a bus

From Decatur, we took a bus to the Governor's Mansion in Buckhead, on a large, beautiful grounds, and there was a long black fence that ran along the grounds.

We arrived at the Governor's Mansion, pulled the little lever on the bus to signal that we were off, got off the bus, and my parents and I crossed the street.

I walked down the driveway to the front door of the official residence, where cars were rolling in with students from all over Georgia.

we stopped on one side of the road

To keep me from being hit by a car, my father and mother walked in single file with me in the middle, and we reached a guarded gate.

and the guards came out

He glanced at me, then at his parents. Guard: "This is not your place. It's a private event."

Dad: No, this is my daughter, Stacey, and one of the student representatives.

But the guard didn't see the checklist in his hand.

I didn't even ask my mother if she had an invitation. It was in the bottom of her big tote.

Instead, he saw the bus behind us, and to him, the people who came by bus weren't the people who should have come to the Governor's Mansion.

It meant that we were poor and didn't have a car.

Or maybe he judged me by the color of my skin, maybe by the way I dressed, I don't know what's in his head.

But he looked at me condescendingly and said, "I told you, this is a private event, not your place."

My parents were studying to be ministers in the United Methodist Church, but they weren't pastors yet.

(Laughter) So my parents started a rather heated discussion with this gentleman about his decision-making abilities.

(Laughter) My father might have said, "If I can't find my daughter's name on the list, I'm going to spend forever in the blazing abyss."

Security finally checked the list, found my name, and let me in.

But I don't remember meeting the governor.

I don't even remember meeting students from 180 other school districts.

My only clear memory of that day was being told at the gates of Georgia's most prestigious place that it wasn't my place.

And 20-odd years later, I decided that I would be the one to open this gate.

(Applause) (Applause) Unfortunately, as you all know, the result was a loss.

didn't go as expected

now i have a problem how to move forward

Look, I didn't just want to open the door to young black women who were looked down upon and discriminated against.

latino asian american

Illegal immigrants Other immigrants

Supporters of the LGBTQ community

Families of gun crime victims wanted to open the gates to everyone

I wanted to open the gates to all of Georgia, because this is our state, our country, and this is where we all belong.

(Applause) (Applause) But I realized that my first attempt wasn't good enough.

My question has changed: "How do we move forward?"

How to overcome bitterness and sadness and lethargy How can I stop watching too much TV while eating ice cream?

(laughs) What's next?

i'll do what i've always done

Forward, because backwards is not an option. Don't just stand still.

(Applause) Look, I started running for governor by analyzing who I was and what I wanted to do.

There are three questions I ask myself in everything I do, whether I'm running a campaign or starting a business, when I started the New Georgia Project to get people registered to vote, or when I started the recent Fair Fight Georgia.

Whatever I do, I ask three questions: What do I want?

why ask

and how to get

This time I knew what I wanted

is that things change

wanted it

And the question is what would you like to change? was

And you should ask yourself: 1. Am I honest about the magnitude of my ambitions?

Because when you don't get what you want, it's easy to think that you should aim a little lower, but today I'm here to tell you to be aggressive and pursue your ambitions.

Don't give in to setbacks

(Applause) 2. Understand your mistakes.

It's also about understanding the other person's failures, and women are taught that they're at fault, especially when things go wrong.

There must have been a better way, but we are taught that we shouldn't pursue what the other side should have done.

This is true for people in general, both men and women.

Women are often taught that failures are their own fault, but victory is shared by all.

So in my opinion, try to understand not only your own failures, but also the failures of others.

and stay calm

And be honest with yourself and those who support you.

Once you know what you want, understand why you want it

And retaliation, while it feels good, isn't a good reason.

(Laughter) Make sure you really want it, because "should" and "must" are two different things.

What you want must be something that you can't sleep if you can't dream about it. Something that wakes you up in the morning and excites you, or something that makes you so angry that you have to do something.

But you should know why you do it

why it has to be done

You've heard women all over the world discuss why things should change.

But you should understand what the "why" is to you, because jumping from "what" to "practice" without knowing why is pointless.

When things get tough When things get tough When your friends abandon you When your supporters forget about you When you lose your first election You can't try again if you don't know your motives.

So know what you want first

Second, know why you want it, and third, know how to get it.

I faced some obstacles in this election.

(Laughter) Just a little bit.

But in the process, I became the first black woman in American history to be nominated for governor by a major political party.

(Applause) (Applause) But more importantly, in the process, we got 1.2 million black votes in Georgia.

That's more black votes than the Democratic nominee got in 2014.

(Applause) Our campaign has tripled the number of Latin American votes who say, "We should listen to ourselves."

Asian-American votes tripled claiming "This is our state too!"

These successes are proof that I can achieve things.

It is also proof that obstacles are not insurmountable.

This time it was a little higher.

But there's also this: there's always three obstacles.

The first is the economic impediment.

You've heard that I'm in debt

this story is well known

(Laughter) Financial obstacles often hold us back. Dreams are tied to how much money you have.

But we hear over and over again the examples of people who have overcome money problems.

But I can't get over not talking about it.

That's why I didn't allow any defamation about debt in this campaign.

I didn't let anyone tell me that my lack of access to opportunities was the reason I was ineligible as a candidate.

It's true, I've been told many times that I shouldn't run for office.

my friends said

collaborators said

"USA Today" probably shouldn't run

(Laughter) But no matter who you are, money issues often make us give up on our dreams.

I'm not saying you can always overcome this obstacle, but listen, if you don't try, you lose.

(Applause) The second obstacle is fear.

fear is real

paralyze the will

appalling

But it's also energizing, because once you know what you fear, you know how to deal with it.

The third is fatigue.

Sometimes I get tired of trying

I'm tired of learning the process, playing games, and having things that get in my way.

Sometimes fatigue can lead us to choose status instead of influence.

Instead of trying to fight through fatigue and rush toward our goals, we sometimes accept our title as a consolation prize.

That's why God created naps

(Laughter) But then again, fatigue is a measure of how much we want to achieve our goals.

If you feel overwhelmed and try your hardest and do what you say you're going to do as much as you can and it still doesn't work, then you're exhausted.

At this time, look back on "why (motive)"

I know we need women to speak for people who don't have a voice.

we need people with a conscience to stand against oppression

We need people who understand the social justice we deserve.

It wakes me up every morning and I fight harder for it.

I keep my eyes on the past and move forward

I know the obstacles to face

I know how the enemy will come out, and I'm sure they'll rise up and come up with new obstacles.

They have four years to think (until the next gubernatorial election).

(Laughter) (Applause) Maybe two years.

(Applause) (Applause) What I mean is what I want is justice.

I know why I want it, because the existence of poverty is immoral and a stain on this country.

And we move forward every day to achieve justice.

thank you

(Applause) (Applause)

Those who know me know how much I want to pave the way to space.

So I couldn't believe that I would have the chance to offer a zero-g experience to a guru in the field of gravity.

tell that story

We met through the Archon X Prize in genetics

It's our second X Prize, for the first team to sequence 100 human genomes in less than 10 days.

There is something called "genome 100", and as a side prize for this contest, we plan to conduct genetic analysis of 100 celebrities.

Supervised by Craig Venter

I met Professor Hawking there, and he said his dream was to travel to space.

I said, "I can't take you there, but I can go to the world of weightlessness and zero G."

He said right on the spot, "I will definitely go."

The only way to experience zero G on Earth is to fly in a parabolic, weightless flight.

Climb in an airplane and become weightless for 25 seconds around the highest point,

Weight doubles when descending

repeat it over and over

You can stay in weightlessness for 8 to 10 minutes, and NASA has been training astronauts this way for years.

decided to do this

It took 11 years to start

And he announced that he would fly Stephen Hawking.

A government official and an aviation department official said: "You're crazy, stop it! I'm going to kill him!"

(Laughter) And he wanted to go.

It was difficult to get all the permits.

Six months later we were at the Kennedy Space Center

I said at a press conference that we're planning one zero-G parabolic flight, 25 seconds of zero-G.

If all goes well, aim for 3 parabolic flights

I asked him why he wanted to do this

his answer was very moving to me

He said: "Life on Earth is more and more likely to be ruined by disaster.

I believe that mankind has no future other than going to space.

That's why I want to arouse public interest in space."

I took him out of Kennedy Space Center, into a NASA transport vehicle, into a zero-G plane.

And about 20 people who donated — who raised $150,000 for a children's charity — flew with us.

There are also several TEDsters

prepare a whole emergency room,

4 paramedics and 2 nurses on the plane,

We monitored his blood oxygen levels, heart rate, and blood pressure.

I did everything I could just in case I did. I don't want to hurt a famous person in this world.

Takeoff and landing of the space shuttle We have taken off from the shuttle takeoff and landing facility

And my partner, Byron Lichtenberg, and I cautiously supported him to Zero G.

Once they got there, I let them go and let them experience what weightlessness really is.

After the first parabolic flight, the doctor said all was well, he was smiling and decided to continue.

I made my second parabolic flight

(Laughter) (Applause) The third time.

(Applause) We floated apples in homage to Isaac Newton, because Professor Hawking holds the same position as Newton at the University of Cambridge.

And the fourth time, and the fifth and sixth time

(Laughter) Seven and eight

It didn't look like a 65-year-old man in a wheelchair at all.

(Laughter) I was really happy.

We live in precious jewels And we're trying to get out of here while we're alive

Join us in this groundbreaking adventure

Thank you very much

(applause)

What does it mean to be a woman?

You mean you have XX chromosomes, right?

actually that's wrong

Some women are mosaic

Some women have a mix of X and XY and XXX chromosomes.

What does it mean to be female, if not just about chromosomes?

Feminine things?

are you married?

having children?

It's easy to find great women who break those rules, but we all share feminine traits.

maybe it's in the brain

You may have heard the theory in the last century that men are better at math than women because they have larger brains.

the theory was a lie

The average man's brain is about one-third the size of the average elephant's brain, but the average man isn't three times as dumb as an elephant.

I wonder if that's true?

(Laughter) New female neuroscientists are discovering important differences between women and men in terms of neural connections, how the brain is structured and how it works.

We're discovering that the brain is a patchwork mixture.

Women's brains are predominantly female and have fewer male compartments.

In light of this new data, what does it mean to be a woman?

This is what I've been thinking about for most of my life

People who find out that I'm a transgender woman always ask me, "Why did you think you were a woman?"

As a scientist, I study the biological basis of gender.

i want to know why i'm like this

Cutting-edge science is discovering new biomarkers that define gender.

My colleagues and I are working in the fields of genetics, neuroscience, physiology and psychology to understand how sex works precisely.

The common link shared by these widely disparate fields is epigenetics.

Epigenetics studies how DNA activity can be radically and permanently altered without altering the DNA sequence.

DNA is a long, thread-like molecule that's coiled up inside the cell.

DNA is so long that it's actually tangled like a knot, let's just call it a knot.

Extrinsic factors change the way DNA knots are tied.

Think of it this way: inside the cell, there's a lot of machinery that builds structures, connects circuits, and does all the things that are necessary to sustain life.

This is one of them, reading DNA and producing RNA.

It carries giant neurotransmitter sacs [synaptic vesicles] from one end of a brain cell to the other.

Will I get hazard pay for this job?

(Laughter) This is the big picture of the molecular factory, which is sometimes called the mystery of life.

is a ribosome

I have been researching this since 2001

The amazing thing about our cells is that the structures within them are biodegradable.

They're taken apart and put back together every day, like a carnival where the rides are taken apart and rebuilt every day.

The big difference between cells and carnivals is that amusement parks have skilled technicians who rebuild them every day.

There's no such engineer in the cell, and there's a goofy synthetic machine that builds whatever it's on the blueprint, regardless of its intentions.

That blueprint is DNA.

It's how everything in a cell is made.

If everything in your brain cells breaks down almost every day, how can your brain remember the day before?

That's where the DNA comes from.

DNA is a substance that cannot be decomposed

But in order for the DNA to remember the event, something has to change.

We all know that the base sequences don't change, and if the base sequences were to change all the time, we would grow new ears and eyeballs every day.

(Laughter) Instead, it changes shape, and that's where DNA knots come into play.

it's like DNA memory

When something big happens, like a childhood trauma, stress hormones flood the brain.

Stress hormones don't affect the DNA sequence, but they change its shape.

Stress hormones affect part of the design book of molecular machines that reduce stress in DNA.

When that piece of DNA knots, the stupid synthetic machine can't read the blueprints to make the stress-reducing molecular machine.

This is something that happens at the molecular level, so to speak.

At the human body level, you lose the ability to deal with stress, which is not good.

This is how DNA can remember past events.

I think this was also happening when I first transitioned.

I wore women's clothes because I knew in my heart that I was a woman, but everyone saw me as a man dressed as a woman.

No matter how hard I tried, no one saw me as a woman.

In the world of science, reliability is everything. I've been giggled in the hallways, stared at, stared at with disgust, and scared to go near me.

I remember my first big talk after my gender transition.

was in italy

I used to speak at high-profile conferences, and it was a terrifying conference.

When I looked at the audience, I was whispering.

Even though it happened eight years ago, I still feel social anxiety.

I despaired

don't worry i got therapy i'm fine i'm fine now

(Laughter) (Cheers) (Applause) But I thought I had had enough. I'm a scientist. I have a Ph.D. in astrophysics.

(Laughter) I went online (Applause) and found some great research papers online.

It wasn't all bad things about DNA knots.

It's actually like a tie-and-open, complex computer language.

Adjusting the body with exquisite precision

So when you get pregnant, the fertilized egg grows into a newborn baby.

This process requires many decisions for development involving DNA.

Should an embryonic cell become a blood cell?

heart cells? brain cells?

Those decisions occur at different times during pregnancy.

Some can occur early in pregnancy, some can occur in mid-trimester, and some can occur in late pregnancy.

To really understand DNA decision-making, we need to look at the knot-making process at the atomic level.

Even if you can't see it under the strongest microscope

What if you could simulate it on your computer?

To do that, we needed a million computers.

In fact, we've connected a million computers in a giant warehouse at Los Alamos National Laboratory.

Here's an overview of one gene made of DNA, folded into a very distinctive knot.

Our team simulated the entire DNA gene for the first time, the largest biomolecular simulation ever.

First, it's starting to make it possible for us to understand the open question of how hormones make these knots.

DNA knots can be seen brilliantly in calico cats.

The decision to be orange or black happens early in pregnancy, so it's going to have an orange-and-black patchwork pattern, which is exactly what happened in her mother's womb when she was an embryo.

In fact, this patchy pattern can also occur in the brain and in cancer.

directly related to intellectual disability and breast cancer

These decisions made by DNA also occur in other parts of the body.

Early in pregnancy, the gonad primordium changes from masculine to feminine.

On the other hand, it is during the second trimester of pregnancy that the brain's primordia change to be feminine or masculine.

So in the model we're working on, a unique mix of gene expression in the mother's womb changed the gonadal primordia to one sex and the brain primordia to the other.

Most of the epigenetic research has focused on the bad things, like stress, anxiety, depression and low mood.

(Laughter) But now -- the latest research is looking at relaxation.

Will it have a positive effect on DNA?

We don't have definitive data on mouse models right now.

Mice relax, but can they meditate like the Dalai Lama?

Will you be enlightened?

Can you move stones with your telekinesis like Jedi Master Yoda?

(Voice of Yoda) Jedi Mouse must be feeling the Force.

(Laughter) (Applause) Is the aid since that Italian lecture trying to loosen the knots in my DNA?

Maybe because I'm surrounded by good friends, I have supportive parents, and I have a girlfriend, I want to be strong and support others.

I wear a rainbow bracelet at work

It frowns on some, but it also raises awareness for everyone.

There are many transgender people, especially women of color, who can take their own lives with just one demeaning comment.

40% of us will attempt suicide

If you've heard this story and feel like you have no choice, call a friend, go online, or contact a support group.

If you're not transgender but know the pain of loneliness and sexual violence, reach out.

So what does it mean to be a woman?

A new study suggests that the female and male brains develop differently in the womb, and that's probably what makes us feel so innately as women.

On the other hand, perhaps what makes us women is our common sensibility.

We all have different looks and body types, so it's not fair to judge femininity by that.

It's like asking a calico cat what it means to be a calico cat.

I believe that being a woman means accepting ourselves for who we are and acknowledging that we're all the same.

I know you

you know me too

(applause and cheers)

i love learning foreign languages

I love languages ​​so much that I learn a new language every two years, and I'm currently working on my eighth.

The question I always get asked is this: "How? What's the secret?"

To be honest, for many years my answer was, "Well, I just love learning languages."

But they didn't convince me

Even after years of studying, I can't speak even one language fluently, so why am I able to learn one language after another?

They wanted to know the secrets of "polyglots," who speak many languages.

So I thought to myself, how do other polyglots learn? and

do we have anything in common?

And why are we able to learn languages ​​so much faster than other people?

I met people like me and decided to find out.

A great opportunity to meet many polyglots is at an event where hundreds of language enthusiasts come together to practice their language.

These events are happening all over the world, and I decided to join in and hear how other people were learning.

Benny, from Ireland, taught me how to "speak from day one."

After learning a few phrases from a travel phrasebook, she goes to meet a native speaker and immediately strikes up a conversation.

He doesn't care if he gets it wrong 200 times a day. He learns from other people's reactions.

The biggest advantage is that I don't have to travel as often now, because websites allow me to easily talk to native speakers from the comfort of my living room.

Lucas, from Brazil, had a very interesting way of learning Russian.

He added 100 random Russian-speaking people as Skype friends and started chatting with one of them.

The other person replies, "Hey, how are you?"

Lucas copies this and pastes it into a chat with another person, who responds, "I'm fine thank you, how are you?"

Lucas sends this answer to the first person, and thus, unbeknownst to them, they mediate the conversation between strangers.

(Laughter) As you repeat these conversations, you'll begin to see how to start a conversation in Russian, and very soon you'll be able to use it yourself.

Nice way, right?

I met some polyglots who said, "You start by imitating the pronunciation." Some said they always memorized the 500 most common words, while others said they read grammar books first.

If you ask 100 polyglots, you'll get 100 different ways to learn.

We all learn differently, but the end result is the same: we all become fluent in several languages.

As I listened to their learning methods, it suddenly clicked with me. We all had one thing in common: we knew how to enjoy the process of learning a language.

All polyglots also happily talk about language learning.

With a glowing face, they show you colorful grammar charts, handcrafted flashcards, and data about vocabulary learning in apps.

There are different ways to do it, but I always make sure that they are all fun for me.

Come to think of it, I used to learn languages ​​that way myself.

I'm learning Spanish and I'm tired of the textbook sentences

"Jose asks for directions to the train station" or whatever?

Instead, I wanted to read "Harry Potter," because it was my favorite book when I was a kid, and I read it over and over again.

So I started reading the Spanish translation of "Harry Potter." Of course, at first, I didn't understand much, but I loved the book, so I kept on reading it, and by the end, I was able to read it almost perfectly.

The same thing happened with German.

I decided to watch my favorite drama "Friends" in German, and again it was gibberish at first.

I couldn't even make out the gaps between the words, but it was "Friends" that kept me watching every day.

I love it so much that I can enjoy it in any language

By the time I finished watching two or three seasons, I really started to understand what the conversation was about.

I only realized this after meeting other polyglots.

We're not geniuses, we don't know any shortcuts to language learning.

It's just finding ways to enjoy the process that make learning a language a fun activity that you want to do every day instead of a boring school subject.

If you don't like writing words down on paper, you can type them in an app.

If you don't want to listen to boring textbooks, YouTube and podcasts have interesting shows in many languages.

If you're a bit of an introvert and think, "I don't think talking to a native speaker is...", try learning to talk to yourself.

Talk to yourself in the comfort of your own room. Talk about your weekend plans or your day's events.

That's how polyglots learn languages, and the good news is that it's a method that anyone can do, if they're willing to make it their own.

I realized how important it is to meet other polyglots and find joy in the process of learning a language, but having fun is not enough.

If you want to become fluent in a foreign language, you must practice three additional principles.

First, we need an effective method.

If you're trying to memorize a list of words for tomorrow's exam, the words will be stored in your short-term memory and you'll forget them after a few days.

If you want to remember words long term, you have to repeat them every few days, this is called spaced repetition.

You can use apps like Anki or Memrise to do this, or you can use the Gold List method and write it down in a notebook, which is also favored by many polyglots.

If you don't know what methods are available and which ones work for you, look at polyglot YouTube and sites to get ideas.

If it works for other people, it might work for you too.

The third principle is to incorporate conventions into learning.

In today's busy world, it's hard to find time for language learning.

But you can make time just by planning a little ahead.

How about getting up 15 minutes earlier than usual?

It should be perfect for reviewing vocabulary

Listening to podcasts on your commute?

It will be good listening practice

There are so many things you can do that don't require extra time. Podcasts can be listened to while commuting or doing housework.

The key is to incorporate planning into your learning.

"I'm going to practice speaking with my friends for 20 minutes on Tuesday and Thursday."

"Let's watch YouTube videos while eating breakfast."

If you make a commitment to learning, it becomes a part of your life and you don't need to devote extra time to it.

Finally, if you want to become fluent, you also need a little patience.

You can't learn a language in two months, but you can definitely make measurable progress by doing a little bit each day in a way that you enjoy.

There is nothing more motivating than a successful experience.

I still vividly remember the moment I learned my first German joke while watching "Friends."

I was overwhelmed with joy and motivation, so I watched two more episodes that day. As I continued watching, I experienced a small sense of accomplishment, "I understand." Gradually, my German improved and I reached a level where I could express anything freely and fluently.

this feels great

I want to feel this feeling more, so I learn a new language every two years.

This is the whole polyglot secret

Find a method that works systematically, something that's fun to do over time, and that's how polyglots learn a language in a matter of months.

Now, some of you might be thinking, "It's all very well to enjoy language learning, but the truth is, you polyglots are a bunch of talents, and most of us aren't?"

There's something I haven't told you about Benny and Lucas.

Benny studied Irish Gaelic for 11 years and German for 5 years in school.

By the time I graduated, neither could speak at all.

Until he was 21, he thought he couldn't speak a foreign language because he didn't have the language gene.

Since then, he's found his own way of learning, talking to native speakers, getting feedback, and now he can converse easily in 10 languages.

Lucas studied English in school for 10 years,

had the lowest grades in the class

His friends even teased him and gave him a Russian textbook because they thought he would never be able to speak any language.

And then Lucas experimented with different methods, finding his own way of learning, and one of those things was using Skype to talk to people he didn't know.

In just ten years, Lucas became fluent in 11 languages.

Is it like a miracle?

Around me, such miracles are a daily occurrence.

As a language mentor, I see miracles every day in supporting self-learning languages.

People who have struggled for five, 10, or even 20 years to learn a language suddenly begin to actively engage in learning, using materials they enjoy, using more effective methods, and documenting their learning so that they can see their progress.

If you've ever tried to learn a language and gave up because you thought it was too difficult or you didn't have the talent, try again.

Maybe what I'm missing to reach fluency is a way to have fun.

There's only one way you can become a polyglot.

thank you

(applause)

My quest is mostly about finding ways to share, document, and chronologically record the stories of ordinary people.

A story that offers change and leans into transcendence, but never sentimental, a story that never looks away from our darkest places.

'Cause I truly believe that there's nothing more beautiful than when we're at our ugliest

Because that's the moment we realize what we're really made of.

As Chris said, I grew up in Nigeria, where an entire generation of students in the '80s protested against a military dictatorship that was now over.

That's right, not just me, but everyone in my generation.

So what I learned was that the world is never saved by grandiose, messianic behavior, but by gentle, gentle, almost invisible acts of compassion, the simple accumulation of everyday acts of compassion.

South Africa has the phrase Ubuntu

Ubuntu means this in a philosophical way: I am human because you reflect my humanity back to me.

But if you're like me, my humanity is like a window

I don't usually look at it, and I don't care, unless it's covered in dead bugs, for example.

So I finally see humanity, and there's nothing good about it.

Normally, when I swear at someone while driving, it's someone who's trying to get a coffee or texting or taking notes while driving.

So what Ubuntu really says is that we can't be human without other people.

very simple and complicated

So I thought I'd start with a story.

I'm going to tell you a story about wonderful people, and I'll start with my mother.

(Laughter) She was also black.

mother was British

My parents met in Oxford in the 50's and my mother moved to Nigeria and lived there.

She was 5ft 2 (1.5m), very strong-willed and totally British.

How British she was -- she just died

When my mother came to visit me in Los Angeles, California, we went to Malibu, and she was disappointed.

(Laughter) Then we went to a fish restaurant, and when a waiter named Chad, a surfer boy, came to our table, my mother asked, "Do you have any specials?"

Chad said, "Of course, something like salmon wrapped in wasabi or pie crust.

It's crazy good."

My mother turned to me and said, "What language does he speak?"

(Laughter) I said, "It's English, Mom."

She shook her head and said, "At all Americans, we gave you the language, why don't you use it?"

(Laughter) So when I married my father, this woman who converted from the Anglican Church to Catholicism -- and there is no one more radical than a Catholic convert -- my mother decided to teach the Billings Ovulation Method, the only method of birth control approved by the Catholic Church, among women in rural Nigeria, especially among Igbo women.

But she doesn't speak Igbo very well

took me to the interpreter

i was 7 years old

(Laughter) To those women who have never talked to their spouses about menstruation, I say, "How often do you menstruate?"

(Laughter) Do you notice any bleeding?

(laughter) Does your vulva swell?

(Laughter) She never thought of herself as a feminist, but my mom used to say, "There's nothing a man can do that I can't fix."

(Applause) My father complained about the situation of taking a seven-year-old boy for birth control education, and he said, "You're training your son to be a woman."

My mother said, "Somebody has to do it."

(Laughter) During the Biafra civil war, we were caught up in the war.

mother and five children

It took me a year to walk from refugee camp to refugee camp to an airfield where I could escape.

In every refugee camp, she faced off against soldiers who kidnapped my nine-year-old brother, Mark, and turned him into a child soldier.

Can you imagine this 5-foot-tall woman with a gun facing the man who wants to kill us?

All those years my mother didn't cry once

But when we were at the Lisbon airport, about to fly to England, when I saw my mother in clothes that had been washed so many times that I could see through them, and five hungry children, a woman came to my mother and asked what had happened.

When my mother tells this woman

She emptied her suitcase and gave all her clothes to my mother and us, and her children's toys -- and they didn't like it -- (Laughter) and that was the only time she cried.

Years later, I remember writing her a letter and asking her, "Why did you cry then?"

She said, "You can harden your heart in the face of any difficulty or fear.

But a simple act of kindness from a stranger will melt your heart."

After this war, the old women of my father's village memorized the names of all the dead, and they composed lamentations with these names.

Lamentations will burn you too painfully

And like the hearts of the dead seeding rice, they chant this lament only when they plant the rice.

And at harvest time, we sing a happy song with the names of all the children born that year.

And at the next planting, when they sing lamentations, they leave out as many dead names as there are born.

And in this way, women have brought about many changes, beautiful changes.

Did you know that before the Rwandan genocide, the word marriage was the same word as the word rape?

But today it is women who are rebuilding Rwanda.

Also, did you know that after apartheid, when the new government entered the Capitol, there were no women's toilets there?

It suggests that apartheid was entirely a man's business.

This tells us that despite their horror and death, women were never counted.

Their humanity didn't seem to matter much to us.

When I grew up in Nigeria -- it's too generic and inappropriate to say Nigeria, but in Urhobo, where I'm from, in the Igbo region, there was always a rite of passage for young people.

Men are taught to be men by not being women, and that's basically it.

And as the ritual progressed, a lot of it involved killing small animals, and then when I turned 13 -- I mean, rightly so, it's a rural area, so someone has to kill the animals.

I'm a weird, sensitive kid and I couldn't do this, but I have to.

I should have been alone

But one of my friends, Emmanuel, who was a lot older than me and was a child soldier during the Biafra civil war, decided to follow me.

I was relieved because he was very experienced.

And when I was growing up, he would often tell me stories of how he once stabbed a man with a bayonet, and of a man whose intestines popped out and still kept running.

this man is coming with me

Have you ever seen a goat or heard a goat cry? A goat cry sounds like a human being. That's why we call tragedy "The Goat Song."

My friend Brad Kessler says that we became humans by raising goats.

A goat's eyes are like a child's eyes

I tried to kill the goat, but I couldn't, so Emmanuel leaned over, put his hand over the goat's mouth, and covered his eyes so I didn't have to look while I killed the goat.

For someone who has seen as much as he has, killing goats must be an everyday occurrence, but he never lost his desire to protect me.

i was a wimp

cried for a long time

after that he didn't say anything

sat for an hour just watching me cry

After that he said it's always hard, but if you cry that much every time, you'll die of grief.

Sometimes just knowing it's hard is enough

Of course, talking about goats reminds me of sheep, not in a good way.

(Laughter) I was born two days after Christmas.

I was always celebrated with a cake or something, but I never got a present because I was born two days after Christmas.

When I was nine years old, my uncle had just returned from Germany, and a Catholic priest was visiting at home, and my mother was serving tea.

My uncle suddenly said, "Where's Chris' present?

My mother said, "It's not about speaking in front of customers."

But he wanted to show that he had just returned, so he called me over and said, "Go into my bedroom.

You can choose whatever you like from what's in your suitcase.

It's your birthday present."

You thought I'd take a book or a shirt, but I found an inflatable sheep

(Laughter) I inflated it and went to the parlor, and my fingers were in the wrong place, and I swung this humming sheep around, and my mother looked like she was about to die of shock.

(Laughter) Father Maggetrick wasn't upset at all, he just stirred the tea and looked at my mother and said, "It's okay, Daphne, I'm Scottish."

(Laughter) (Applause) My last days in prison, the first year of my last 18 months, I had a 14-year-old cellmate.

His name was John James, back then, if anyone in your family committed a crime, the military would hold you hostage until they turned themselves in.

This 14-year-old was on death row

It's not just political prisoners on death row.

some people are really bad

He smuggled in two comic book magazines - Spider-Man and X-Men.

he was obsessed

And when I got tired of reading, I started using this comic book magazine to teach the men on death row how to read.

And every night, all these men, these criminals with tags, surround John James and read out, "Take this, Spidey!"

(Laughter) It's amazing.

i was so worried

he didn't know what death row meant

I went in there twice and was very afraid to die.

But he laughs and says, "It's okay, we can get out."

When I say, "How do you know?"

He said "I heard a rumor"

he was killed

He was handcuffed to a chair, had his penis nailed to a table with a six-inch nail, and was left there to die of blood loss.

I let the people around me know my feelings and spent the rest of my time alone

There are people like this all around us

The Igbo used to say they made gods.

they come together as a crowd and express their wishes

And their desires are gathered to a priest who finds ritual objects, appropriate sacrifices are made, and shrines to the gods are built.

But when the god gets out of hand and starts demanding human sacrifices, the Igbo will destroy the god.

They tear down shrines and stop calling the name of God.

This is how they regained their humanity.

All of us here daily worship the gods who have gone berserk It's time for us to take them down and forget their names

I don't need anything out of the ordinary

All it takes is recognition among us on a daily basis that the few of us who can see are surrounded by people like the ones I told you about.

Some wonderful people in this room provide us with a mirror of our own humanity.

I would like to end with a poem by an American poet named Lucille Clifton.

I dedicate the poem "Liberation" to my friend Vusi somewhere in the audience.

"Sake Offering" North Carolina 1999

"Let's offer this gin to this ground

Imagine an old man crying here, out of sight of the Overseer

If he had been perfect, he would have pushed his tongue through the holes where his teeth would have been.

In that aching void Where there once would have been a tooth Where there would once have been a land His house his wife his son his beautiful daughter

He wipes sorrow from his face And puts his dry fingers to his dry tongue and tastes the salt

I call the name that could have been his

I dedicate this to you old man

This gin, this salty earth

thank you

(applause)

From space, the Earth appears to have more ocean than land.

But even though the planet's surface is 71 percent water, more than half the world's population suffers from acute water scarcity for at least one month of the year.

Current projections suggest that by 2040, up to 20 new countries may experience water scarcity.

These stark statistics raise a startling question: Is the planet running out of clean water?

I can't say either yes or no

At a planetary level, thanks to the water cycle, the earth will never run out of fresh water, because there are systems that constantly create and recycle water, turning it from water vapor to water to ice as it circulates around the earth.

So it's not a question of how much water we have, it's a question of how much we can use.

Ninety-seven percent of the water on the planet is salt water, with too many minerals to be used for drinking or agriculture.

Of the remaining 3% of potentially usable water, more than two-thirds is frozen in ice caps and glaciers.

That leaves less than 1% of the water to sustain all life on Earth, and that water is distributed all over the planet in the form of rivers, lakes, underground aquifers, anchor ice, and permafrost.

These water resources are rapidly depleted by humans, but they are slowly replenished by rain and snow.

Also, this finite amount of water is not distributed evenly around the world.

They have different climates and geographies, some with abundant rainfall and natural water sources, while others have geographic features that make water inflow much more difficult.

And it can cost a lot of money to provide the infrastructure and energy to get water across these regions.

In many water-scarce areas as well as in some well-supplied areas, people are rushing to consume more of their land than is resupplied.

When replenishment can't keep up with demand, it starts pumping water from finite groundwater sources.

Twenty-one of the planet's 37 major groundwater sources will be irreversibly depleted.

It's true that the planet will never run out of water, but we are depleting the water resources we depend on at an unsustainable rate.

It may surprise you, but after all, the average person drinks only about two liters of water per day.

But water has a hidden role in our daily lives, and during that same 24-hour period, most people consume an estimated 3,000 liters of water.

In fact, the amount of water we use for domestic purposes, whether it's drinking, cooking or cleaning, accounts for only 3.6 percent of the water we consume.

Another 4.4% goes to the various factories that make the products we buy every day.

But the remaining 92 percent of water is consumed in just one industry: agriculture.

The annual amount of wastewater produced by agriculture is equivalent to 3.3 billion Olympic-sized swimming pools, all of which is used for crops and livestock to support the planet's growing population.

Agriculture currently occupies 37 percent of the land surface and poses the greatest threat to the region's water supply.

That said, farming is also necessary.

How can we limit agricultural use while preserving water supply for those who depend on it?

Farmers are already finding ingenious new ways to reduce the impact of their water use, such as introducing special irrigation techniques that allow them to grow "more crops per drop of water," and growing new varieties that require less water.

Other industries have followed suit, adopting manufacturing processes that reuse or recycle water.

On an individual level, reducing leftovers is the first step to reducing water use, because one-third of the food shipped by farmers is left uneaten or wasted.

You might also try to eat foods that use less water, such as nuts with shells and red meat.

Adopting a vegetarian lifestyle can also reduce your water footprint by up to a third.

The planet will never run out of water, but that doesn't mean that individuals won't run out of water.

Solving this regional problem requires global solutions, and small, everyday decisions can affect water resources around the world.

Before there were empires and royalty in the world, before pottery and writing, before metal tools and weapons, there was cheese.

As early as 8000 BC, early Neolithic farmers in the Fertile Crescent began making cheese, a history as old as civilization.

With the advent of agriculture, sheep and goats were domesticated, and ancient farmers milked them.

But if you leave it in a warm place for a few hours, fresh milk will start to spoil.

Lactic acid causes the proteins to coagulate into soft clumps.

A farmer who discovered this strange change poured out the remaining liquid, later called "whey," and discovered that the yellowish mass could be eaten raw.

This mass, called curd, is the basis of cheese, which can be aged, compressed, aged and squeezed for years to create a wide variety of delicious dairy products.

The discovery of cheese gave Neolithic humans many survival advantages.

Milk contains essential proteins, fats and minerals.

It's also high in lactose, which was and still is hard on the stomach to digest.

But cheese has all the benefits of milk, but much less lactose.

It's preservative and storable, so you can get these essential nutrients during crop failures and long winters.

A 7th-century B.C. pottery shard found in Turkey bears indications that it contained cheese and butter.

By the end of the Bronze Age, cheese had become a common maritime trade around the eastern Mediterranean.

In the densely populated cities of Mesopotamia, cheese was an integral part of the diet and religious life.

There are records in ancient documents that managed the cheese quotas, allocating different cheeses to ceremonies and peoples across Mesopotamia.

Records of neighboring civilizations in Turkey make mention of "rennet."

It's a livestock by-product made in the stomachs of certain mammals that can speed up and control clotting.

Eventually, this sophisticated cheese-making tool spread around the world, leading to the birth of many different kinds of new hard cheeses.

While some culinary conservative cultures didn't like cheese, many people embraced it and quickly added local flavors to it.

Mongolian nomads made hard, sun-dried Byaslag from yak milk.

The Egyptians preferred cottage cheese made from goat's milk, with whey strained through reeds.

In South Asia, various edible acids -- lemon juice, vinegar, yogurt -- were used to coagulate the milk, which was then hung to dry and made into a cheese called paneer.

This soft, light cheese can be used in curries, sauces, or as a ready-to-bake vegetarian dish.

Greeks also made brined feta and hard cheeses similar to today's pecorino.

This shaved cheese originated in Sicily and was used in a variety of dishes throughout the Mediterranean.

Under Roman rule, a hard cheese called cassius aridus was a mandatory food ration, feeding nearly half a million soldiers guarding the sprawling borders of the Roman Empire.

After the fall of the Western Roman Empire, it was in the manors that dotted the countryside of medieval Europe that cheesemaking continued to flourish.

In hundreds of Benedictine monasteries scattered across Europe, medieval monks constantly used different milks and experimented with different production and aging methods, giving rise to the cheeses that are so popular today.

Parmesan, Roquefort Manster and several Swiss cheeses have been refined and perfected by the cheese-making priests.

Swiss cheesemaking flourished especially in the Alps, giving rise to a wide variety of cheeses made from cow's milk.

By the end of the 14th century, cheese from the Gruyères region of Switzerland was so profitable that neighboring towns invaded the Gruyères Heights and took control of the growing cheese industry.

Cheese remained popular during the Renaissance, and the Industrial Revolution moved cheese production from monasteries to factories.

Currently, about 22 billion kilograms of cheese are produced annually in the world and shipped and consumed all over the world.

Ten thousand years after the invention of cheese, local farms are still handcrafting some of mankind's oldest and favorite foods using Neolithic methods.

First of all, everyone, remember the last time you sent or received a fax.

(Laughter) For me, it was this morning, because one of my jobs is to make sure that all Americans have the information they need to vote.

Collecting that information from the district offices that manage it would mean a lot of faxing back and forth.

Voting is one of the most basic human rights

It is also one of the most familiar means for each and every one of us to be involved in building a local community.

As we enter the age of the Fourth Industrial Revolution, where everything is changing thanks to technology, if the right to vote is important, then there must be the most advanced, most secure and open system, right?

But it's not

Compared to other democracies, the United States has the lowest voter turnout in the world.

In this country's voting system, even the most persistent voters run into tedious obstacles.

Twentieth-century technology, like the fax machine, and outdated methods of conducting elections prevent full and active voting participation.

Voter turnout in US presidential elections is around 60%.

Numbers in local elections fall further

So nearly 40% of Americans don't vote.

This equates to about 100 million people

I believe it's very simple: everyone should have access to the information they need to vote, and the voting process should be smooth and safe.

Because when more people vote, together we can make better choices about our communities.

For the past eight years, I've been on a mission to update this country's democracy for the 21st century.

Now, the most common way to promote electoral modernization is by advocating for electoral changes and so on, which is a very important part of the strategy to create a system that can increase voters by the millions.

but i took a different approach

It turned to a very important and overlooked human resource for electoral modernization: local election officials.

I'm helping thousands of local election officials across the country develop the tools and skills they can use to transform the way voters today engage in elections.

It's for people like Kat and Marie.

For years, Kat and Marie worked in the windowless basement offices of the Mercer County Courthouse in Western Virginia.

Both of them have a very important responsibility.

They're district elections officials who oversee the county's 40,000 voters.

Local election officials are civil servants who run the election system on a day-to-day basis.

These are the people who fill out the voter registration form and process the registration.

They're also the people who buy the machines that are used to vote and count the ballots.

We also recruit and train volunteers for local polling places.

People who formally and bipartisanly teach their communities how to vote.

Unlike other countries that have a centralized electoral authority, the United States has 7,897 counties and municipalities that each have their own electoral authority, each with its own separate role in managing elections, like Katt's and Murray's.

So that means there are nearly 8,000 variations of voting in each region, slightly different.

When I listened to Kat and Marie's story, like many election officials I've talked to in both big cities and suburbs, they were both very proud and anxious to help their residents.

The new tools that people use as information sources—the Internet and social media—are difficult to understand how to use them effectively.

They felt that they were not meeting the needs of voters in the county.

One of the things they desperately wanted was a website, so that they could create a hub of information where they could post information about how to register to vote for the upcoming elections and inform them of the election results.

At the time, if voters had any questions, they had to call or visit the office, which meant that Kat and Marie would have to answer the same question over and over again.

It wasn't just about Mercer County.

At that time, 966 counties, including Mercer County, did not have voting information available online.

Please look be considered

About a third of counties in the United States did not provide any information about voting online at all.

Kat and Marie shouldn't have had an election site, but they couldn't help it.

We didn't have the budget to commission a website developer, and we didn't have the knowledge to build one ourselves, so we went into the election without a website.

That's how 40,000 voters in Mercer County went into the election.

We now have an unprecedented opportunity to change the face of civic engagement.

Technology continues to revolutionize science and industry

The way we connect with each other and the way we understand the world has changed forever, yet our democratic institutions remain outdated.

America is one of the few democracies in the world that forces individuals to self-register to vote, and the government doesn't do that for them.

The rules that govern how people vote are different from state to state, and sometimes even from county to county.

And the ballot paper has many pages.

I've seen ballots for this month's election, and that's where you have to choose from over 100 candidates and ballot items.

In a complex environment like this, we should be using the best tools available to assist with voting, but we're not.

One of the most common statements I hear at work is, "People are under-sufficient because they don't care, they don't care about politics."

But my best friends at the Civic Design Center say that the lack of interest is the system's fault, not the voters' fault.

We can change the system today by giving local election officials like Kat and Marie 21st century voting tools and teaching them how to use them to better serve their voters.

For example, how to use social media to encourage people to vote, how to staff and equip polling places based on data, how to avoid hours of waiting in line at polling places, and how to train cybersecurity best practices to ensure the security of voting systems.

Investing in these efforts will yield meaningful results over the long term.

Kat and Marie are using the net now

We used their experiences as a reference and incorporated the results of our research into Civic Design to create a template for the website.

In less than a week, they went from completely ignorant behind the scenes to an informational site for county voters that they've been running themselves since 2014.

Today, 40,000 voters in Mercer County and 100,000 voters nationwide can get all the information they need to vote directly from their local elections officials on a smart, easy-to-use, mobile-friendly site.

These achievements can be extended further, if election officials in each region don't limit themselves to their own channels of reporting, but if they work together to broaden their channels of reporting.

Initiatives like the Voting Information Project are working with election officials around the country to create a standardized database of important information, such as ballot content and polling place locations.

And that information gets to places people already do, like news feeds and search, through tools built by Google and Facebook.

In 2016, the Voting Information Project informed citizens more than 200 million times about candidates and ballot items, helping between one-third and half of voters make decisions.

That model has been adopted in elections around the world.

If you look at other government initiatives, you'll find opportunities to listen to the needs of your citizens and solve them with modern tools.

In the example of mRelief, 260,000 families were saved. We helped government agencies transform a 20-page paper food ration application into a 10-question text message process that took less than three minutes, enabling an additional $42 million in food assistance.

We can make that change in our voting system.

It's happening now, but there's still a lot to do.

If you're good at technical things, yes

can solve everything

I already have the technology I need

Bring your expertise together

Some of you may be interested in volunteering at your local elections office.

It's solution-oriented and great, but let's be clear: modernizing the electoral system isn't something you can do with 20% of your day's work, or you can do it with a hackathon, or you can do it with one-off projects.

What we need is long-term, large-scale investment.

Let's invest in technology, invest in improving the skills of local election officials to run 21st-century elections.

If you're ready to help millions of people, if you're willing to bridge the gap between the system as it is and the system that should be, lend a hand.

The organization that does that kind of work all year round needs you.

Your local elections office needs you

please join us

thank you

(applause)

It happened in the spring of 1988, and there was a moment of surprise.

I was at my very first roundtable, and for those of you who don't know, a roundtable is a term that's used a lot on Wall Street, and it's an end-of-year performance review.

It's called a roundtable because it's closed to the public, around a table, and everyone is put into one of the top, middle, and bottom categories, and that's a bonus category, and they're assigned according to their job title.

It was my first experience, but as I was observing -- I saw a person -- there was someone who was recording the outcome of the conversation.

I also noticed that there were several people in charge to introduce everyone to the audience.

In addition, there was a guest who was to make comments while the subject's situation was explained.

What I found interesting was that the people who were invited as guests were in higher positions than the people being appraised, and they technically knew them in some way.

It was my first time attending this roundtable, and I was very excited because I knew my personnel evaluations would follow the same process, and my bonuses would follow the same path, so I wanted to know how it worked.

Every time I talked to him, he said, "Our corporate culture and personnel evaluations are based on meritocracy.

In order to stand out in this company, you need to be smart, work quietly, and work hard.

So this was my chance to learn how meritocracy works.

So when the evaluation began, the name of the first candidate was called to the note taker.

"Joe Smith"

The person who introduced Joe's case worked as planned.

Towards the end of the day, someone interrupted me, saying, "He's a great candidate. He's good at analysis and numeracy.

He is an outstanding person.”

And the note taker said, "Joe seems like someone who should be in the upper echelons."

followed by Mary Smith

In the middle of the introduction, someone interrupts, "He's a good candidate.

It's nothing special, but it does the job."

The registrar said, "Mary seems like someone who should go to the middle class."

Then someone says, "Arnold Smith."

Before Arnold's case is introduced, someone says, "This guy can't do the job.

Far from being a model

Before the case is introduced, the note taker says, "Arnold seems like someone who should be on the lower tier."

(Laughter) And I thought, "Who's going to introduce me to you?"

who will introduce me

In that moment, I really realized that the idea of ​​meritocracy that every organization promotes is just an illusion.

As long as people are involved in evaluating people, there's no way we can have an environment that's 100% performance-based, because subjectivity will inevitably come into play.

In that moment, I realized that someone needed to make a case on my behalf in private, and I needed to be introduced to the decision maker present so that he could give me an answer that was convenient for me.

It was a very interesting lesson. And then I asked myself, "What kind of person is that?

What should we call this person? ”

I thought of all the buzzwords in business at the time, but I didn't realize that "mentor" was different. A mentor's job is to give advice that's right for them.

Good things, bad things, dirty hands, it's an existence that teaches you by making full use of every method.

"Advocates" and "advocates" are also different, because you don't have to spend money to be someone's advocate.

If you're a supporter, you're not guaranteed to be invited to a private event.

About two years later, I knew what to call this person.

At the time, I was lecturing to MBA students at the University of Michigan, a lesson I learned in my three short years on Wall Street.

“The person who will work for your benefit—the person who will bring your evaluation materials to the personnel evaluation site—the person who will use the capital of his or her valuable personal and social connections to advocate for you—this person is the ‘sponsor’.

I am a sponsor.”

And then I thought, 'How do you get a sponsor?

do you really need it? ”

We really need sponsors, because, as we all know, when it comes to the evaluation process, whether it's in schools, health care, financial services, or anything else, you can't think of one without the human element.

So there's a certain degree of subjectivity involved in personnel evaluations.

The person presenting your case will give you a subjective assessment.

A certain degree of subjectivity creeps into what you say and when you interpret objective data about you.

Even the way we express our thoughts involves subjective evaluations that affect our results.

So what you have to make sure is that the person you're talking to, the sponsor, who wants you to get the most out of it, has the power to get whatever it takes for you, and does it in the evaluation arena.

Now, people always ask me, how do you get sponsors?

Ideally someone finds you in an environment and says, "I'll do this for you.

This is the moment when you decide to make sure you succeed.

But I'm sure many of you here know that things don't happen that way.

So let's talk about the concept of currency that I think of and how you can get sponsorships with this currency.

There are two types of currency in any environment: performance currency and relationship currency.

Performance currency is a currency created by giving back to the other party a little more than what was asked for.

Performance currency is created every time you deliver more than expected

This mechanism is the same as the stock market

If a company is expected to make 25 cents per share, and it delivers 40 cents, the stock will go up, and so will your valuation.

Relationship currency is valuable for three reasons.

Part 1: You're the focus of attention

enhances your reputation

Number two, with performance currency, you can get rewards and promotions, very early in your career and in any environment.

And three, it might catch the eye of a sponsor.

Because if you have a strong performance currency, as I said earlier, you'll be more visible in the workplace and you might get noticed by your sponsors.

because everyone likes good people

But you may find yourself without a sponsor, and I have good news for you.

You can ask for a sponsor on your own.

But here another currency becomes very important.

That's relationship currency. This currency is the currency you invest in the people you work with. It's the investment you make in the people in your environment.

Don't ask someone you've never interacted with to use their hard-earned, influential currency for you.

It's useless to ask

So the important thing is to invest the time in building relationships with the people you work with, getting to know them better, and even more importantly, creating opportunities for them to get to know you.

Because once they're remembered, they're more likely to be accepted if you ask them to sponsor you.

Now that you've read this story and convinced yourself that you need a sponsor, let's talk about how to find one.

First, the sponsor you're looking for must have three main characteristics.

First, be in a position to participate in decision-making, and then know your work well -- this is to gain credibility in closed-door discussions.

Having these three characteristics is very important.

And when you find someone to sponsor, how do you ask for it?

How about asking

"Jim I want to get promoted this year

It's been a great year, and I think I've proven enough within the company that I'm worthy and worthy of a promotion.

You know me, you know my work, you know my customers, and I'd like you to make a case for me."

If Jim knows you and there's a relationship between the two of you, there's a pretty good chance he'll get a good answer, and he'll do his best to help you.

But it's also possible that Jim refuses, and if he does, it's probably for one of three reasons.

The first is that they don't know your work very well, so they don't think they'll be able to gain the credibility and exert enough influence on your behalf in the performance review process.

The second reason is that even though you think the person is influential and dependable, the person knows he/she has no power and doesn't want to touch on that in a conversation.

(Laughter) The third reason is that I hate you.

i hate you

(Laughter) That might be the case.

But that would also be valuable information for you, because it might be a little more influential, and it might help you when you have a conversation with your next potential sponsor.

I can't say enough about the importance of having your own sponsor.

It's a vital connection in your career.

Sure, having a mentor helps, but you can still work without one, but without a sponsor, you won't get promoted in any organization.

Sponsors are essential, so ask yourself this question on a regular basis: "Who will bring my review materials to the performance review?"

If you can't tell me who it is, put a little of your work energies into finding sponsors, because they're essential to your success.

Finally, a word to potential sponsors who have a seat at the closed-door discussion.

If you've ever been called to a performance review, know that you have your seat, and if you have your seat, you have a responsibility to speak up.

Don't waste your power worrying too much about what other people say Don't worry about people thinking you're only supporting people who are like you

Use the currency you have If someone has value, use it

In my decades on Wall Street, I've learned one thing: to grow your power, you have to share your power, and your opinion is --

(Applause) And your opinion is the core of your power.

use force

thank you

(applause)

Feminists have no sense of humor Feminists just want to be alone. Boo, foo, foo, foo. Feminists spew malicious lies and rumors They have tumors in their weird bones They say child sexual abuse is not funny. Ha, ha, ha, ha Rape and depravity are simply crimes. Excuse me, ladies. They say prostitution everywhere is sex for money. What's wrong with that These girls can't do anything but complain Let's dance, let's break Da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-da-ooh-hu-da-da-da-da-da-da-da-da-da-yay Ridiculous Equal pay for work is an issue worth fighting for. "It's time to say something new. Abortion anytime, anywhere. Okay. But without gun control How could these women take their life in their hands Feminists have no sense of humor. Poor Hilary Feminists and vegetarians, give me one Big Mac Feminists spread malicious lies and rumors They're too sensitive to be ham So these feminists just need to find a man Da-da-da-da-da-da-da-da-da-da-da-da support this message

thank you

applause thank you

applause thank you

I asked my mom "Do you think I should say something for someone?

Then my mom said "No way, heckle everyone, except Ralph Nader.

I could teach the world how to laugh and smile I could always be happy I could turn gray skies into blue skies. If only you were by my side I could leave the old world clean I could drop all my friends and I wouldn't care at all I could start my life all over again If only you were by my side, I could climb the snow-capped mountains, I could sail the ocean, I could cross the burning desert. If only you were by my side, I could be a king, uncrowned, humble, poor, rich, famous, there's nothing I can't do. If only you could stay by my side, thank you. thanks so much

As the warrior slept, a snake entwined his face.

The warrior's wife saw not fear, but an omen that great power would bring glory or ruin to her husband—

Now they're just slaves, one of the millions brought from the Roman-conquered territories, forced to fight to the death in the mines, in the fields, and for public spectacle.

He was a nomadic Thracian from what is now Bulgaria, a soldier who fought in the Roman army, but was imprisoned for desertion.

I said my name was Spartacus

Spartacus is brought to Capua by a man named Batiatus, who is training gladiators.

Life at the gladiator training school was tough.

Newcomers are forced to take an oath, "Burned, bound, beaten, and killed with the sword," the master's life was absolute.

But even the harshest of slaps did not break Spartacus' heart.

In 73 BC, Spartacus, accompanied by 73 slaves, fought his way out with knives and skewers taken from the kitchen, robbing a chariot of gladiator gear along the way.

Stop fighting for others, fight for freedom

When news of this reached Rome, the Senate was busy fighting Hispania and the Kingdom of Pontus, and had no time to care about disobedient slaves.

Praetor Claudius Gravel, taking no notice of it, decided to go with 3,000 men to Mount Vesuvius, where the rebels were hiding, and block the only way to the mountain.

I figured I'd just have to wait and start a starvation attack.

In the dead of night, the rebels descended cliffs on vine ropes to flank Gravel's unprotected encampment.

Thus began the legend of the Roman renegade gladiator.

As rumors of a rebellion spread, runaway slaves, deserters, and starving peasants joined them.

Many of them had no combat training, but Spartacus' clever tactics turned them into effective guerrilla forces.

The second Roman expeditionary force, led by Praetor Varinius, was ambushed while the commander was bathing.

The rebels disguised their enemy's corpses as guards, got past the rest of the Roman army, stole Varinius' horse, and fled.

Because of his inspiring victories and his policy of sharing the spoils evenly, Spartacus' followers grew and he took control of villages and made weapons.

The Romans realized they were more than just a bunch of fugitives, and in the spring of 72 B.C., the Senate went full force with two legions to retaliate.

The rebels continued to win, but many died in the battle, including Crixus, Spartacus' lieutenant.

In honor of Crixus, Spartacus held a mourning game, forcing captive Roman soldiers to fight to the death as the rebels were once forced to do.

By the end of 72 B.C., Spartacus had grown to an army of 120,000.

Its size made it difficult to command.

With an unobstructed path to the Alps, Spartacus wanted to cross the borders of Rome and set his people free.

But as his army grew, it became arrogant.

Many wanted to continue looting, and some wanted to march on Rome.

In the end, the rebels headed south, missing their last chance to be free.

Meanwhile in Rome, Marcus Licinius Crassus took over the army.

As Rome's richest citizen, he pursued Spartacus with eight new legions and drove the rebels to the tip of Italy.

A failed attempt to build a ship, betrayal by local pirates, and unsuccessful attempts by the rebels to breach Crassus' siege.

Roman reinforcements returning from the battle against Pontus crushed the rebel ranks and morale.

In 71 B.C., the last stand was made.

Spartacus was one step closer to Crassus, but was defeated by the centurion.

The rebels were defeated, and 6,000 prisoners were crucified along the Appian Way to show Roman prestige.

Crassus won the battle, but he wasn't the one we talked about for centuries.

Thousands of years later, the name of a slave who rocked the world's mightiest empire became synonymous with freedom and the courage to fight for it.

I'm sure some of you have heard this story before, but some of you have never heard it before. I'm a little more nervous in front of an audience right now than when I usually give this story.

I used to be a photographer for a long time

In 1978, Time magazine, where I worked, assigned me a three-day job to photograph Amerasian children -- abandoned children of American soldiers who were fathered by American soldiers -- across Southeast Asia -- 40,000 children across Asia.

I had never heard the word Amerasian

I spent a few days in different countries photographing many children, and like many photographers and journalists, I always hoped that when my photos were published, I would actually have an impact on the situation, not just for the record, but for the shocking things I witnessed.

I was really unhappy with the article that was actually published, so I decided to take a six-month vacation.

when i was 28

I decided to look for six children in different countries and actually spend some time with them, and decided to tell their stories a little better than I had previously done for Time magazine.

When I was looking for children who weren't photographed, I was told that the Pearlbach Foundation had many Americans donating money to help those children.

And the man who runs the Pearl Buck Foundation in South Korea told me about an 11-year-old girl being raised by an old woman who wouldn't let any Westerners see her.

Every time a westerner comes to town, he hides the girl.

And of course, I was immediately intrigued by this story.

I saw her picture and wanted to go there.

The man said to me, "I can't. As I told you, this old lady will never let you see that girl. I will enter the village with an interpreter.

I was able to meet the old lady, and to my surprise, she told me

agreed to photograph his grandchildren

So I was working at my own expense, so I asked the interpreter if I could stay there for a week.

i had a sleeping bag

There was a small warehouse next to my house, so I asked, "Can I sleep in my sleeping bag every night?"

And I told this little girl, Lee Hyun Sook, that if I did something that embarrassed her -- although she looked American but didn't speak any English -- she could raise her hand and say "stop," and I would stop filming.

After that, my interpreter left. Unfortunately, I couldn't speak a word of Korean.

This is the first night I met Lee Hyun Sook, her mother was still alive.

Her grandmother, not her mother, raised her.

And I was immediately struck by how much these two people loved each other.

The grandmother's love was very deep

They slept on the floor at night.

Then the heat spreads under the floor. Hyunsook was 11 years old.

I said I was filming a lot of these kids

Hyunsook was actually the 5th child I photographed

Almost all of these children were very traumatized by the experience of being teased, bullied and neglected.

Also, South Korea seemed like the worst place for these kids.

What struck me immediately in meeting Hyun-sook was how happy and confident she was to be herself.

Remember this photo, because I'm going to show you another one later, anyway, even though she has a Western appearance.

You know you look just like your grandma

I decided to follow her to school, this is the first morning.

this is on the way to school

This is the morning assembly at school

where she is fooling around

When the teacher asked a question, she was the first to raise her hand.

She's not really shy or shy, she's completely different from the other kids I've photographed.

She was the first student to go to the blackboard to find the answer Whispering in her best friend's ear during class

was a problem

So one of the things I told her through my interpreter -- about that "stop" thing -- I told her not to pay attention to me.

she completely ignored me

During recess, I realized that she was the one who picked the other girls to join the team.

It was very clear from the beginning that she was the leader.

This is on the way home, around this hill is North Korea.

This is the demilitarized zone

People would cover their windows every night to keep the light out, because the South Korean government had warned them that North Korea would invade at any moment, so the closer they got to North Korea, the more scared they felt.

At school, very often when I was filming, she would whisper into her friend's ear, and then look at me and say, "Stop."

And then I got on my guard and the girls laughed so hard, it was kind of like a little joke.

(Laughter) At the end of the week, I asked the interpreter to come back.

And in the middle of her talking to the interpreter, she started crying, so I asked the interpreter, "What's wrong, why is she crying?"

The interpreter spoke to the old woman for a few moments, and then tears began to form in her eyes, and I said, "Well, what am I doing, what is happening?

why is everyone crying? ”

Then the interpreter said, "This old woman says she will die soon. So I want to know if you will take Hyun-sook to America with you."

So I said, "I'm 28, I live in a hotel, I'm not married," and I kind of fell in love with this girl.

Emotionally, I felt like I was 12.

If you know photographers, you can make an interesting analogy to this classic example of late puberty.

"Sorry, I have to go and do some interviews. I'll be back."

Can I take you to the hospital? Can I pay to see the doctor? she refused any help

when you go out there

I gave the interpreter some money and asked him to come back and see how things go.

Then I gave my business card to the old lady.

"If you're serious, I'll find a family for her."

I immediately wrote a letter to my best friend in Atlanta, Georgia, who has an 11-year-old son, wishing he had another child.

One day I carelessly said

My friends Gene and Gail hadn't heard from me for almost a year.I called out of the blue and said,"I'm in Korea right now and I met this crazy girl."

"Grandmother thinks she's sick, but I think she should bring the girl with her."

Then he said that I would pay for it. I had an image

well anyway i left

My friends were actually very interested in adopting her.

I said, ``If you tell your grandmother that you are really willing to adopt her,'' I said, ``If you tell your grandmother that you are really willing to adopt her, she may die.

my duty was off

After a few weeks, I decided to talk to my grandmother on Christmas Day.

I was in Bangkok with a group of photographers when I received a telegram from Time magazine, saying that someone in South Korea had died and left his child to me in his will.

It was unexpected news

I didn't let them know what I was doing and I was upset.

Anyway, I went back to the village of Hyunsuk in South Korea.

the house is empty

It was unbelievably cold.No one in the village knew where Hyunsuk was.

Because the old woman always hid her from Westerners.

And finally she used to play every day after school

I found my best friend Myungsung

Myung-sung gave in to me and the interpreter and finally gave me an address in the suburbs of Seoul.

I went to the address, knocked on the door, and a man answered, not in that nice part of Seoul.

It was a dirt road outside

I knocked on the door and Hyunseok came out and her eyes were bloodshot and she looked surprised.

didn't remember me didn't remember me at all

A man came to the door and yelled something in Korean.

he wanted to know who i was

I was told, "I'm a photographer," and he knew who I was.

I wanted to know why you came

I explained to him that her grandma asked me to find her family.

He told me to go home because he was my uncle and had no business with me.

So the door was closed, and it was a ridiculously cold day, and I started thinking, "If I was writing a movie script, what would the main character of the movie do?"

So I said, "It's cold here and I've come a long way. Can you let me in?" I said, "It's cold here and I've come a long way.

And when we started talking I saw him yelling something

Hyunsook came and brought us food.

It made me imagine something like Cinderella

I imagined this incredibly beautiful, smart, happy kid who had become a slave to this family and was very withdrawn.

I was appalled

And as I spoke to him he became more and more distant

I can't speak Korean, so through an interpreter, I started talking, "I'm really happy that Hyun-sook has a family. I was very worried about her.

I promised to find your mother and her family.

I am very happy to hear that you will take care of her.” And that I am buying a return ticket for the week ahead.

Explain that you will be staying in a downtown hotel during that time.

Invited me to lunch the next day.

adding that it also helps him practice his English

I was trying to find out more about him

There were two Ameranians at the hotel I was staying at.

One girl had a prostitute mother and was a prostitute herself, and another boy was in and out of prison.

I told them about a girl who had a chance to get out of here and go to America. I don't know if that's good for her, but I added that

I invited him to lunch tomorrow, so I asked an uncle to tell me what it's like to walk the streets here, what people say, and what you do for a living.

To explain what I want him to know what will happen if she stays here

I asked you to come tomorrow

They came to a restaurant for lunch, but we were thrown out of the restaurant.

Hyunsook's uncle yells

It was a terrible sword curtain

This brings everything back to a blank slate

I wondered what to do

He started yelling again, so I asked the interpreter to calm him down, according to the interpreter.

I think I gave him the impression that I was a group of wealthy Americans with a camera around my neck and that I had walked into his house, and that I had accused him of enslaving his niece.

He said, "This is my niece and I love her and she's my sister's daughter.

How are you guys to blame me like this? ' And I said, 'I know what you mean.

But what's happening here is real

I have seen many children like this, and I love your niece too.

I think she is an extraordinary and special child.

If you want to meet someone who wants to adopt Hyunsook, I will make them come here.

The little I know about this situation is that she has very little chance of living the life you want her to have.

People said it was ridiculous to introduce my future parents, because no one would do that much for their relatives.

But he invited me to his grandma's memorial service.

There, they burned the grandmother's clothes and photos as part of the ritual.

See how she's changed in the last three months

This is probably early February

The photo above is from September.

This is the US Marine priest we met in these stories, who lived with 75 children.

Three women were helping him to take care of his children.

I advised Hyun-sook's uncle to meet with Father Keen to see how the adoption process was going.

I wanted my uncle to feel that all this was done very fairly.

So this is the way to the orphanage

This is Father Keane, he's just a great man.

He lived with children from all over Korea and found a family for them.

This is the social worker interviewing Hyunsuk

I always think now that she had nothing to do with this kind of thing, and I realized that because Grandma was like a wise village elder, people would visit her all day long.

I always remember that they were one of the most respected families in the village, even though they were a relatively poor family in the village.

I think grandma then demanded that the villagers treat Hyun-sook the same way she treats her.

Hyun-sook remained with Father Keen, and his uncle agreed to let her stay until an adoption took place.

he agreed to the adoption

When I left for my mission and came back a week later, Father Keen consulted me about Hyun-sook Father Keen asked me about Hyun-sook

Take me to this room and close the door

He said the orphanage is a very noisy place with 75 children, 3 adults and 75 children. and each clothes

3 adults and 75 children. and each clothes

He also said, "On the second day she was here, she wrote down a list of all the names of the older and younger children.

And I assigned the older children to the younger children one by one.

Then she made a job roster Then she made a work roster

She told Father Keene to clean up too, though I don't know who raised her.

She runs this orphanage, and she's only been here three days." (Laughter)

This was a movie day that she organized, all the kids went to the movies, a lot of the adopted kids.

She sent letters to other children. It tells you what it's like to live with a new family.

So when such a letter came, there was a great uproar.

This is a woman who now works at an orphanage, and her son is adopted.

Gene and Gail started learning Korean from the moment they received my first letter.

Because I really wanted to welcome Hyunsuk to become their family.

One of the things Father Keene told me when I came back from my trip was that Hyunsuk chose Natasha as his name, and I think it came from the Rocky and Bullwinkle cartoon she was watching at the US Air Force Base.

I want to clarify this as soon as possible

My friend Jean flew in with her son Tim.

Gail couldn't come

Then they spent a lot of time staring at dictionaries

This is Gene showing his uncle where they live in Atlanta on a map.

This is the uncle signing the adoption papers

We went out to dinner to celebrate the night, because my uncle went back to his family.

Natasha, Tim, Jean and I went out to dinner

Gene teaching Natasha how to use a knife and fork Natasha practicing

When we got back to our hotel room, Jean showed Natasha where Atlanta was, and this was the third night of our trip to Korea.

The first night, the room next to us was the children's room.

I stayed in this room for three months, and it was a small 15-story Korean hotel.

We didn't get the children's room the second night because we went downstairs and slept on the floor with the orphanage children.

And on the third night, when I came back from dinner, as you can see in the picture, when I went to the front desk, the man at the front desk said, "There are no rooms available on this floor tonight. There are rooms five floors down for children."

So Gene and I looked at each other and said, "I don't want 11-year-olds sleeping five floors down."

I had a sleeping bag too, so Tim and I slept on the floor. Natasha and Jean each slept in their own bed.

They said they saved a girl's life

we were all puffed up

I stayed in that room for months I stayed in that room for months

Korean hotels are always overheated, so I always had the windows open during my stay.

Around midnight, the heating in the hotel was turned off.

Around 1:00 a.m., I wake up with a cold that seems to be about minus 20 degrees.

I used to do that every night

As usual that day, at 1 a.m., the room was freezing, and as I approached the window, I heard people screaming outside, and I thought a drunk must have just come out.

I don't speak Korean, but I can hear the voice. It was more fear than anger.

When I opened the window and looked outside, I saw flames coming from the side of the hotel and a fire had started.

I rushed over to Gene and woke him up and told him there was a fire so as not to startle Gene.

Smoke and flames came to our window on the 11th floor.

So we were both just freaking out. I tried to wake Natasha up, but she couldn't speak.

When the child slept for an hour, she was in a terrible state, as if she had taken sleeping pills After sleeping for an hour, the child was in a terrible state, as if she had taken sleeping pills

His son has L.L Bean boots

I remember we tried to tie his shoelaces

And I run to the door and I open it and it feels like I'm walking inside a blast furnace

People scream, the sound of breaking glass and the strange banging of something

In two seconds, the whole room was covered in smoke.

Gene turned around and shouted, "I can't help it anymore."

When he closes the door, the whole room fills with smoke

We're all choking, smoke fills the vents, people screaming under the door

I remember it being such an unbelievable utter chaos.

I remember sitting by my bed feeling two emotions.

One is a tremendous fear - God please wake me up

This is just a nightmare It can't be real Please wake me up This must be a nightmare

The other is an extraordinary sense of guilt

Friend, son, because you acted like a god in Natasha's life.

The result of being puffed up hurts people and becomes like this

Anyway, I remember being terribly frightened and upset.

Gene was lying on the floor and said, "I need a wet towel." I asked, "What?"

So I hurried to the bathroom to get a towel.

covered their faces and the faces of their children

And ``Do you have adhesive tape?'' Gene

he asked again if he had sticky tape

When I replied, "It's somewhere in my suitcase,"

He said, "We have to stop this smoke. That's all we can do. Just stop the smoke."

I was lucky to have Jean

Then the two of us put the room service menu on the air vents in the wall, stuffed the gaps under the doors with blankets, and had the kids stay by the window to get some air.

And then I saw a new building on the right hand side across from our hotel.

There were photographers in that building, waiting for people to jump in, and in the end, 11 people were burned to death.

Five people fell to their deaths, others suffocated from the smoke.

And about 45 minutes later, there was what sounded like a loud banging on the door, and people were yelling in Korean.

I remember Natasha not letting us open the door - no. I was unable to open the door.I spent so long defending the room that I didn't know who it was and didn't want to know what it was for.

Then Natasha told me they were firefighters trying to help us.

It seemed that he was fighting hard to open the door

Anyway, 12 hours later they rescued us to the lobby.

Gene was cracking open the liquor store with his bare hands wrapped in his coat, and people were lying on the floor.

i had a horrible experience

Twelve hours later, we returned to Natasha's village in our rented car, as planned.

We said to each other, "Can you understand that I almost died in a hotel fire eight hours ago?"

Natasha wanted to introduce her brother to all the villagers, and the day we visited was a 60-year-old man's birthday.

This person turned 60

So Natasha was the first villager from this village to come to America, so it was a celebration for both sides.This is a greenhouse tent.

This is the elders teaching Jean to dance.

We drank a lot of rice wine and got pretty drunk.

it was unbelievable

This is the last picture of Gene and Tim before they go home.

People who have been through adoptions say it takes a year to settle.

What can you do in a year?

I found an official name that could be used in both Korea and the United States, photographed them, and said that they would soon become famous when the book was published.

Four months later, the adoption papers were issued.

This is a picture of me saying goodbye to everyone at the orphanage.

This is Father Keane and Natasha at the bus stop

where my aunt is at the airport

Over the years, I've had a great deal with Cathay Pacific that allowed me to fly on their planes for free in exchange for my photos.

It was like the ultimate perk

This pilot used to put me in a booster chair, and you can tell how long ago this is, this is a Tristar plane, and Natasha actually put me in a booster chair.

Pilot Jeff adopted a child from that orphanage after he met Natasha.

This is Atlanta, 28 hours later, and it's been a very long flight.

To my surprise, Gail Natasha's new mother left home three days ago to give birth to her daughter.

Well, if you were writing this script, you would say that you have to write the script differently.

This is the first night I'm letting Natasha see her new cousins, uncles, aunts.

Gene and Gail know everyone in Atlanta and are the most social couple you'll ever know.

At this point, I can only speak a few words of English that Father Keane taught me.

This is Kylie one night, her sister who is now a doctor.

This is my arrangement with Natasha when we got to Atlanta, she's cutting my beard.

she never liked my beard

She learned English for three months

Natasha who became a first year junior high school student according to her age

first national anthem

her cooking teacher

Natasha told me that she was confused because many children tried to talk to her and she couldn't answer.

But what I noticed in my observations was that she was the leader, and she became popular really quickly.

Now remember that picture, early on she looked a lot like her grandmother, didn't she?

People always said that Natasha looked just like her current mother, Gail.

I think this was the first close match in a soccer game.

Then Kylie was like Natasha's own child

Natasha being baptized

A lot of parents who adopt a child actually try to erase their past history, and Gail and Jean did the exact opposite.

They learned Korean and bought Korean clothes.

In fact, Jean even made a little tile in the kitchen that once upon a time a beautiful girl came from the hills of Korea and lived happily ever after in Atlanta.

Natasha hates this photo her first job

With the money she worked for Burger King, she bought a bright red Karmann Ghia car.

as cheerleader captain

beauty pageant

I used to make Christmas cards every year.

Gene has kept the card without fail until now.

Kodak hired Natasha as an interpreter in South Korea

Natasha's future husband, Jeff, was working at Canon Camera and met Natasha at the Olympic Village.

This is her uncle on her first trip back from Korea.

sister in law

My best friend's mother when she returned to the village

When I look at this, I think it's always dressed like Annie Hall.

Well, it's really funny just looking at these pictures of her mom in the backyard.

natasha wedding day

Jean looks a little older

This will be in Sydney in a few days for her third birthday.

Ivan

Natasha, can you come out and say hello to everyone for a minute? (applause)

Natasha actually never heard me tell this story.

I once looked at that picture together.

Natasha: I've seen the picture a million times, but today was the first time I actually saw him speak from beginning to end.

I started crying Rick: There must be about 40 things she wants to say to me.

"That's not accurate." Natasha: Later I'll talk about that later.

(laughter) Rick: Thanks anyway Mike and Richard for letting us talk about this.

thank you everyone

(applause)

A few years ago I was in Paris walking along the Seine on a beautiful summer afternoon.

I saw a big soap bubble floating on the bank of the river, and it looked like this.

The next moment, the soap bubble burst and disappeared

Surrounded by spectators, two buskers were making soap bubbles.

It's clear that the two of them make a living out of collecting chips and selling two sticks strung together.

I was surprised to see someone who bought that stick for 10 euros.

I'm a scientist with a passion for bubbles

The trick to making giant soap bubbles is the right proportions of water and soap, not sticks, and if you need them, they're easy to make at home.

If you get distracted by the sticks, you'll miss that the bubbles are the star.

Soap bubbles may be thought of as just child's play, but they can be very fascinating at times.

There's a lot more interesting science behind bubbles, like they can be a tool for solving problems.

Today, I want to talk to you about a few things about the science of making bubbles, and the science of removing microbubbles.

It's on the screen above, so let's start by talking about soap bubbles.

Soap bubbles are made from very ordinary substances: air, water, and soap mixed together in the right proportions.

If you look at a soap bubble, you can see that the color is constantly changing.

This is because light is reflected from different directions and the thickness of the surface changes.

A molecule of water, one of the most common substances, is H2O, a molecule made up of two hydrogens and one oxygen.

When a drop of water falls on the surface of something, it curves inward and forms a hemispherical shape.

The reason is that the surface of the water droplet is, so to speak, a flexible sheet.

That's because water molecules on the surface are always pulled inward by the central molecules.

And this stretchiness is called "surface tension."

By adding soap, the soap molecules reduce the surface tension of the water, making it more stretchy and easier to form foam.

Bubbles can be used as a math problem-solving tool

You can see I'm trying to create a geometrically perfect shape.

For example, given a constant volume, a sphere has the smallest surface area.

So a single bubble is always a sphere.

let me show you one

this is a single bubble

When two bubbles meet, they share a wall and shrink the material that forms the surface.

When more bubbles come together, they change shape.

When these four bubbles come together

Bubble connect in the center

When the six bubbles come together, they form a magic cube in the center.

(Applause) This is what happens when surface tension tries to find the most efficient configuration.

Let me give you another example

it's a simple tool

It's two plastic plates connected by four pins.

Imagine that each pin is a city that's the same distance apart, and I want to build roads that connect these four cities.

What is the shortest distance connecting the four cities?

Soak it in soapy water and find the answer

Remind yourself that your soap bubble should always be perfectly shaped and have the least amount of surface area.

The solution may not be what you expected

The shortest distance between the four cities is 2.73 times the distance between those two cities.

(Applause) Okay.

Soap bubbles always try to minimize surface area with perfectly shaped arrangements.

Let's look at the bubbles from another angle

My daughter Zoe loves the zoo

I love the penguins at Marwell Zoo in the south of England, where you can see them swimming through the water at incredible speed.

One day, my daughter noticed a penguin leaving trails of bubbles while swimming, and asked why.

Animals that are active in water for a long time and birds like penguins, animals that are active in water for a long time and birds like penguins have evolved into bodies that reduce the density of water by cleverly exploiting the properties of bubbles.

It's estimated that emperor penguins can dive hundreds of meters below sea level.

They store air in their feathers and release tiny bubbles in batches before they dive into the water.

This reduces the density of the water around you, makes it easier to swim, and increases your speed by at least 40 percent.

Shipbuilders noticed this feature

I'm talking about big ships, ships that carry thousands of containers across the ocean.

We recently developed a system called the Air Lubrication System, inspired by penguins.

This system creates a lot of air bubbles that envelop the ship as it sails, like an air carpet that reduces water resistance.

This system reduces energy consumption by up to 15%

Foam can also be used as medicine

We might also buy drugs, for example, non-invasive delivery systems that deliver drugs or genes to specific parts of the body.

Imagine microbubbles filled with a mixture of drugs and magnetic agents being injected into your bloodstream.

Bubbles go to target area

But how do you find your destination

because it has a magnet

For example, this part of my hand

When these tiny bubbles reach this area, they are ultrasonically repelled, releasing the drug where it's needed.

So far, we've talked about making bubbles.

But sometimes it's necessary to remove the bubbles.

that's exactly my job

My exact job title is "ink formulation scientist."

But I'm not concerned with ink for pens.

I'm working with cool applications like organic thin film solar cells, or OPV for short, or organic light emitting diodes, or OLED for short.

Part of my job is figuring out how and why to remove bubbles from the inks my company makes.

In the process of mixing or preparing the ink formulation, the formulation of the active solvent and additives are mixed to achieve the properties desired for the ink's intended use.

But like when you're making a drink or making a cake batter, you can't avoid bubbles in the ink.

The bubbles here are a different kind of bubble than the ones I saw in Paris.

Bubbles trapped within this ink range in size from millimeters to microns or even nanometers.

It's the oxygen and moisture inside the bubble that's the problem.

It's not easy to remove a bubble of this size.

But it's important, for example, the inks in organic light-emitting diodes, which are used in smartphone displays.

This ink should last for years, but if oxygen and moisture are not removed and mixed in, the pixels will soon show dark specks.

Now, the challenge with removing microbubbles is that they are not very cooperative.

Bubbles like to sit still, submerged in ink.

How can I kick them out?

One way is to force the ink through a long, narrow, porous tube that is placed in a vacuum chamber, and in doing so, the bubbles are squeezed out of the ink and removed.

If you manage to remove the bubble from the ink, let's celebrate.

Let's open a champagne full of bubbles

wow i'm excited

(laughs) Wow!

(Applause) You can see a lot of bubbles coming out of the champagne bottle.

These bubbles are made of carbon dioxide and are produced during the wine fermentation process.

pour into a glass

Don't miss this opportunity

is this enough

(Laughter) You can see a lot of tiny bubbles rising from the bottom of the glass to the surface.

Before the bubbles burst, they release tiny scent molecules that intensify the flavor of the champagne, making it even more enjoyable.

As a scientist with a passion for bubbles, I love looking at them, playing with them, and learning about them.

Of course, I also love to drink bubbles.

thank you

(applause)

One summer night, a single male firefly glows in a field in a seductive flicker.

A male firefly's wish is for a nearby female to respond with her own light show and mate.

Unfortunately for the male firefly, things take an unexpected turn.

A different species of female firefly mimicked the flashing patterns of the males, tricking them into thinking they would be together, luring the males in and making them easy prey.

The male firefly was deceived

Behavioral biologists have identified three characteristics that define deception in animals: misleading, benefiting the deceiver, and not just coincidence.

In this case, we know that predator cues are no coincidence, because female fireflies can change their flashing patterns at will to match male fireflies of different species.

Based on this definition, where can animal deception be found in nature?

Let's start with camouflage, the most common deception technique.

A gecko with a leaf-like tail The octopus merges with its place and deceives the viewer.

Some animals mimic to protect themselves.

The nonvenomous scarlet kingsnake evolved red-yellow-black markings similar to those of the venomous harlequin coral snake, because the markings serve as a protective warning to its advantage.

Plants also use mimicry. There are orchids that look and smell like female wasps, luring unlucky males to pollinate them in the end.

While some animals benefit from having certain traits that are adapted to their environment as a result of evolution,

Other deceiving animals also appear to change their behavior in anticipation of other people's reactions.

When octopuses sense danger, they rapidly change their color and blend in with their surroundings.

Dwarf chameleons change color to match their surroundings, but they change colors more when they see birds than when they see snakes, because birds have better color vision.

A more interesting example of animal deception is the black drong.

These birds perch on the tops of tall trees in the Kalahari Desert, looking out for predators and chirping when they sense danger.

Meerkats and black-winged bumblebees run away when they hear the call.

But black drongos also set off false alarms when animals have finished catching their prey.

After a meerkat or black-throated bumblebee has escaped, the black drong swoops down and steals its prey.

Because this tactic is often successful, black drongos find plenty of prey.

In more rare cases, we've seen examples of animals using cues to trick their own species.

Let's observe the mantis shrimp

Mantis shrimp, like all crustaceans, molt as they grow, revealing a soft, vulnerable body.

You still need to protect your nest from your rivals.

That's why I bluff with skillful acting

Despite their weakened bodies, freshly molted mantis shrimps often threaten intruders.

It works, because bluffing mantis shrimps are more likely to defend their nests.

A weakened mantis shrimp can't stand fighting, so you can be sure that this action is a bluff.

Biologists have found this bluff to be a clever strategy: freshly molted mantis shrimps often bluff to smaller prey, choosing those who are more likely to escape.

Mantis shrimp doesn't intimidate reflexively, it looks like it's trying to judge the situation on the fly, predict the opponent's actions, and choose the best.

Now, we know that animals cheat, but are they intentionally cheating?

This is a conundrum, and many scientists believe that we will never know the answer.

You can't observe an animal's inner thoughts.

But you don't have to know what animals think to find deception.

Behaviors and outcomes reveal how animals manipulate predators, prey, and rivals, and reveal the stunning complexity of the animal's ability to deceive.

I've been a firefighter for 24 years and I work in Huntington, West Virginia.

As firefighters, it's our job as a team to protect lives and property from car accidents, home fires, and other life-threatening emergencies.

I'm a woman, but I lead a male-dominated workplace.

Ten years ago, I got my bachelor's degree in nursing to improve my medical knowledge.

Because I knew there was going to be a big threat, not just in my city, but in other parts of the United States. It's not like it's a one-time disaster, where you, as a firefighter, rush in like a knight to extinguish the fire and go home feeling like, "I did it, I did it."

The future catastrophe in my town is long-term debilitating, deadly opioid dependence.

We call this a health-threatening epidemic, and we use "substance use disorder" instead of "dependence."

To put this epidemic into perspective, in 2017, in my town of 95,000 people, there were 1,831 drug overdoses, 183 of which died.

It's the job of firefighters and other agencies to respond to this.

(coughing) Excuse me.

Watching this epidemic spread over the years has given me some insight.

We need to redefine the job of firefighters as first responders to this disaster.

Become more than a knight

More than just saving lives

I need to find a way to get those I save back on their feet.

it takes a lot of people

That's exactly what we're trying to do in Huntington, West Virginia.

think about what we do here

First of all, this is what happens during a drug overdose.

Let's say you have brain damage from a drug addiction.

you are weak

because i'm ashamed of myself

overdosed on drugs

Maybe a friend or family member will call an ambulance.

And suddenly you're woken up by five or six people in uniform you don't know.

Rubbing their sternums, they said, "Wake up! Wake up!

I almost died from an overdose."

Will you be angry?

i would be angry

On top of that, they administer naloxone to induce withdrawal symptoms, or "withdrawal symptoms."

you will suffer a lot

Like I made the flu ten times worse

Nausea, vomiting, diarrhoea, and body aches for some

People you don't know not only woke you up, but they made you very sick.

So your attitude as a patient is bad.

Refusing further treatment

It annoys us. It pisses us off because we don't get thanked for saving lives.

this is not good energy

We're dealing with brain disorders that change the way you think.

that's why you think everything's fine

This isn't the first overdose, it's the third, fourth, maybe fifth time we've resuscitated you.

this is not a good situation

Second, first responders are less educated about substance use disorders.

So do medical workers

Not trained in coping with substance use disorders

various methods of extinguishing fires,

I've been trained in fire rescue methods.

They are not trained to handle the complex interrelationships between first responders, health care workers, social service organizations and the larger community that are critical to long-term lifesaving.

Third, I poke where it hurts.

As a first responder, I consider myself a knight.

We are warriors in shining armor

I want to rush to the scene, do my job, show my ability to save lives, and go home satisfied.

But that's not the case with people with substance use disorders.

I go home frustrated and incompetent

Dealing with the same people over and over again with no positive results.

That's it

At some point, I realized that it was up to us, as first responders, as a community, to solve this problem and treat them better.

So watch more drug overdoers

I got to talk and listen to them

I wanted to know what causes an overdose.

what are they actually experiencing?

What is making things worse?

What turned things around?

I started experimenting with words, and I started paying attention to my behavior and the effect it had on my patients.

The education I've had and the things I've continued to learn in the town of Huntington have opened my eyes and changed my life.

In the city of Huntington, West Virginia, communities are coming together to change the way people who suffer from this terrible disease are treated.

We've started a lot of programs, and they're going strong.

For example

Last year we launched the Quick Response Team, or QRT for short.

Team members are paramedics, police officers, rehabilitation workers, religious people.

Team visit within 72 hours after drug overdose is resuscitated.

talking

listen to

Builds rapport with patients and presents treatment options

Today, 30% of the patients visited by the Quick Response team agreed to receive some form of support.

The great thing about this activity is that the first responders who get involved with the team feel like they can actually make a difference.

finally started to get better

This year -- (Applause) this year we opened an outpatient clinic called PROACT for people with substance use disorders.

It's a one stop shop

As soon as a patient comes in, an addiction specialist examines them.

Provides treatment options according to individual needs

This had some effects.

It created a place for first responders to take and refer patients who were life-threatening but refused to go to the hospital.

The emergency room of the hospital, which was overflowing with emergencies, will also be tidy.

The third thing I want to talk about is something that's important to me and to the team.

I recently started a self-care program for first responders.

more and more...

First responders experience compassion fatigue and PTSD

It's not uncommon for the average Huntington firefighter to handle or see about five young deaths a month.

they are friends and classmates

Programs like this are coveted not only because it's hard work,

Because training can help you cope with the stress you're going through.

And it will give firefighters more of the mental health options they crave.

The fire station now also has a yoga class.

(Laughter) (Applause) You can get a massage during work hours, which is great.

(Laughter) As an off-duty program, I started cooking classes and pottery classes for first responders and their partners.

A few months ago, I walked out onto the fire truck floor and met some firefighters.

Half of them had finished their massage and the other half were about to get theirs.

I saw 10 firefighters joking around in a very positive and relaxed way.

i haven't seen that in years

Little by little, that relaxed state is passed on to the local community and citizens.

A few weeks ago there was a drug overdose in my neighborhood.

I am 22 years old

Of course, I came to help my men and to help my neighbors.

There, I saw my firefighters treat me kindly.

in a non-judgmental manner

One of my men taught the man's father and family how to perform artificial respiration in case it happened again.

I was handing over a bag valve mask.

is a positive change

is a positive change

Did I mention the two things firefighters hate the most?

"Situation as it is" and "change"

(Laughter) You used to have a drug epidemic.

I've seen the impact of crack on communities.

Many critics attribute this new heartfelt response we're having in Huntington to race.

Because drug overdoses are common in white societies.

I understand the criticism because the whole country is in a bad state.

Because when crack was all the rage, the treatment of black people was terrible.

don't forget that

I have to create better conditions

people are dying now

Every day, Huntington firefighters work with people with substance use disorders on the streets, regardless of skin color or background.

A first responder's job is to prevent unnecessary deaths.

this is all

that's why...

By all appearances, I'm a stubborn firefighter and nurse.

I believe there is a way around all obstacles

One of the obstacles we've faced is the shame of tackling the opioid crisis.

in short...

Firefighters in Huntington, West Virginia, are showing other states that they can make a difference.

There is hope to deal with this epidemic.

Drug overdoses are now down by 40%

(Applause) Now drug overdose deaths are down 50 percent.

(Applause) This epidemic is not over.

But each of us listens to someone

By being kind, you have a role to play in this epidemic, and you have the power to change their lives.

thank you god bless

(applause)

♫ ♫ Imagine a world all alone ♫ ♫ There's no one there ♫ ♫ Voices and faces from just a moment ago ♫ ♫ They're gone somewhere ♫ ♫ Imagine a world where you feel worthy ♫ ♫ Children are everywhere ♫ ♫ Every life has a reason ♫ ♫ Just keep going ♫ ♫ I've said what I have to say ♫ ♫ Love will take the rest ♫ ♫ Oh listen carefully ♫ ♫ Anyone can be anything ♫ ♫ You can change anything ♫ ♫ Anyone can be anything ♫ ♫ You can change anything ♫ ♫ You can see the world with your own eyes ♫ ♫ Anyone can be anything ♫ ♫ You can change the world ♫ ♫ You can do it ♫ ♫ I can do it ♫ ♫ That girl can do it ♫ ♫ He can do it ♫ ♫ You, me, that girl, and her ♫ ♫ Anyone can change the world ♫ ♫ Little by little ♫ ♫ We make small changes ♫ ♫ Yes, we all change the world ♫ ♫ We all make small changes ♫ ♫ Oh yeah ♫ (Applause) Thank you so much

(Applause) I made this song because I thought it was hard to be in the world without knowing what was going on, war and all that stuff.

This song is about that

On my debut album, I wrote a lot of bright songs, and I still do, but this song is a little different.

"Peace on Earth"

♫ ♫ No hope ♫ ♫ No future ♫ ♫ No God to seek salvation ♫ ♫ No reason, no understanding ♫ ♫ No holy places to hide ♫ ♫ No sincere conversations ♫ ♫ No teachings from the sages ♫ ♫ No reconciliation ♫ ♫ No human compromise ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Everyone says ♫ ♫ Peace on Earth ♫ ♫ But lurking in the corridors- ♫ ♫ Ghosts of war... ♫ ♫ He wants more, more, more, more ♫ ♫ More, more, more, more ♫ ♫ No darkness, no sunshine ♫ ♫ No good society ♫ ♫ No freedom without faith ♫ ♫ No freedom to freedom ♫ ♫ No heaven, no damnation ♫ ♫ No brotherhood ♫ ♫ No country, no religion ♫ ♫ No prospects for all mankind ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Everyone says so ♫ ♫ Peace on Earth ♫ ♫ But lurking in the corridors- ♫ ♫ Ghosts of war... ♫ ♫ He wants more, more, more, ♫ ♫ More, more, more, more ♫ ♫ The answer to peace is ♫ ♫ Mutually assured destruction ♫ ♫ Balance of power ♫ ♫ Weapons for all ♫ ♫ Mutually assured destruction ♫ ♫ Bring peace to all ♫ (Trumpet sound) (Trumpet sound) ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ ♫ Everyone says so ♫ ♫ Peace on Earth ♫ ♫ In this corridor- ♫ ♫ Peace on Earth... ♫ ♫ Peace on Earth ♫ ♫ Peace on Earth ♫ (Applause)

I am not very good at English

I started studying English about a year ago.

Usually in French. I was educated in French, so my English has a French accent.

I was born around here in western Congo and attended Kisangani University.

After graduating from university, I went to the Ituri forest in this area

Let me tell you about my background. I grew up in my uncle's house since I was 14.

My father was a soldier and my uncle was a hunter and poacher.

Between the ages of 14 and 17, I helped my uncles collect ivory horns and meat. Whatever my uncles killed, poached, or hunted in the woods, I took it to the cities to sell at the market.

But eventually, I got involved in the work too.

I started poaching when I was 17 or 20

to continue studying

I wanted to go to college, but my father was poor and so was my uncle...

for that reason

I went to college for 3 or 4 years

I applied to Biomedical Sciences three times to become a doctor.

could not enter

My motto was to enter biology

I thought there was nothing I could do

My family is poor and there is no good medical care in the area where I live.

I wanted to become a doctor to save my family.

Three applications for admission, that is, three years passed, time passed

It's hard, I didn't want to give up

There, I studied tropical ecology and botany.

After graduation, I went to Ituri Forest for an internship.

Here, I'm really passionate about what I'm doing, and I'm here in front of you now, passionately, plant and wildlife conservation.

When the Ituri Forest was created as a reserve, it had animals and plants.

A training center was built with a staff of Congolese scientists and American scientists.

The Okapi Wildlife Sanctuary protects many – perhaps the most – elephants, now the largest in the Congo.

There are also chimpanzees.

Okapi is so beautiful that we named it the Okapi Wildlife Sanctuary.

this is a wild giraffe

I'm sure you know

This is a savannah giraffe. It evolved into a forest giraffe like this. Now it lives only in the Congo.

There are also beautiful primates

13 species. The most biodiverse of any single region in Africa

Within this is the Ituri Forest. About 1,300 species of plants are known so far.

I joined the Wildlife Conservation Society and have been working here since 1995, but my first job was in 1991 as a student.

In college, I was actually appointed as a teaching assistant because I graduated with honors.

I didn't like the job because the salary was very low

So I wanted to work in a training center and a research center.

The end of Mobutu Sese Seko's dictatorship, as most of you know, made life very difficult.

It became extremely difficult to continue the work I had been doing.

As Kabila launched the Congo Liberation Movement, Mobutu soldiers began to retreat.

they began to migrate from the east to the west

The Okapi Wildlife Sanctuary is here, the road runs from this part of Goma to this part.

Because of this they moved through the Okapi Wildlife Sanctuary

Congo has five of the richest protected areas in the world, including the Okapi Wildlife Sanctuary.

The soldiers fled to the Okapi Wildlife Sanctuary.

I stole everything along the way.

torture, fighting. What do you mean? you won't believe

Everyone was at a loss, looking for where to go

It was really too early for us, it was the first time we heard the word war and guns.

Even those who experienced the 1963 rebellion could not believe what was happening to them after the country's independence.

They killed people and did whatever they wanted because they had power.

So who did it?

small children. a child soldier

But you can't ask how old you are. because he had a gun

But I came from the West and worked in the East

I didn't speak Swahili then

they came and robbed everything

I don't speak Lingala. Because the language of Mobutu, the soldier spoke Lingala.

I was from the same area as him.

My friends were all trying to move because they were targets

But I didn't go east. Because I didn't know Swahili

i stayed there. If I moved, I would have been killed.

I couldn't go back to my hometown. more than 1,000 kilometers away

Stayed there after they robbed it all

And then we did some botanical research, and we created a small herbarium of 4,500 species.

I collected the plants, dried them, put them together, and made specimens in folders.

the purpose. It's for science, for agriculture, for medicine, for the study of flora, for the study of forest change.

These are people on the move, pygmies

This is a smart man, a hard worker, a pygmy

I worked with them for 10 years

They went to the forest with soldiers to poach elephants.

He's a pygmy, so he knows how to look for elephants in the forest.

He was attacked by a leopard, so they left him in the forest

And he came to me and said he wanted to help him, so

I gave him antibiotics to treat tuberculosis.

luckily he was saved

this is the language of war

Minerals are always being mined, animals are being killed, trees are being cut down everywhere.

The important thing here is that everyone has a mobile phone,

Minerals are killing a lot of people. Five million Congolese people died because of the Colombo tantalite called Colton. It's used to make mobile phones.

What I did in the first war was after losing everything I had to protect something. myself, my life, even the lives of my staff

I buried and saved a new car engine

Some of the equipment they took with them was put on a canopy and protected.

He didn't collect any plants, but he protected our tools with a canopy.

It seems they wanted to destroy and burn those things that were left They didn't go to school so they didn't know what it was I packed up

this is me. I'm rushing to Uganda I've tried to save 4,000 specimens I'm carrying along with other people on motorbikes and bicycles

After it worked

Stored 4,000 specimens in Makerere University specimen room

After the conflict, I was able to bring it home, so I could continue my research.

The next conflict broke out unexpectedly

We were sitting with our friends watching a football game and listening to our favorite music on World Space Radio, and then a conflict broke out.

it was so miserable

Again from the East, we hear that the conflict has begun and is escalating rapidly.

I thought Kabira would change and do the same thing as Mobutu this time.

Reserves were also targeted by rebels

Three factions and two militia groups were operating in the same area, competing for natural resources.

it's not going to work

they destroyed everything

Poaching. what do you mean

They're influential men, and we need to meet face-to-face.

What are the regulations for protected land? What are the park regulations?

what they are doing is not doing

so we went to see them

Collecting Colton, it's a gold mine.

I started talking to them and convinced them that we were in a protected area.

There are regulations, especially logging, mining and embezzlement are prohibited

But they said: "You men who are dying are not important, are you saying that the animals you protect are the most important?

i don't think so

In order to move forward, we have to do

I said "Never do that here."

started talking to them and negotiated

I tried to protect my specimen, I tried to protect ours, and I tried to protect a village of 1,500 people.

continued for a long time

implemented it and negotiated with them

Sometimes we had meetings and they talked to Jean-Pierre Bemba, Mbusa Nyamwisi and Kabila. i am here too

Sometimes spoke in my language Lingala

I also asked them what strategies they are pursuing and what they are planning to do.

They sometimes supplied helicopters with ammunition and other supplies.

Told me to carry it and count and where it came from, where it went, etc.

I had a satellite phone, a computer, and plastic solar panels that I hid in the woods.

Every day, in meetings, we explored compromises, and I sent a short email.

I don't know how many people were in the address book

I told them about the progress of the conflict and what they were planning to do.

They started to suspect what we did in the morning, and then it was reported on the BBC, RFI news.

(Laughter) Something might be up.

I went to a meeting one day

(Applause) Excuse me.

One day I went to see the Supreme Commander

He also had the same Iridium phone as mine

He asked me, "Do you know how to use it?"

I've never seen

(Laughter) So I don't know."

I had mine in my pocket

It was a chance for them to really trust me

But they didn't trust me, they wouldn't look at me

i get scared

After finishing the meeting, I went to the forest to return it.

And we were on the news, and we sent daily reports to the United Nations, to UNESCO, to our organizations in New York, and we told them what was happening.

They were pressured, they left, they liberated the realm.

There was no other way. Whatever they did, it became known at the same time.

Two riots killed all the animals in the zoo

One of the 14 Okabi there was pregnant.

During the strife, after a week of bitter war, we fought in the land, and we were victorious, and the first okapi was born.

Here are the pants and shirt that reminds me of that

This is a rebel, not a native

They're happy to send the news now. They defended the okapi during the struggle.

A week later, they celebrated the okapi's birthday, and they killed the elephant just 50 meters from the zoo, where the okapi was born.

i'm so pissed

They tried to dissect it, but they objected until they reported it. After that, I met the Supreme Commander.

it was a success

Elephants were rotting and they were trying to take their tusks

Then we got into conflict and had to rebuild.

I had some money. I was getting paid $150

I spent half of it correcting herbarium, because I didn't have good infrastructure to grow plants.

Wildlife Conservation Society deals with plants

I started this with $70, collecting donations wherever I went.

I've had the opportunity to go around, wherever there are herbariums of African plants.

They helped me a little too, I built this

It is now a place of training for young Congolese

One of my specialties here is designing to track the impact of global warming on biodiversity, and the Ituri forest is a carbon trap.

This is a study that we'll do on 40 hectares of land, where we'll tag trees and vines one centimeter and track them.

Now we have 15 years of data, so you can see how forests contribute to carbon reduction.

this is very difficult

it's a very messy story

I don't know where to start or how far to talk

The best title I could come up with is this. never thought of before

"Gun language" would be better

where are you?

I'm here to talk about rebuilding, rebuilding Africa

Is the gun industry a tool for rebuilding? Or is it a game?

We think of war like a game, like soccer or football.

Everyone has fun, but you know what's going on, you know what's going on in Darfur.

it's a big deal

What was the war in Rwanda?

because of gun language

No one can blame Google, because they're doing good things, even if people like Al-Qaeda use Google to collaborate.

Millions use it for good

But what about the gun industry?

thank you very much.

(Applause) Chris Anderson: Thank you very much.

wait a moment please

it was a great story

I think a lot of people here have the same question.

How can we help?

Corneille Iwango: I'm in a lot of trouble.

I'm a little confused

Aid to us, but people sometimes act in ignorance

so was i

When I was younger, if I knew elephants were being killed and I was destroying biodiversity, I wouldn't have done it.

I'm sure many of you know about the power of Africa: very few children go to school.

Many people are dying from epidemics HIV, malaria, poverty keep them out of school

You can help increase production capacity

How many people like me can go to America and get a master's degree?

And now I'm in Holland for my Ph.D.

But many have no money

I can't even go to college

can't get a bachelor's degree

The productive power of young people creates a better generation, which in turn means a better future for Africa.

Anderson: Thank you very much.

(applause)

In 1982, a young nurse was suffering from severe, unrelenting depression.

She couldn't work, she couldn't socialize, she couldn't even concentrate enough to read a newspaper.

one treatment changed everything for her

After two courses of electroconvulsive therapy (ECT), my symptoms improved.

She went back to work, went to graduate school, and got excellent grades.

At first, she was outspoken about the treatment that changed her life.

After realizing that many people had such a negative impression of ECT, I stopped talking about my experience.

The stigma attached to ECT is for treatments of the past that bear little resemblance to modern treatments.

The first use of this therapy in medicine was in 1938.

At first, doctors sent strong electrical currents through their brains that would cause their patients to go into convulsions all over their bodies, bite their tongues, and break bones.

Modern ECT is quite different

Under general anesthesia, electrodes deliver a series of gentle pulse-wave currents to the brain.

This activates a large number of neurons at once in short, controlled spasms.

A muscle relaxant is used to prevent the spasm from spreading to other parts of the body.

The only physical symptoms that result from the electrical current flowing through the brain are leg cramps.

The treatment takes about a minute, and most patients can return to normal activity within an hour or so after the procedure.

ECT is commonly given to patients with severe depression or manic depression who have not responded to other treatments or who have side effects from medications.

More than half of patients who receive treatment experience symptom improvement

Many patients receive ECT treatments two to three times a week for several weeks.

Some patients feel effective after just one treatment, while others require time to improve.

Patients taper off over a period of months to a year, with some requiring infrequent maintenance therapy for the rest of their lives.

Modern ECT is much safer than it was in the past, but it still has side effects for patients.

Immediately after treatment, you may feel some pain, tiredness, nausea, etc.

Some people have trouble remembering what happened just before the procedure, like forgetting what they ate the night before.

In very rare cases, some people have problems with memory for weeks or months.

Most patients improve their memory loss over time.

Interestingly, although ECT has been proven to work, we still don't understand why ECT works.

Neurons in the brain communicate with each other through electrical signals that affect brain chemicals, altering mood and behavior.

A burst of electrical activity from ECT changes these chemicals.

For example, ECT causes the release of certain neurotransmitters, molecules that transmit signals between neurons and affect mental health.

ECT also stimulates the flow of hormones that help relieve depression.

Interestingly, continuation of ECT allows patients who were previously unresponsive to medication to respond better in combination with medication.

As we learn more about the brain, perhaps we can make ECT more effective.

In 1995, more than a decade after her first ECT treatment, the nurse decided to publish a book about her experience.

Given the notoriety of the treatment, I was worried that publication would have a huge negative impact on her personal and professional life, but I knew that patients who had failed all other treatments could improve with ECT.

Misconceptions about ECT persist, but her story helped remind doctors and patients alike that ECT can be life-changing.

Dewey once saw and heard that society is composed of debates.

To question the tyranny of assumptions and avoid doxa that goes unheard, we must expose our own assumptions to debate and discussion.

So I would like to use the discussion here to talk about an important question of our time, namely, how to circulate the various forms of capital for nation-building.

Clarify that assumption. 150 years later, capitalism is accepted and democracy is preferred.

If you look into the world in 1945 and look at maps of capitalist economies and democracies, you'll see that these were unusual for the time.

But the question here is which form of capitalism and which form of democracy.

It must be recognized that at this very moment there is a rare consensus on assumptions.

And that unity is the basis for action. Because that moment of agreement leads to action.

And no matter how fragile and temporary the consensus is, we must move forward.

Most of the world doesn't benefit from capitalism or democracy.

Most of the world has been ruled by oppressive nations whose concern is denial of rights and denial of legitimacy, not their support.

And within the experience of capitalism, there are two phases that the rest of the world experiences.

The first is the exploitative industry.

Conflict diamonds, smuggled emeralds, timber, quarried from the poorest of places.

Next is technical support.

It may surprise you, but technical assistance is the lowest and ugliest form of assistance in modern times from a developing country to a developing country.

Billions of dollars are imagined to be spent on capacity building, and some people are paid up to $1,500 a day for it, but they are sometimes incapable of thinking creatively or organically.

The next assumption -- and the events of July 7th, I feel deep sympathy for, and before that, September 11th reminds us that we don't live in three different worlds.

We live in one world.

But it's easy to say.

We are not dealing with what that one world implies.

And if you want to have one world, there must be no mass exclusion or inclusion into the other as the foundation of that world.

Ultimately, what we now have to think seriously about is the premise of a truly international world, and the international management of rights, responsibilities and responsibilities in that world.

If we don't, we miss this opening moment in history, the moment when our views are aligned about the political and economic system.

Which organization should you choose?

There are three key conditions: the economy, civil society, and the state.

I won't talk about the first two, but let me tell you that if you haphazardly shift assumptions from one situation to another, it's a disaster.

Economics, what is taught in most elite universities, from my background, is utterly irrelevant.

My country is ruled by a mafia and drug economy.

A textbook economy doesn't make sense in this situation, and no one can tell you how to set up a legal economy.

Our lack of knowledge must be the first basis for moving forward. Don't become a burden on initiatives that work on the basis of mathematical models. I respect you.

The guys at John Hopkins are especially nice.

And second, rather than having endless debates and talking about the system of nations, make a brief visit. What functions do nations need in the 21st century?

Claire Lockhart and I are writing a book about this and I would love to share it with you. And third, actually create the metrics. By comparison, we measure how the agreed-upon necessary features are working in different places.

What exactly is that function?

We have 10 suggestions.

The first is the monopoly of legal means of violence, the administrative control, the financial control, the investment in human capital, the protection of citizens' rights, the provision of infrastructure, the control of the state's tangible and intangible assets through regulation, the creation of markets, and international agreements, including public debt, and most importantly, the rule of law.

I won't go into detail about that.

You will have the opportunity to speak during your question.

These are achievable goals. Because, contrary to popular belief, we know how it can be done.

Who could have imagined that Germany would now become a unified democracy? If I had looked at it from Oxford's perspective in 1943, I would have said no.

But the people of Oxford were preparing for the democratization of Germany, and they were putting effort into their plans.

There are many other examples.

In order to realize this, it is important to rethink the concept of capital.

The most important form of capital in this plan is financial capital, money.

Money is not capital in most developing countries.

It's just cash.

For money is not capital because it lacks institutional, organizational and administrative form.

What we need is a balance between physical capital, institutional capital, human capital, and security. But information is also important.

The concern here, and this is the conundrum I want to pose to those capitalists, is that it takes 16 years for you to get a Bachelor of Science degree in your country.

And after 20 years, I can finally get my PhD.

The challenge here is to fundamentally rethink the question of time.

Should we repeat our inherited modalities?

The education system is inherited from the 19th century.

Fundamentally, what do you have to do to get back to work and generate capital quickly?

The absolute majority of the world's population is under the age of 20 and continues to grow at a rapid rate.

They need to be approached differently. Each way to get suffrage, There is a way to learn technology that fits each.

That's the first thing.

Second, you want to solve problems, but you don't have a firm eye on international responsibilities.

We have stayed away and overlooked corruption.

They just want a clean place that can function.

But if you don't think about corruption, who will?

You have also stepped away from the development plan.

Even though he is a wonderful planner, he does nothing but selfish plans.

Just do it for yourself.

In the world I'm in, the design has roles for roads, dams, and electricity supply, and it hasn't been revised in 60 years.

It's funny. We need to think more.

But, especially for us, what we need more than anything else in capital is that your imagination influences the problem and works like a meme.

As the old work on paradigms -- Thomas Kuhn's work -- posited that at the crossroads of ideas, new developments can only really come into being.

It is my hope that this group will face nations, development, and revitalize many poor people around the world in this way.

thank you.

(Applause) Ashraf, until recently you were Finance Minister of Afghanistan, a country on the global agenda.

What is the future of this country?

Will democracy spread? What do you think is the scariest thing?

What I fear the most is --you. Things you don't take seriously.

(laughter) You heard it, didn't you? I always give different answers.

No, but this is true. The problem of Afghanistan must first of all be considered over a period of 10 to 20 years.

Today's globalization is progressing rapidly.

Time has been contracted.

For many people, space is as good as non-existent.

But in my world, after 23 years, when I returned to Afghanistan, the space had expanded.

All the original infrastructure had collapsed.

Even when I drive, it used to take me 3 hours to reach two cities, but now it takes me 12 hours.

First of all, at such a scale, we have to recognize that something as simple as infrastructure can take six years to complete.

It's a story in our world.

All that matters is the same.

But the focus is on what is happening today and tomorrow.

Second, when the country belonged to a large and brutal power, the country had a Red Army for 10 consecutive years and had 110,000 soldiers. It was really scary.

The sky... All Afghans see the sky as a fear.

It is as if the existence was erased by the bomb.

And tens of thousands of people have been trained in terrorism--in many ways.

For example, the United States and Great Britain joined the Egyptian Intelligence Service and trained thousands of people for urban terrorism.

How can a bicycle be turned into a tool of terrorism?

A donkey, a wagon, or anything else.

Same with Russia.

When violence occurs, in a country like Afghanistan, it can be blamed on history.

But what you have to understand is that we actually got lucky.

I am incredibly lucky to be able to speak in front of you.

When I became Finance Minister, I thought the odds of surviving three years or more were less than 5%.

The risk was worth it.

We can do it. The reason why I can do it is because of people.

Why -- let me give you a statistical example.

In Afghanistan, 91% of men and 86% of women listen to at least 3 radio stations a day.

Their arguments and their knowledge of the world are, in my opinion, very sophisticated, better than that of an American graduate or some Europeans. Because the world is very important to them.

And what are their biggest worries?

It is to be abandoned.

Afghans have become very international.

When I returned in December 2001, I had no intention of working with the Afghan government. Because I was a nationalist.

I said then that people in my country and Americans are separate.

I am an advisor to the United Nations.

Rapidly visited 10 provinces in Afghanistan.

People all said it was a different world here.

they are serious about it.

And for them, working hard on a global level is so important to the future of ordinary people.

And what worries the average Afghan is -- there's a Claire Lockhart here, and I'm going to quote from her speaking to an illiterate woman in northern Afghanistan --

The woman said she no longer cares if there is food on the table.

Her concern was about future plans. Is there a future where her children can live differently?

I felt hopeful about it.

How can Afghanistan provide an alternative source of income and give a new life to those who depend on the drug trade for a living?

I agree. First of all, instead of sending hundreds of millions of dollars to fight drugs and pay security companies, we should pay that money to the 50 most innovative companies in the world and ask them to create a million jobs.

Jobs are the key to fighting drugs.

Now, a little-known fact is that no country with a per capita income of $1,000 or more produces drugs.

The second is the textile industry.

It is trade that counts, not aid.

America and Europe should have zero tariffs.

The textile industry is a highly mobile industry.

If you want Afghanistan to be able to compete with China and attract investment, Afghanistan could easily be attracted to the $4-6 billion textile industry. That is, if there were no tariffs. And jobs will be created.

Cotton cannot beat opium. You can win with a T-shirt.

You have to understand that it's a value chain.

Look, average Afghans are tired of hearing about microcredit.

Importantly, ordinary people with microcredit want to participate in a much larger world.

I don't want to sell it at a charity bazaar, where only foreigners come to buy. And they don't want to embroider the same shirt over and over again.

What we want is a partnership, working with an Italian design company.

Afghanistan has some of the best embroidery professionals in the world!

Why can't we do what was done in northern Italy?

Like wholesale cottage industry?

Economically, it's important to think things through.

And I'm here to unequivocally say that help is pointless.

The aid system is already broken.

There is no knowledge, vision or talent in the aid system.

I was in favor of assistance. I actually collected a lot.

More precisely, I was able to persuade the world to give my country $27.5 billion.

The world didn't want to hand over the money.

But it didn't work?

No, it's not that the aid didn't work.

Instead, one dollar of private investment is, in my judgment, worth as much as $20 in aid and provides the same drive.

Second, one dollar of aid is no different from 10 cents, 20 cents, or 4 dollars.

It depends on what form it is given and what conditions come with the aid.

The aid system was designed from the beginning to make profits reach entrepreneurs in developing countries, not for growth in poorer countries.

This, again, is one of assumptions. It's like the assumption that car seats, for example, received from the government. door too.

You wouldn't think that the American government would think that American companies needed subsidies, but they would give them advice on how to function in the developing world.

A lot of history has to be revisited relative to aid.

If the purpose is to build a nation and ensure that the nation can take responsibility for itself, I intend to take my proposal on an equal footing. Within a limited period of time in each country.

And what we need each year is the flow of domestic revenues and the progress of economic emergence.

Consensus will not last long unless such a contract is made.

Once upon a time, there was a very terrible disease that afflicted children.

In fact, many children died from one of the most serious diseases on earth.

Then a wise scientist came along and invented an imperfect cure.

It wasn't perfect, and many more lives were lost, but things are better than they used to be.

One of the advantages of the therapy was that it was free -- it was literally free, and it was easy to use.

But the biggest drawback was that it couldn't be used on babies under the age of two.

And then a few years later another scientist came along, apparently not as clever as his predecessor, but improved upon the first and found a second.

The great thing about the second treatment is that it can treat babies under the age of two.

But the problem with this treatment was that it was expensive, and it was complicated to use.

Parents tried to use it properly, but very few people used it successfully.

The second treatment was complicated and expensive, so it was only used in children under the age of two.

Children over the age of two continued to use the previous treatment.

People were happy with this method for a while

A mother used both treatments together until she lost her two-year-old baby.

The mother thought, the child had just turned 2 years old, and had been on complex and expensive treatments until the age of 2.

And he's two years old, and he's just switched to a cheap and easy treatment, and like any other parent who's lost a child, he wonders: Was there another alternative? Would it have been better to continue with the complex and expensive treatment?

The mother told everyone, "How could this really be possible? How can a cheap and simple method work as well as a complex and expensive treatment?"

Other people had the same idea

It may have been a mistake to switch to a cheaper and simpler method.

The government also listened to the mothers and said they should make new laws.

This cheap and simple treatment should be outlawed Children shouldn't be given this treatment

people were happy with it

It's been working fine for years

Once upon a time, an unknown economist came along who had children and was using expensive and complicated treatments.

But I also knew a cheap and simple cure.

I don't know the science, but I do know the data. Let's look at the data. Let's see if this expensive, complicated treatment works better than the cheap, simple treatment.

When we looked at the data, we were surprised to find that, at least for children over the age of two, expensive and complex treatments were no better than cheaper treatments.

Economists told people, "I've made an amazing discovery. It just seems like a cheap and easy way to do it. That's going to save us $300 million a year. We'll use that money elsewhere for our kids."

Parents were very frustrated, they couldn't believe that the cheap and easy methods were as effective as the cumbersome ones, and the government was also very frustrated.

Especially those who found this expensive method resented the idea that it was superseded by an almost free method.

be locked out of the market

People got angry and blamed the economists.

The economist thought he should leave the country for a few days and go to a place called Oxford, where the smarter and more open-minded people live, and try to get his point across there.

That's why I'm here. It's not a fairy tale.

This is the state of America, and the disease we've been talking about is car accidents in children.

The free cure is seat belts for adults, and the expensive cure worth $300 million a year is child seats.

I would like to share with you today the evidence that has led me to believe that this is the case. Children over the age of two are not safe in a car seat. We have spent a lot of energy promoting this law, banning children from wearing seat belts.

And finally, I'd like to touch on the third method, which is better than any other, but no one is adopting it, because people think the child seat is the best.

Now, data exploration is based on records of complex events,

The comparison between seat belts and child restraints is not

The United States has recorded data for all fatalities since 1975.

So you can get information about the passengers in a car crash that has a fatality.

Visit the Department of Transportation's Highway Traffic Safety Administration site, and even if you just look at the raw data, you'll see that there's very little evidence to support the use of car seats for children over the age of two.

Children over the age of 6 do not use child seats, so if a child between the ages of 2 and 6 rides in a fatal accident, 29.3% of the children will die if they are not secured with a device.

18.2% of children in child seats die

If you wear a three-point belt, the mortality rate is 19.4 percent. If you wear a two-point belt, it's 16.7 percent. In theory, a two-point seat belt should be no better than a three-point seat belt.

So in our research, we're creating a diagram that's easier to understand.

The yellow bar indicates the child seat, the orange indicates the 3-point seat belt, and the red indicates the 2-point seat belt.

It's compared to wearing none of them, so the longer the bar, the better.

Now let's take a look at this data

The longest bar is what everyone wants

You can also adjust the size of the impact at the time of the collision, the seat the child was sitting in, and the age of the child.

hits the middle graph

After making these adjustments, the two-point formula doesn't feel so good.

And finally, this last graph, this bar is an adjustment for all possible factors in a crash, and crashes have different characteristics.

From a life-saving perspective, child restraints and three-point belts have exactly the same mortality rate.

The range of variability is still relatively small for this estimate.

It's not a rough number, it's a very clear trend.

Interestingly, child restraints are more effective in frontal collision cases.

this is no coincidence

Because in order for a car seat to be approved, it must pass federal standards, which means head-on collisions must also be taken into account.

But in a rear-end collision, child restraints aren't as effective.

The emphasis is on passing the test, because, as we've always expected, the priority is to meet a clear criterion: how much the car is affected.

Another point that will be discussed is that the performance of child seats should be improved.

If you look at the numbers only for recent crashes, you're not limited to recent crashes, because the data spans the last 30 years.

But in recent accidents, three-point belts are more effective than child restraints.

Some people may think that it cannot be so

Parents of children say, child safety seats are expensive and complicated, they have all the latches involved, they can't be any less effective than seat belts, they're expensive and complicated.

It's a very interesting logic, and there's another theory: if a car seat is that good, why should the government tell you to use it?

But it's not data-driven that governments are pushing to use.

It's based on the strong desire of parents who lost a child as young as two years old, and that desire has led to a series of laws being passed.

So far, I've been talking about abstract statistical numbers.

When I invited some friends over for dinner, I asked for advice, and they told me to do a crash test.

i thought it was a good idea

I actually did a collision test

I searched around for an independent company that did crash testing, and none of them would do it for me, because I was hired by a manufacturer of child car seats.

I don't want to spoil the relationship with the comparison experiment with the seat belt.

I managed to find a company that would do an experiment on the condition of anonymity for $1,500 per seat per crash.

We visited Buffalo, New York, and they're the starters.

It's a crash test dummy, waiting its turn to take center stage.

It looks like a crash test

It's not like you're going to crash a whole car, you don't have to.

There is only a bench seat. Fasten the seat belt and put the child seat on it.

Have a look at this

I can see why parents think child seats work. Look at a child sitting in a child seat.

It looks like it will survive no matter what, right? On the other hand, the child in the back seat is likely to choke even before the crash occurs.

In a crash, it's hard to believe that the kid in the back seat would survive.

Now let's do a crash test, let's see what happens when we hit a wall at 50 kilometers an hour.

now what happens

By the way, this dummy is a three-year-old child.

This is the car seat. Notice two things. Your head is going forward and you're about to hit your knees. This is the car seat.

Child seat moves in all directions

Please note two things

This child seat was installed by someone experienced and able to install it correctly.

Also, this bench seat is perfect for installing a child seat.

Flat back makes installation easy

This test was done in favor of a child seat, and the child in this crash did a great job.

Federal standards require a score of 1,000 or less to be certified as a child seat, and credits don't matter.

In this crash test, the score was 450.

Consumer Reports scored above average for this child seat.

Now we're going to use a doll that's wearing a seatbelt, and it doesn't move as much as the other dolls. And the funny thing is, the camerawork was really bad.

In the two clashes we did with this 3-year-old, the score was about 500, which is pretty bad compared to the previous one.

Let's say you take the data from this crash to the federal government, because you invented a new child seat.

You say you want to get approval to sell it, you say it's a great car seat.

My score was 500, up to 1000 is fine.

This seat belt should have been approved as a child seat without any problems.

What this experiment shows is that it's not just that we're putting children at risk by misplaced child safety seats, it's that child safety seats just aren't good enough.

It's timed. The child in the child seat keeps rebounding much longer. The child in the seat belt moves less.

See also 6-year-old conflict

It's a six-year-old child in a child seat. I think the number is about 400.

That means it's safe from collisions.

This clash will not cause any problems for the child at all.

Next up is a 6-year-old wearing a seatbelt, and the numbers are a few points different, but they're pretty much the same, meaning there's no child seat-specific effect for the 6-year-old.

We have some other evidence, but I was criticized by one scientist who said that we shouldn't be publishing results based on just four experiments.

What if you give him 45004 tests? I replied

It also takes into account 45,000 real-life crashes.

I think the idea of ​​using data from real-life crashes is also a good idea. Economists think it's the right way to go, but scientists will think about using the laboratory.

There's a much better solution to this problem, and nobody accepts that solution because the child seat seems to work.

If you think about it from a design standpoint, you're going to go back to the beginning and say, "I want to protect the kid in the back seat."

I don't think anyone here would say something like, "First of all, we have to make high-performance seat belts for adults.

After that, let's somehow get that complicated device installed."

But it's mostly children who ride in the back seat.

I mean, it's like this. I don't know how much it costs, but I can't see any reason why it should be more expensive than a regular seat.

This seat is foldable and it's the back of the seat.

Where there's a normal seat for adults, you can unfold this into a seat for children.

It won't cost much, and it should work better than the current system.

The question is whether this device will be adopted, and if it is adopted, it will save many lives.

In answer to this, let me tell you something.

That's why child restraints are so successful, and whether they're going to be adopted in the future, there's a hint that my father told me that he used to be a doctor in the U.S. Air Force in England.

Patients sometimes come in with symptoms that don't qualify as illness.

For those patients, I take out a placebo in a big jar, and if it doesn't get better in a week, I tell them to come back.

Most patients never came back, but some came back.

Convinced they're not sick, my father pulls out a jar of very large pills.

not big enough to swallow

This is the theory of the child seat

The patient says it's a very big drug.

Most of the patients never came back because the drugs worked, and sometimes we have patients who think they're sick.

According to my father, even the smallest pills can't be discerned.

The last pill was huge, complicated, and difficult to swallow. Now the pill works, and it's so small that you can't see it.

you can't see

And the patient to whom my father gave this little pill never came back complaining.

My father thought that this was proof that these little pills had the ultimate placebo effect. If the story is correct, I think this all-in-one seat will become popular in a short period of time.

If that's the case, we're going to continue to use existing child seats for the long term.

thank you

(Applause) Spectator: Wearing a seat belt isn't just about saving lives, it's about avoiding serious injuries.

Data are for fatalities only and do not include serious injuries.

Is there data to show that child restraints are as or less effective than seat belts? Levitt: In my data, I looked at crashes in New Jersey, and there was very little difference in injuries.

So the difference between child restraints and three-point seat belts was not statistically significant.

The data for New Jersey isn't just about fatalities, it also includes reported crashes, and there's a 10 percent difference in injuries, most of which are minor.

I have to remind you that there is medical literature that contradicts other data, and that child seats are far superior.

They're taking a completely different approach. After a crash, they get the names of the people involved in the crash from the insurance company, and they call them and ask them what happened.

I'm not sure yet. I'd like to work with these medical researchers to understand what causes the differences. This is inconsistent.

This issue must be considered

Are there enough serious injuries to justify the cost?

Even if they were right, I don't know if it would be cost effective enough.

Today, I'm going to talk to you about technology that we're currently developing at Oxford that we believe will change the way computer games and Hollywood movies are made.

That technology is human simulation.

A simulated human with a simulated human body and a simulated nervous system that controls that body.

Now, before we talk about that technology, let's take a quick look at what a human character in a game looks like today.

Clip from the game "Grand Theft Auto 3"

I took a look yesterday

As you can see, it's a very well made game.

One of the most successful games of all time

But as you may have noticed, the animation in this game is repetitive.

all look the same

I tried hitting the character against the wall over and over again,

As you can see, it always does the same thing

The reason is that the characters aren't real people.

This is just a graphic visualization of a person.

To create these animations, studio animators have to actually predict what's going to happen in the game and animate that sequence.

So when you create an animation on your desk, by predicting what's going to happen, that animation will play at the right time in the game.

This method cannot be truly interactive.

All you get is an animation that plays at the right time.

As a result, it can't be a game that has the unexpectedness that I thought it would.

nothing new is coming

Thirdly, as I said earlier, that's why there's a lot of repetition throughout the animation.

The only way to solve this is to actually simulate the human body and simulate the part of the nervous system that controls the body.

To illustrate the difference, I'm going to do a little demo, because you can see it when you see it.

If you give Chris a little push like this, he responds to it.

If you push him from a different angle, he reacts differently because he has a physical body and he has the motor control that controls that body.

It's a matter of course

Currently this is not used in the game yet

Thanks Chris Anderson: Done?

Torsten Leil: Yes it's over

We're trying to simulate this not just for Chris, but for all humans.We're trying to simulate this for all humans, not just Chris.

We're doing this research at the University of Oxford, but let's start with the simple stuff.

I started by teaching stick figures how to walk

This stick figure is being physically stimulated. See it on your screen.

It can be affected by gravity, it can have joints.

If you just do a simulation, it will fall like this

We're going to put artificial intelligence controllers in here and make it work.

To do that, we use neural networks, which are based on parts of the nervous system in the spine that control human locomotion.

It's called the central pattern generator.

I also simulated this, but the tricky part here is teaching this network to walk.

That's why we brought in artificial evolution, a genetic algorithm.

We talked about this yesterday, so I'm sure you all know.

To give you a quick idea of ​​the concept, you start by randomly generating a large number of different individuals -- in this case, a neural network.

And then you connect these to virtual muscles -- in this case, this two-legged animal -- and wait for something interesting to happen.

It's all boring at first

Most won't even move, but some may.

Such individuals are selected by an algorithm, replicated through mutation and crossover, and then bred.

We repeat this process over and over again until we get a walking individual, in this case, walking in a straight line like this.

This is the background idea

One evening in the early days of research, I set up a simulation.

ran for 3-4 hours

I woke up the next morning and went to the computer to look at the results, hoping that at least one would walk in a straight line.

(Laughs) I went back to the beginning

After much trial and error, I was finally able to get him to walk.

This is an example of a successful evolutionary process.

I'm going to show you how a simple bipedal animal uses artificial evolution to learn how to walk.

At first, you won't be able to walk at all, but you'll get better over time.

this is totally unwalkable

(Laughter) If you apply five generations of evolution, the genetic algorithm gets just a little bit better.

(Laughter) Gen 10 gets a little better, but it doesn't mean you can walk.

But after the 20th generation, they walk straight without falling.

great progress for us

It was a very academically challenging project, but when I got to this stage, I was convinced that I could use this approach for other things, and that I should be able to simulate the parts of the nervous system that are necessary to simulate the human body.

Once you've come this far, you'll be looking forward to seeing how it can be used in games and online worlds.

Here's a character standing and placing obstacles in his path.

Let's see how this character stumbles over an obstacle.

Interestingly, if you shift the obstacle to the right, and I'm going to try this here, it will fall in a completely different way.

If you move the obstacle again, it will fall again in a different way.

(Laughter) What you see at the top is how some of the neural activation is being sent to the virtual muscle.

That was the video Thank you

This seems obvious, but it's important because it's not yet implemented in interactive or virtual worlds.

At this stage, we decided to start a company and take what started with a very simple biped.

I wanted it to be the whole human body.

we started a company

So we hired a team of physicists, software engineers, biologists, and we started working on this, and the first thing we had to do was basically build a human body.

Speed ​​is important so that it can run on a regular computer, but accuracy is also important when it comes to aesthetics.

We tried to infuse our knowledge of bionics and try to be as close to reality as possible.

What you're seeing on the screen right now is a simple visualization of that body.

By the way, it's easy to add things like hair and clothes, but here I've used a simple model so that you can focus on the action.

So let's push this character a little bit and see what happens.

Nothing particularly interesting happens

The way you fall is just like a stuffed doll

The reason is that they don't have the intelligence

Incorporating artificial intelligence makes things interesting

This character is developing motor skills in the upper body, but not in the legs at this stage.

Let's press it again. This character is

autonomously recognizes that it is pressed

stick out hand

Twist your body in the direction of the fall and try to touch the ground

As you can see

Even more interesting things happen when you incorporate AI into your lower body.

I'm using the same characters here.

I'll try pushing a little harder than before, harder than I pushed Chris.

This character is pushed from the left facing the screen

You can see I took a few steps back trying to balance and see where it would land.

then again

eventually fall to the ground

Pushing this character in a different direction, as I've just shown, makes it even more interesting.

you can't do this now

The only thing used in the game now is empty CG

I have an actual simulation here that I can show you.

It's the same character I showed you earlier, it's the same movement, but this time let's push it in a different direction.

Start from the right

By the way, it's all in slow motion so you can see what's going on.

Now if you change the angle a little bit, you'll see how it reacts differently.

Let's push it again from the front this time

Then I fall again in a different way

Then from the left, another way of falling

we were thrilled to see this

because i've never seen anything like this before

This is the first time for everyone to see this.I've been in stealth mode all this time

I haven't shown it to anyone yet.

Here's an interesting one. What would happen if you put this character -- a wooden version but with the same AI -- on a slippery surface like ice?

I tried it as a story

(Laughter) This is how it happened.

(Laughter) (Applause) You don't have to do anything special.

If you put the previous character on a smooth surface, it will naturally look like this.

This is the beauty of this approach

We went to movie studios and game companies and showed them this technology, and they responded very well.

They say what we need right now is a virtual stuntman.

Stunts are very dangerous, they cost a lot of money, and there are many stunt scenes that can't actually be done.

So there's a need for a virtual stuntman, and I've been working on it for the last few months.

This is my first work and it will be released in a few weeks.

I had a simple scene where the guy just got kicked.

I just made it as requested.

(Laughter) As you can see, it's always reacting.

As if it were alive, this body senses the force in this case and tries to protect the head.

I think it will be a big shock.

You may sympathize, but we've done it so many times that no one cares.

(Laughter) There are worse videos out there, but I won't show them here.

Here is another example

The motion I was asked to do was how the character would react in the air when an explosion exerted a large amount of force on the character.

What you need is not a limp character, but a character that looks like it's alive in the air and can be used right out of the box in an action movie.

When this character is blown away, it thinks it's in the air and tries to stick its hand out in the direction it's going to land.

from a different angle

If it's this realistic, it can be used in movies as well.

Let's see something a little different

It just arrived yesterday from an animation studio in London that is testing our software.

Exactly the same motion as the one you just saw, rendered in a higher quality.

If you take a closer look at the character, you can see it moving all over its body, but there's no need to animate this.

Traditionally animated by an animator

All generated automatically by simulation

Let's look at it again in slow motion from a slightly different angle.

very fast simulated in real time

You can run the simulation in real time in front of you and even modify it on the fly if you need to.

That kind of work would take days if done manually.

This is another action requested

I don't know what it's for, but I made it anyway.

It's a simple behavior that proves the usefulness of this approach.

In this case, the character's hand is fixed at a point in space, and all he's commanded is to struggle.

looks natural and realistic

I feel pity

This is even worse, the video just arrived last night, but it's rendered more realistically.

I showed you this to give you a sense of nature and realism.

Reproduce the whole body with physics simulation and move the muscles virtually with AI

Now, as a joke, I made a slightly more complicated stunt scene, the famous scene where James Bond jumps into a dam in Switzerland and bungee jumps.

It's just a short video

let's see

A real stuntman was used in the movie, and it was a very dangerous stunt.

I think the Sunday Times named it the most impressive stunt.

When I saw the characters we made, I thought, "Can we do it?"

We're going to take a character's physics simulation and artificial intelligence, and we're going to put that intelligence into the character, and we're going to have them move virtual muscles, simulate jumping into a dam, and then have them skydive and then get stuck on a bungee cord.

I tried it, and it only took me about two hours in total to simulate it.

This is what happened please

There's still room for improvement. It's still in its early stages.

But what we've learned over the last few months is that this approach we use as a standard is incredibly useful.

Even I am amazed at the results of the simulation.

It's not uncommon for it to behave completely unexpectedly.

There are many other possibilities

One is the virtual stuntman I mentioned earlier.

Some studios are now using this software to create virtual stuntmen, and there are several major motion picture productions using it coming soon.

The second is a video game

If you use this technology, video games will change completely.

It's the first time a truly interactive character appears in a game.

i think it will be really interesting

Maybe it'll start with sports games to be more interactive.

But personally, I think it would be interesting to use this technology in the online world, as Tom Melcher did, for example.

I think it will be much more interactive than it is today.

The third thing we're interested in is simulation.

We've been approached by several simulation companies, but one of the most exciting projects we're excited to start next month is to use our technology, specifically our gait technology, to help pediatric surgeons by predicting postoperative outcomes for cerebral palsy.

As you probably know, even if you try to treat people to walk better, the outcome of surgery is very difficult to predict.

There's an old adage that you can't predict no matter how hard you try, and that's what everyone thinks about outcomes.

We want to use our software to create a surgeon's tool.

Using the gait simulation we create for a particular child, the doctor can try different ways to improve gait before actually performing the surgery.

I'm really excited about this project, and it's due to start next month.

Last but not least, this is only the first step.

There are still limits to what you can do

AI is still not good enough to fully simulate the human body

It's okay for your body, but you can't regenerate all motor skills.

I think it's only when you can do ballet-like movements that you can say it works.

We haven't gotten that far yet, but I'm sure one day it will be possible.

I'm going to show you one last dancer who actually happened to be born.

It's an AI-generated contour that's evolutionary -- technically speaking, semi-evolution -- that's designed to be balanced.

So when you kick it, it tries to keep your balance in the opposite direction.

I thought it was supposed to be

What I ended up getting was this

(music) Somehow I don't have a head

this is not what we put in

This is a dance that this character made without permission

By the way, you seem to be a better dancer than I am.

After looking at it for a while, I'm directing to the climax at the end

probably — it's starting

(Laughter) It happened completely automatically.

The simulation created the dance, not us.

So — (Applause) Thank you.

I'm not going with John Travolta yet, but I'm working on that too. Thank you for your attention.

thank you

(Applause) CA: Great, really great.

TR: Thank you

I'm going to talk a little bit about what kind of stories I like to write.

When I write, I focus on the subject

I like to dive deep into the subject and use myself as a test subject.

I see my life as a series of experiments.

I work for Esquire magazine, and a few years ago I wrote an article called "Outsourced Life," where I hired a team of people in Bangalore, India, to run my life for me.

reply to emails on my behalf

answer the phone for me

Arguing with my wife for me and reading fairy tales to my son before bed

It was the best month of my life. I was able to relax and read books and watch movies.

it was a great experience

More recently, I wrote an article for Esquire magazine called "Extremely Honesty."

This movement was started by a psychologist in Virginia who told us that we should never lie, except when we're playing poker and golf.

On top of that, you have to put into words everything that comes to your mind.

I decided to try it for a month.

it was the worst month of my life

(Laughter) I definitely don't recommend this.

To help you understand this experience, I titled the article "You're fat."

(Laughter) This was a big challenge.

My last book, titled "The Amazing Encyclopedia Man", read Encyclopedia Britannica from A to Z in one year and tried to know everything in the world.

(Laughter) The end of this experiment is so unexpected, like an O'Henry novel, that I'll keep it to myself.

It was a really fun experiment, because it was an experiment about how much information the human brain can absorb.

For example, if you listen to Kevin Kelly's performance, you don't have to remember anything.

just search on google

I wasted a lot of time on this experiment.

I enjoyed it, but the most meaningful and life-changing experiment was the most recent one. It's a "biblical life" where you live according to the commandments of the Bible for a year.

I did this experiment for two reasons.

One, I grew up completely non-religious.

As I wrote in my book, calling me Jewish is as irrelevant as calling an American Olive Garden an Italian restaurant.

(Laughter) Not much of a difference.

But gradually I became interested in religion

I now consider religion to be an important theme of our time, perhaps the most important one.

I have a son and would like to know what to teach him.

I decided to try living according to the Bible first.

The second reason was that I was concerned about the rise of fundamentalism -- religious fundamentalism. People who interpret the Bible literally. According to one statistic, 40 to 50 percent of Americans are fundamentalists.

I wondered what would happen if I really lived by the Bible.

As a theoretical conclusion, I decided to try to live true to the Bible, no matter what.

First I gathered a mountain of Bibles

There is also the New Testament

I had the Old Testament

A friend of mine sent me something called the Hip-Hop Bible, and in it, Psalm 23, it says, "The Lord is everything."

I read all kinds of Bibles and wrote down every single commandment in them.

There are over 700 precepts, which is a long list.

If you categorize them, there are the famous “Ten Commandments,” “Love your neighbor as yourself,” and “Be fruitful and multiply.”

I thought I'd try these

I took this venture seriously because I had twins this year, so I took it really seriously.

On the other hand, I wanted to follow the hundreds of obscure and obscure commandments in the Bible.

In the book of Leviticus, there is a commandment that says: Do not shave the horns of your beard.

I didn't know where the corners of my beard were, so I decided to grow my beard out, and it ended up looking like this.

As you can imagine, I spent a long time in airport security.

(Laughter) My wife hasn't kissed me in the last two months.

it sure was hard

The bible says don't wear mixed fabrics.It was a strange commandment, but I tried it.

It's the first thing you'll understand when you try it

I got rid of all the T-shirts that were a mixture of cotton and polyester.

The Bible says, "When two men are fighting, the wife of the man who holds the other's vitals shall have his hand cut off."

I thought I'd give this commandment a try.

(Laughter) On the other hand, I tried to see what would happen if I didn't fight a man with a wife who seemed to have a strong grip.

(Laughter) Here's another photo of a beard.

It's been a wonderful year. It's been a life-changing and rewarding year.

There were two precepts that were particularly difficult.

It is a commandment not to commit the small sins that we commit every day.

You can go a year without killing, but it's hard not to gossip, be greedy, or lie for a year.I'm in New York, and I work as a journalist.

Interestingly enough, I was able to grow a little bit.

This is one of the biggest lessons I've learned in a year, but I've always acted like a nice person, and it made me a little nicer.

I always thought this. When you change your thoughts, you change your actions. but it was actually the other way around

I changed my thoughts because I changed my actions

If you want to be kind-hearted, go to the hospital and visit sick people, and you'll be kind-hearted.

When you donate to welfare, you're emotionally involved in welfare.

It's really cognitive psychology, and what I've experienced is cognitive dissonance.

The Bible talks about cognitive psychology, the earliest cognitive psychology.

There is a saying that if you smile, you will be happy, and it's true.

Another commandment that has been difficult to follow is that keeping that commandment in 21st-century America is a bit of a problem.

The most obvious example is "throwing stones at adulterers"

(Laughter) This is an important part of the Bible, so I thought I'd try.

I had the experience of throwing stones at an adulterer

When you're actually in the park wearing the biblical clothes, sandals, white cloth, you know how the outside can affect the inside.

I wanted to see how wearing the clothes of the Bible actually changed me inside.

A man came up to me and said, "Why are you dressed like that?"

I explained my experiment and he said, "I've had adultery, do you throw stones at me?"

"it's great"

(Laughter) I took a bunch of stones out of my pocket and carried them with me for almost a week, waiting for this moment to come. It was actually a pebble, but he snatched it out of my hand.

He was an older man in his mid 70's.

was an adulterer and was actually quite angry

He took a pebble out of my hand and threw it in my face, so I threw it at him in retaliation, following the rule of "an eye for an eye."

This is the experience of throwing stones. And this experience gave me the opportunity to tell you something very important in a serious way.

Why is the Bible partly barbaric and partly wise?

how should we interpret the bible

Should I take it as it was originally meant or should I take a conservative interpretation?

how the bible was written

Since most of you here today are very system savvy, I compared the Bible in my book to Wikipedia, which has multiple authors and multiple editors over hundreds of years.

has evolved gradually

The Bible Wasn't Written in Heaven and Descended

Lastly, I would like to share with you a lesson that will remain in your memory.

The first lesson is that you should not take the Bible literally.

This became clear early on

If you take it literally, you're forced to act like a freak, like throwing stones at an adulterer, for another example.

I lived as a shepherd for a while

(laughs) It's a very relaxing profession. It is recommended

The Bible says you should not have contact with a woman for a certain period of the month, and that you should not sit in a chair where a menstruating woman has sat.

My wife found this distasteful, and sat on chairs all over the apartment, leaving me standing for most of the year, until I bought my own chair and started lugging around.

One day, I met a creationist

We also visited the Creation Museum.

they were the ultimate literalists

they're not weird people

I'd bet that their IQ's are on par with the average evolutionist.

Their beliefs are so strong that they distort real information to match the literal interpretation of the Bible.

And they do some amazing brain teasers to make this happen.

That said, the museum was quite nice.

doing a great job

You can watch a flood movie while you're in Kentucky, and there's a sprinkler on the ceiling, and the flood scene has water spraying down from the ceiling.

No matter what you think of Creationism, this is insane, but great work.

(Laughter) Another lesson is to be grateful.

It's a strange thing for a godless person like me to say a prayer of thanksgiving.

As a result of constantly saying "thank you" every day, my perspective has changed♪

A lot of small things that I didn't realize before started going right without me noticing, and the three or four things that went wrong stopped bothering me.

This is the key to happiness, and I'm grateful that my car didn't overturn when I came to this venue, and I didn't skid up the stairs.

this is amazing

The third lesson is to have respect

This was unexpected. I started the year as an agnostic, but now, a year later, my friends call me a devout agnostic, and I love it.

Although I'm trying to extend this experiment as an exercise

If anyone wants to join me, whether God exists or not, there is something important and beautiful about the idea of ​​sacredness.

The Sabbath Is Also Sacred

Observing the Sabbath has been very important to me this past year.I'm a workaholic, so this one day when I shouldn't work changed my life.

About this sacredness, whether God exists or not

I think we should not be prejudiced

I think that's because I've spent time with different religious communities across America, and my interactions with them aren't just a journey.

I did it for the sake of American religion.

He interacted with evangelicals, Hasidic Judaism, and the Amish.

I'm proud of myself as probably the only man in America to challenge Jehovah's Witnesses to a debate about the Bible.

(Laughter) Three and a half hours later, he looks at his watch and says, "It's time to say goodbye."

(laughs) Thank you.

thank you.

It was very interesting. I had preconceived notions about, say, evangelical Christianity, but the activity was so broad and varied that it was difficult to generalize.

There's a group I met called "Red Letter Christianity," and they cherish the letters in the Bible that are written in red.The red letters are the words that Jesus spoke.

Old Bibles have the word printed in red letters

Their argument is that Jesus said nothing about homosexuality.

Their pamphlet says what Jesus said about homosexuality, and when you open the page, it says nothing.

They say Jesus spoke a lot about saving the poorest, and the poor as well.

this is a very moving story

I introduced them to Jim Wallace and Tony Campolo.

They are very good leaders, although I disagree with a lot of what they say.

"Don't ignore the irrational"

These words were very unexpected to me, because I grew up in a scientific worldview, but I was shocked to see how many irrational forces rule our lives.

They cannot be completely ignored unless they are harmful.

As for the practices I have practiced, I have asked believers about biblical practices, such as separating cotton from linen, and why does the Bible say this, why does God care about this?

"I don't know," they say. It's the commandments that give us meaning.

when you say "that's funny"

they said "what about you"

Blow out the candles on your birthday cake

If a Martian comes down and sees a man blowing out the candles on a cake and a man without fabric clothes, the Martian can understand this man, but the other man is crazy, right? I think rituals and conventions are inherently irrational.

The important thing is to choose the right rituals and choose the harmless ones. But the tradition itself must not be rejected

Finally, I learned to pick and choose

I learned this trying to keep all the commandments of the Bible

Unfortunately it failed

can't follow everything

Anyone who follows the Bible must make a choice.

The key is choosing the right part

There's a term cafeteria religion Fundamentalists use this term negatively They all say it's a cafeteria religion

Say you are only partially selecting

I don't think there's anything wrong with that way

The cafeteria also has good food

Some foods make you nauseous

It's important to choose kindness, patience, and love of neighbor, as the Bible says, and it's not important to choose homosexuality as a sin, intolerance, or violence, both of which are in the Bible.

If we need to find meaning in the Bible, we need to engage and wrestle with it.

I'll finish it soon

this is me reading the bible

This is me hailing a taxi

(Laughter) I was able to successfully stop a taxi. This is a borrowed sheep. I had to return it in the morning, but it was useful during the day.

thank you for inviting me

i really love the colors

find color everywhere

My family often teases me because I like to use colors with obscure names, like celadon.

(laughs) Ebony color

magenta

Now, if you haven't noticed, I'm black. (Laughter) And when you grow up in a segregated city like Chicago, you start thinking, "Color and race are inseparable."

I am reminded almost every day that I am black.

Racism is very evident in my city.

Now, it's clear that race is socially constructed, but it's difficult to understand that in everyday life.

because it is so pervasive

The neighborhood I grew up in was full of culturally codified beauty.

The main shopping streets were lined with brightly colored storefronts competing to attract black customers.

The corner grocery store, the beauty store, the currency exchange store, and so on, were such a visual mix that I unexpectedly learned a basic principle, which I later identified as color theory.

In college, I was intimidated by the term color theory.

I was terrified of old, old white men, their papers, and obscure terminology.

I've mastered all those colors and related principles.

Color principles, simply put, is the art and science of using color to shape structures and spaces.

it's not that complicated

this was my bible in college

The hypothesis about the color red that Josef Albers put forward has stuck with me for a long time.

He said that the iconic color of a Coke can is red, and while we can all agree that it's actually red, there are as many different colors as there are people when we think of "red."

please think about it

We've been taught since kindergarten that we're all primary colors -- red, yellow, blue -- they're not really primary colors, they're not the most simplified, they're not objective, they're highly subjective.

What do you mean?

(Laughter) Albers called this "relational."

relational

For the first time, I was able to see the neighborhood I grew up in in a relevant context.

Each color is influenced by the color next to it.

As each person is influenced by his neighbor

In the 1930s, the U.S. government created the Federal Housing Administration, which created maps and systematically color-coded them to show which neighborhoods should receive government mortgages or not.

This Habitat Safety Map had its own color, and it had more impact than all the colors combined that I had studied in college.

Banks wouldn't lend to people in neighborhoods like mine.

my region is D86

Cartographers literally painted these maps with color, labeling that color as "dangerous."

Red was the new color, and black areas were painted red.

This problem continues today, and is seen more recently in the spate of foreclosures.

In Chicago, the problem is symbolized by the gaudy X's painted on the fronts of vacant homes on the South and West Sides.

In reality, my physical and artistic existence was defined by other people's colors.

ridiculous

I decided to create my own colors, and I decided to talk to people in my area and change the reality that other people had defined my colors.

I already knew this color without having to search extensively or read the papers.

What kind of painter will emerge from this reality?

What color are the cities?

What color are the slums?

What color are privileges?

What colors are associated with gangs?

What is the color of the gentrification of lower residential areas?

Freddie Gray killed by police

What color is Mike Brown?

Finally, I found a way to connect racially influenced perceptions of color with theoretical perceptions of color.

And I gave birth to my third child, the "color theory".

(Laughter) "Color Theory" is a two-year art project about applying my own colors in my own way to the area where I live.

Now, if you walk down 79th Street and ask 50 people what the name of a color that's a little greener than blue-green is, they'll look at you with suspicion.

(Laughter) But when I say, "What color is the ultra scene of hair care products?" they all smile and tell stories about their grandmother's bathroom.

For everyone, it's more of an ultra scene than turquoise

For everyone, it's more of an ultra scene than turquoise.

From ultramarine blue to everyone

(Audience) Ultra scene.

(Laughter) And that's how I created my own colors.

I've heard stories and memories like this from family and friends who have similar backgrounds.

It's not always a happy story, but the color has always resonated more than the product itself.

I went out on the town with this theory.

"Ultra Scene"

"Pink Oil Moisturizer"

If you're from Chicago, you know "Harold's Chicken Shack"

(Laughs) "Exchange shop + safe passage"

"Fire-breathing spiciness"

"Bulk cigarettes"

"Crown Royal Hotei"

I painted houses in the infamous neighborhood of Englewood that were about to be demolished.

I collected enough paint to fit in the trunk of my car, called in my most trusted artist pals, had my wonderful husband at my side, and painted every inch of the exterior wall in one solid color.

I wanted to understand scale in a new way.

I wanted to paint the biggest canvas imaginable, the house.

I eagerly traversed the familiar streets where I grew up, checking the houses against city data to make sure they were tagged for demolition, left unsaved and left to decay.

I realized what it was like to let color run free, and I decided to trust my instincts and stop asking for permission.

No meetings with city officials, no community support, just let the colors rule, because I want to give the South Side a different image.

These houses are the exact opposite of neatly arranged houses.

I painted them to make them stand out in this environment, like the pieces in Monopoly.

I would go out early Sunday morning and paint until I ran out of paint or someone complained.

"Hey did you paint it?"

One day, while I was taking this picture, a driver asked me,

I nervously answered "yes"

Then his expression changed

"Sorry, I thought the singer Prince was coming."

(Laughter) He grew up on this corner, so when he drove by and saw that the color of the abandoned house had mysteriously changed overnight, he thought it wasn't a Crown Royal cloth bag, but a secret cue from Prince.

(Laughter) The idea is that in a neighborhood where almost everything is disappearing, Prince could pop up in an unexpected place and give a free gig in a neighborhood that the music industry and society now deem worthless.

For him, it was a possibility in itself that the appearance of the house would suggest that Prince could come.

In that moment, a corner of Eggleston became synonymous with nobility.

Even if only for a moment, Eric Bennett's neighborhood regained its value.

Even though we didn't know each other, we talked about what high school we went to, where we grew up, and our childhoods on the South Side, including Mr. Nana's candy store.

And when I told him that this project had nothing to do with Prince, Eric nodded in agreement and said, "But he might come!"

(Laughter) He didn't want this project to be completely his own, not even in the hands of me, the author.

this was a success for me

I wish I could say that this project has transformed the region, dramatically changing the metrics we care about: more jobs, less crime, less alcoholism, but the reality is more ambiguous.

The Color Principle has sparked a new conversation about the value of being black.

The (With) Color Principle has made a thorny question clearly visible, a question that organizations and governments need to ask themselves about why they should continue doing things the way they are.

And it also asked me, and my neighbors in similar circumstances, what our values ​​and how the path towards collective representation should be.

Color has given me freedom without having to wait for permission, affirmation, or inclusion.

Color is now something I have control over.

A member of the paint squad who lives in my neighborhood put it very well, saying, "This project didn't change the neighborhood, but it did change people's perceptions of what's possible in the neighborhood they live in more or less."

Passers-by often asked me, "Why are you painting that house when you know it's going to be demolished?"

At the time, I had no idea what the answer was. I just knew I had to do something.

I wanted to throw everything away to understand color as a medium and an inevitable way of being perceived in society.

If I can make this world any better, I need to love and exploit both ways of being perceived, where there is a lightness of value and a tone of mindset.

thank you

(applause)

(Chris Anderson) Nice to meet you, Christian.

You have a great point of view. There have been some disturbing developments in the last few years.

What are you most concerned about?

(Christian Amanpour) I've heard from previous speakers, and if you look at it from that perspective, for example, climate change, I'm concerned about the threats to cities, to our environment, to our lives.

It all boils down to understanding the truth and being able to figure out the truth about what we're arguing about to really solve the problem.

Even if 99.9% of climate science is empirical and scientifically proven, it's a five-minute battle with a handful of naysayers who say it's not true -- that's the classic example of fake news.

So for me, in the last few years, especially last year, the concept of fake news has gone from being a mere slogan to being spread around to becoming a distinct concern.

Because if we can't distinguish between truth and fake news, it will be very difficult to solve the most pressing problems we face.

CA: Well, you've been grappling with the question of balance for a long time, what is truth, what is fairness.

Twenty-five years ago, I reported on the Balkan wars from the front lines.

At the time, you famously said in your accusations of human rights violations, "There can be situations where it's impossible to remain neutral, because by staying neutral, you become an accomplice."

Do you feel that today's journalism disregards advice about balance in that regard?

(Amanpour) For a journalist, objectivity is the golden rule.

But sometimes we don't understand the meaning of objectivity.

I learned this when I was new to the industry, during the Balkan Wars.

i'm young

it was about 25 years ago

What we saw there was rampant injustice beyond human rights, including ethnic cleansing and genocide, which were convicted by the International Criminal Court's higher courts.

understand what you see

When I tried to tell the world about it, I was accused of biased reporting, of taking sides, of not seeing the big picture, of trying to tell just one story.

I was personally accused, among other things, by the citizens of Sarajevo for "siding with the Muslims," ​​because the Muslim minority in that area was being attacked by Christians on the Serbian side.

I was very worried

I was troubled by being criticized by this report

I wondered if I was wrong, or maybe I had forgotten the meaning of objectivity.

But then I started to understand what people wanted: don't do anything, don't step in, don't change the situation, don't find a solution.

The fake news of the time -- the lies of the time -- our government -- including our government -- democratically elected and upholding human rights values ​​and morals -- the lie they were telling was that it stemmed from centuries of ethnic hatred and that all sides were equally guilty. We knew it wasn't true.

I realized then that objectivity is about listening to and talking to all sides equally, but it's not about treating all sides equally, it's not about creating forced moral equality or fait accompli.

If you can't make sense of what you're seeing in situations of grave danger in international and humanitarian law, if you can't understand the truth, if you're trapped in the fake news paradigm, you become an accomplice.

And I refuse to be an accomplice to the genocide.

(Applause) (Anderson) There's always been a propaganda war, and you've had the courage to stand up for yourself.

It seems like the news is being faked in a whole new way these days.

How would you analyze this situation?

(Amanpour) Yes, I am very concerned.

A wave of fake news as far as the eye can see

First, there is the leader of the free world, the most influential person in the world -- the president of the United States -- the most important and powerful country in the world -- economically, militarily, politically -- that seeks to spread its values ​​and hegemony to the world.

So we journalists who seek the truth -- this is our mission -- to travel the world in search of the truth, to be seen and heard by people, to visit hard-to-reach regions of the world, to find out what's happening to matters that matter to people's health and safety.

When an influential world leader denounces it as fake news, it has explosive repercussions.

And that's where it starts. Not only does it erode our credibility, it affects people's perceptions. People looking at us are probably thinking, "Maybe there's some truth in what the president of the United States is saying."

(Anderson) Presidents have always been critical of the media. (Amanpour) Now they've gone too far.

(Anderson) To what extent... (Laughter) (Applause) (Anderson) A few years ago, someone might have looked at the avalanche of information being posted on Twitter and Facebook and elsewhere and said, "Democracy has never been healthier.

unprecedented amount of coverage

Of course, presidents will say whatever they want, but anyone can say what they want.

What the hell is wrong with this? Why is there more danger lurking? ”

(Amanpour) I wish it was true

It would be nice if the proliferation of platforms from which we get information would lead to the spread of truth and transparency and depth and accuracy.

But I think it has the opposite effect.

I'll admit that I'm a bit of an anti-rationalist.

When we started talking about the information superhighway -- a long time ago, before Twitter and social media like that -- my fear was that the information superhighway would lead people down a certain path, focusing only on their areas of interest and blinding them to the wider world.

What I fear is that algorithms, logarithms, all these "somehow-isms," all of them lead us into one particular channel of information that is biased, and that's what I think is happening right now.

There are numerous reports of this phenomenon.

People said, "The Internet has come, democracy, more access to more information, less prejudice, more and more diverse access to information that will explode."

But in reality the opposite happened

That's why it seems so incredibly dangerous to me.

Again, when the president of this country speaks out, it provides the leaders of non-democratic nations with a convenient pretext to further undermine us, hitting us and their journalists with the stick of fake news.

CA: To what extent, what happened, but in a way it's an unintended consequence that the traditional media that you've been working with has taken on a curation role, where there's discipline and there's been a rejection of articles that lack credibility.

"Let's make it public!"

Do you think this behavior is a problem?

CA: Yes, I think it's a big problem. I witnessed the 2016 presidential election, and the tactic of "clickbait" was eye-catching and tempting. Fake news sites and articles are not random or accidental, but intentional publications.

And one more thing: modern technology can spread this information at the speed of sound and light, something that we've never experienced before.

We've never faced so much information before, and it wasn't curated by a group of truthful, fact-checking, code of conduct, ethical, professional experts.

CA: I'm sure some of you in this room know people who work at Facebook, Twitter, Google, etc.

They all seem like good people with great aspirations - let's assume.

If you were to talk to the leaders of those companies, what would you say?

CA: Well, I'm sure they have very good intentions, and they've built some incredible, groundbreaking systems, and one of them is Facebook, where everyone is connected.

It has created a huge economy and immeasurable income in itself.

All I can say is, "You guys wake up, sniff your coffee and see what's going on."

Mark Zuckerberg says he wants to build a global community

What I want to know is what is that global community like?

I would like to know where the code of conduct is

Mark Zuckerberg said - I don't mean to accuse him, and I think he believed it - "It's ridiculous to think that the Russians or someone else is working on the internet."

What have we learned in the last few weeks?

In fact, they found a big problem and they had to do some research and come up with a solution.

Now we have to do something to slow the rise of fake news, which has been neglected for a long time.

So my hope is that you, the technically savvy people, will come up with algorithms.

can make it, right?

CA: It's an algorithm with investigative capabilities.

(Laughter) And not by chance -- (Applause) Deliberate lies have been planted over the decades by people involved in war issues.

Soviets, Russia - they are another form of warfare - adept at hybrid warfare

And this thing - this is what they decided to do.

It succeeded in the United States, it failed in France, it failed in Germany.

There have been attempts to sabotage national elections in their respective countries, but the current president of France, Emmanuel Macron, has faced it with a very tough stand, as did Angela Merkel.

(Anderson) Don't you feel hope?

the world is learning

We were deceived once, but even if we were deceived a second time, we may not be deceived a third time.

Is it true?

(Amanpour) Let's pray so

But from that point of view, it's a technology problem, and technology needs a moral compass.

It sounds nonsense, but you know what I mean.

(Anderson) Do we need a bullshit exclusion algorithm with a moral compass? (Amanpour) Exactly

(Anderson) That's good

(Amanpour) It's "moral technology."

We all have moral compass — let the machine implement it.

(Anderson) It's a worthwhile challenge. (Amanpour) You see.

(Anderson) Let's talk a little bit about leadership.

It seems that you had the opportunity to talk with many people from all over the world.

Some of us -- I'll tell you about myself, I don't know about others -- there's this kind of disappointment that goes, "Where are the leaders?"

A lot of us were disappointed -- a recent example is Aung San Suu Kyi, and we're like, "No way! Again."

I feel like my heart is going to burst

(Laughter) Is there anyone you've met who has left an impression on you, who has influenced you?

CA: You're absolutely right when you say that the world is in crisis.

It's a very stressful world right now.

And you're right, there's a lack of leadership that everyone feels, and I'm not the only one to say it.

Today I was speaking with the outgoing President of the Republic of Liberia, Ellen Johnson Sirleaf, who will -- (Applause) -- become one of the very few African chieftains who will abide by the Constitution, finish her term, and relinquish power in three weeks.

She said she wanted to show what democracy should look like.

When asked about leadership, in a flurry of names, you mention France's new president, Emmanuel Macron.

She said, "What did you think of when you heard his name?"

She says, "I'm trying to be the leader that fills the current leadership void."

i thought it was very interesting

I had the chance to interview him by chance yesterday.

I'm very proud to say that yesterday was his first international interview.

i was very impressed

I don't know if it's the right thing to say on a public forum, but I was really impressed.

(Laughter) Maybe it was just because it was his first interview, but I asked him a bunch of questions -- guess what?

He answered correctly!

(Laughter) (Applause) No gimmicks, no wobble, no wobble, no five minutes later and finally back to the point.

And in my well-known tactic, I didn't have to interrupt too many times to elicit an answer.

And he replied, the answer was very interesting

He- (Anderson) What did he say?

(Amanpour) Please tell me

(Anderson) You are the speaker and I am the listener.

(Amanpour) No please

(Anderson) What about him?

(Amanpour) You talked about nationalism and nationalism.

I asked him, "After seeing what happened with Brexit, what happened in America, and witnessing elections in European countries in early 2017, where did you get the courage to confront the anti-globalization, nationalist, populist momentum?"

He said, "For me, nationalism means war.

As we have seen so far, people in Europe lived through such times, and I unequivocally assert that.

He wasn't going to accept, so to speak, the bare minimum common denominator as a political stopgap, the way it's been accepted in other countries' elections.

And he confronted a very dangerous woman, Marine Le Pen.

(Anderson) Christian, one last question.

Give me an idea worth spreading

If you could plant an idea in the minds of everyone here, what would it be?

CA: Be very careful about where you get your information. It's about being responsible for what you read, listen, and see. When you get your primary information, make sure the source is a trusted brand. Unless we understand and work on it, we can only march to catastrophe.

So the truth is important. I'm going back to Emmanuel Macron again to talk about love.

i don't think there's enough love

i asked about love

I said, "The world is watching your marriage."

(laughs) "Can you talk about love?

What does it mean to you? ”

I had never heard of love from a president or chief until then.

I thought I'd ask

And— he answered sincerely

"I love my wife. She is part of me. We have been together for over 20 years."

Here's where the value is, and where I'm impressed.

He said, "It's very important for me to have someone at home who can tell me the truth."

You see, the truth is important

(Laughter) (Anderson) That's right, truth and love, an idea worth spreading.

It was Christian Amanpour. It was a great story.

(Applause) (Amanpour) Thank you. (Anderson) It was great.

(Applause) (Amanpour) Thank you.

Loki, the god of mischief, struggled in bewilderment in Thor's mighty fists.

The night before, while the rest of the gods were asleep, Loki sneaked up on Thor's wife, Sif, and cut off her beautiful hair.

At the time, I thought it was just a prank, but Thor was about to shatter all of Loki's bones.

Loki must figure out how to grow his hair back somehow.

But who can restore Sif's beautiful golden hair like a field of summer wheat?

Those dwarves! - Those legendary craftsmen could make anything

Loki rushes to the kingdom of dwarves deep in the mountains,

By the time I got there, I was still trying to figure out how to get the dwarves to do what he wanted.

And Loki thought the best thing to do was pit the two families against each other.

First, Loki visits Ivaldi's brilliant sons.

Their rivals, Brock and Eitori, claimed that they were the best blacksmiths in the world, and that they were going to fight to prove it.

The rules of battle were that each family should make three gifts for the gods, and the gifts that Ivaldi passed on to his sons included golden hair.

Loki next visits Brock and the Eitri brothers and tells them the exact same story, only this time adding that Evaldi's sons are up for the fight.

But Brock and Eitri weren't fooled so easily, and said they were willing to participate if Loki offered his head to the bet.

So if Brock and Eitori win, Loki loses his head.

Loki couldn't say no, so he must figure out a way to get Ivaldi's sons to win in order to somehow protect himself.

And both dwarves got down to business

In order not to ruin the treasure, Eitori told Brock to keep working on his bellows no matter what.

Then suddenly a strange fly flew into the room

When I put a piece of pigskin in the forge furnace, a fly stung Brock's hand, but Brock didn't flinch.

Then Eitori was working on a nugget of gold when a fly bit the block's neck.

The block still works

The last time Eitori put an iron piece into the cauldron

When the fly finally landed on the block's eyelid, it bit as hard as it could.

And for just a moment, Brock let go of the bellows.

That's all. I couldn't get enough of the final gift into the furnace.

Overjoyed at their failure, Loki reverts to his original form and accompanies the dwarves, presenting treasures to the gods.

Loki in the beginning as a treasure for Ivaldi's sons

When her golden hair was tied around Sifu's head, it continued to grow, making her shine more beautiful than ever.

Then for Odin, the chief god, he was gifted with a splendid spear that could pierce anything.

The final gift to Frey, the god of fertility, was a small piece of dough that could be unrolled into a giant ship.

And I presented you with the treasure that Brock made with Eitori.

Frey is gifted with a boar of golden bristles, capable of pulling Frey's chariot across the sky faster than any horse.

Odin was gifted with a golden bracelet that he could make eight more of the same for every nine nights.

And Thor was given a hammer called Mjolnir.

Mjolnir's hilt was noticeably shorter, and Loki thought it was a glaring flaw, and he gloated.

But then Brock showed off the power of the hammer.

Mjolnir never shatters, and when thrown, it never misses its target and always returns to Thor's hand.

Despite its short stump, all the gods agreed that this was the most wonderful gift.

Loki remembered the bet and tried to escape, but was caught by Thor first.

But before the dwarves could get their hands on it, the crafty Loki pointed out that the list didn't say to decapitate his own head, so he couldn't cut off his head.

Everyone grudgingly agreed, but Brock had a smile on his face at the end.

He took Eitri's awl and stuck it through Loki's lips and sewed his mouth so that he couldn't speak, so the mischievous god could no longer do tricks.

But even with the power of the gods, there are things you can't anticipate.

Loki's deception endowed the gods with great treasures and gave Thor the hammer that is still known to this day.

You have discovered a gateway to another world, and you brothers have set off on an expedition to the wondrous world of Paradoxica.

The beautiful creatures of Paradoxica are crawling, running and dancing.

A monster troll appears there

The trolls are catching every single creature and throwing them into a huge net.

Bravely step in front of the troll and demand it be released.

The troll laughed and said, "If you like these guys that much

If you tell any truth, all these creatures

I'll let you go." I try to answer, "You're a troll."

The troll didn't give him time to grab his brother

"If you lie, I'll let your brother go," he says.

"You must say only one sentence

And as you know, I hate paradoxes more than anything.

If you try to deceive me by saying something paradoxical, yes, if you say, ``I'm lying,'' I'll eat you and all the creatures."

What kind of true or false statement will the troll free his brother and the creatures?

Pause the playback and think about it. 3 seconds, 2 seconds, 1 second to the answer.

This is an example of forced logic, invented by the great logician and puzzle maker, Raymond Smullyan.

Smullyan came up with the conundrum of saying something that is true or false based on what you want the troll to do.

Either way, you have to think carefully about what you say.

For example, if I say, "You let the creatures and your brother go," for example, if you say, "You let the creatures and your brother go," the troll might say, "You lied. I'm the only one who lets my brother escape."

So what if I say, "You're going to let my brother go?" Then what if I say, "You're going to let my brother go," and that statement can't be a lie.

This statement can also be interpreted as a paradoxical statement that is both true and false.

But trolls hate paradoxes, so they don't even bother to make that claim.

So the troll has to admit that this statement is true.

If it's true that "you're going to let your brother go," then the troll must let his brother go.

And since he told me the truth, I must follow the promise I made and free the creatures as well.

Using just three sentences like a sword of logic, the troll reluctantly let his brother and the creatures escape.

The troll dejectedly walks away, and the creatures, overjoyed at their release, promise to take them to the treasure at the top of the stairs.

It seems like it's only a matter of getting there

After 40 hours of no sleep, at 4 in the morning, I can finally solve the puzzle associated with this video: a chicken and a roller-skating beaver competing in a dance.

(Laughter) The confusion and the joy I feel at that moment is something I often experience at "MIT Mystery Hunt," an event for geeks in a certain field, kind of a cross between the Olympics and Burning Man.

(Laughter) Today I'm going to introduce you to this quirky, ridiculously fun world of puzzles that tease your brain yourself.

First, let me explain what I mean by "puzzle" here.

A puzzle used in Puzzle Hunt is a collection of data.

There are various formats such as vertically and horizontally arranged characters, Sudoku, video and audio, and when you unravel the information hidden in them, the words and phrases that are the answers will appear.

Let me give you an example: a puzzle called "Master Pieces."

It consists of 10 images of a Lego figure looking at a block of Lego blocks.

I don't have much time, so I'll reveal the seeds

Each block of Lego bricks is a piece of the work of a famous artist, and each piece represents the style of each artist.

Do you know whose work the one on the left is?

red is used a lot

That's right, it's Rothko

what about the second one?

(Audience) Mondrian

(Alex) Exactly

what about the third one? This is the hardest, yes Klimt.

That was great. Color is an important clue.

Some clues in this puzzle tell us that it's not the individual works of art that matter here, but the artists.

Now let's look at the clues we haven't used yet: the number of Lego figures in each picture.

Count the dolls, then count the letters of the artist's surname from the front to the same number.

In the Rothko example on the left, there are three dolls, so it's the third letter in Rothko, "T."

In Mondrian's painting, there is only one, so the first letter "M"

Klimt is also three bodies, so the third letter is "I".

If you take the letters from the names of 10 artists like this and put them in order, you get the answer: illuminate.

(Laughter) These puzzles convey some ideas.

But what I want to make as clear as possible here is that the puzzle must be somewhere between ambiguity and clarity.

It has to be so elusive that you have to work hard to solve it, and it has to be sophisticated enough that when all the pieces fit together, you have a moment of inspiration.

At that moment, people become addicted and get hooked on puzzles. At that moment, your feelings are lifted and your vision suddenly opens up.

And it also brings a deeper sense of accomplishment, which is why people naturally like to solve problems.

That's why crosswords and escape games are so popular that I'm even thinking about ways to explore the ocean floor.

Solving tricky puzzles can open your mind in new directions and help you approach problems from multiple perspectives.

Puzzle hunts made up of these puzzles come in many forms and sizes.

There is a one-hour course for beginners, a 24-hour road rally, and the pinnacle of puzzle hunting, the MIT Mystery Hunt.

The MIT Mystery Hunt is an annual event that draws about 2,000 people to the MIT campus to solve puzzles in teams of one to over 100 people.

I have a team of 60 people, including a national champion crossword puzzler, a molecular physicist, a composer, a true deep-sea explorer, and I'm like, "Mr. Bean, I'm going to a code-breaking station."

(Laughter) Actually, it's kind of weird to say that, because one year in a puzzle, they used cardboard to build a working rotor cipher machine.

(Laughter) Every mystery hunt has a theme.

"The Matrix" and "Alice in Wonderland"

Many of the themes are based on popular culture or literature.

The goal is to find a coin hidden somewhere on the MIT campus.

To do that, you need to solve about 150 puzzles and complete various events and tasks.

It was January 2016, and it had been 10 years since I'd been participating without even dreaming of winning. The theme was the movie "Inception."

(Laughter) My desk was filled with paper notes and puzzles I solved.

The whiteboard was full of scribbles filled with three days' worth of ideas.

I'm stuck with two puzzles

After solving those two, I was close to finishing, but after a few hours of thinking, there was a magical moment when I solved two puzzles almost at the same time.

With anxiety, anticipation, excitement, and sleep deprivation, our minds are in a mess, and we arrive at the statue of The Alchemist.

found this coin

(cheers) yes

(Applause) We won the MIT Mystery Hunt by a close margin of five minutes.

I haven't told you yet, but the winning prize is that you can build an entire puzzle hunt for the following year.

(Laughter) As a punishment for winning, you have to make all the puzzle hunts for the following year.

Until early 2016, I had never built a puzzle.

But I'm also fortunate that my team has had many wonderful mentors and collaborators.

From a puzzle design perspective, a puzzle isn't about communicating your ideas verbatim, but about leaving clues so that other people can figure out their own answers and experience the joy of having an epiphany.

Face the moment of inspiration from a different perspective

And what I find really amazing is that you can create a very emotional, almost physical experience like this with a very precise design.

If you want to explain what I mean, this is a puzzle I made with my friend Matt Gruskin.

It's a text adventure, in the form of a classic adventure game, where you move north, south, east, and west, explore, collect items, and use them.

But going all the way to the end of the game doesn't mean you've solved the puzzle.

To solve a puzzle, you need to find hidden information, and the easiest way is to map the game.

like this

Anyone know what this is?

Yes, it is

This text adventure is based on "Settlers of Catan."

Anyone know "Catan"?

You're an otaku

(Laughter) Catan is a board game where you compete with other people to gather resources and build roads and houses.

This text adventure contains hidden information in many ways that you can use to reconstruct the entire game.

There are roads, cities, houses, resources, numbered tiles and even dice rolls.

Putting it all together, we have the answer, but it's too complicated to explain right now, so I won't.

(Laughter) If you really want to know, come back later.

(Laughter) One of the things that really struck me about making this puzzle was how important it is to shift your perspective in order to guide the moment of inspiration.

The puzzle begins by exploring the world through the eyes of the characters, and then, like when you're playing a board game, you begin to see the world from above.

One of the hardest things about puzzle design is getting the good ideas that lead to those moments of inspiration.

Fortunately, the world is full of ideas and information.

There's a wonderful puzzle consisting of the waggle dance of the bees, and there's the amazing coincidence that the 88 keys on the piano can be neatly linked to the 88 constellations in the sky.

Once you have that idea, you can't help but turn it into a puzzle, and then let the person who solves the puzzle think about it and find the connections.

Draw stars on the keyboard, talk about the universe with the music of the sky, and use any method to help you find the answer.

Eventually, you'll find yourself staring at the turtle and thinking, "Is this another puzzle?"

(Laughter) And then you look at the turtle and you think, "There's so many puzzles out there in just the shell!"

A familiar example for most of us is watching a TED talk and thinking, "Is this another puzzle?"

(laughs) I can't tell you.

But puzzles are in the most unlikely places.

The first puzzle I showed you is my favorite puzzle, it's by Trip Payne.

I'll play it with voice this time, so please think about what melody it is.

(Slow motion mimicking chicken crowing) (Slow motion mimicking chicken crowing) (Slow motion mimicking chicken crowing) (Laughter) Who knows?

Yes, "Natural Woman"

(Laughter) And then I identify seven other songs, and then I look for clues in the footage, how I filmed it, how I edited it, and also the transitions in the footage.

And then, whether you're looking it up on the Internet or just thinking about it, you have a moment of epiphany, and this is a video that mimics the lip-syncing showdown in "RuPaul's Drag Race."

(Laughter) Why are you doing this?

(Laughter) (Applause) Now, I don't know.

But hey, what can I say, it's really fun

And it makes our lives better in so many ways.

Being able to solve puzzles has allowed me to look at challenges from multiple perspectives rather than having to settle for one way from the beginning.

Also, the puzzle-solving process is a great exercise in teamwork, knowing when to listen, when to share information, how to recognize and celebrate good insights, and being able to create moments of inspiration can be a very powerful weapon.

If you can connect the clues yourself and find the idea within yourself, you'll see how powerful, inspiring, and persuasive it can be.

In January 2017, we finally held our puzzle hunt after tens of thousands of hours of work.

There was a sense of satisfaction that was a little different from the sudden euphoria that came at the moment of inspiration.

It's a complicated, abstract form, and it's telling you something slowly, but you still understand it.

When the puzzle hunt was over, exhausted, we declared to each other and the world, "I'm sorry for this. It's too hard.

It's fun, but I'm not going to win."

A year later, in January 2018, I won the MIT Mystery Hunt again.

(Laughter) I don't know how many tens of thousands of hours I've spent so far, but the 2019 Puzzle Hunt is two months away.

I've got to go make some more puzzles - thank you

(Laughter) (Applause)

let's play a game

Imagine you're in Las Vegas and decide to play a game on one of the computers in the casino, like playing solitaire or chess.

Computers can move their hands just like humans can.

this is a coin game

You start with the coin face up, and the computer goes first.

The computer decides whether or not to flip the coin, but you don't know the result.

it's your turn next

Similarly, you choose to flip the coin or not, but the other computer doesn't know the result.

Finally, the computer again chooses whether to flip the coin. After these three plays, the coin is revealed whether it is upside down. If heads are up, the computer wins. If tails up, you win.

It's a very simple game, but if you're honest and your coins are fair, you have a 50 percent chance of winning this game.

To confirm this, I asked the students to play this game against a computer, and after many trials, the win rate was at or near 50 percent, which was what we expected.

Sounds like a boring game, right?

But what if we played this game on a quantum computer?

There are no quantum computers in Las Vegas casinos, as far as I know, but IBM has built a working quantum computer.

this is the picture

what is a quantum computer

Quantum physics describes the behavior of subatomic particles such as atoms, electrons and photons.

Quantum computers work by controlling the motion of these subatomic particles, so they are completely different from conventional computers.

Quantum computers aren't just an enhancement of conventional computers, any more than a light bulb is an enhancement of a candle.

No matter how much you improve a candle, you can't make a light bulb.

The light bulb is a completely different technology based on a much higher scientific understanding.

Similarly, quantum computers are a new type of device, based on quantum physics, and just as the light bulb changed society, quantum computers have the potential to impact many aspects of our lives, from our safety needs to healthcare to the internet.

Companies around the world are working to build such devices, and to see how cool they can be, let's play the game above on a quantum computer.

You can log in to IBM's quantum computer here, which means you can play games remotely, and you can do it too.

Before you play, check. TED sent you an email ahead of time asking you to decide if you were going to play the game, whether you wanted to flip the coin.

The actual question was to choose between a circle and a square.

In fact, the circle meant "flip the coin" and the square meant "not flip."

We received 372 responses

thank you

Now you can play 372 games against a quantum computer using your choices.

It's a fast-paced game, so I can show you the results right now.

Unfortunately, your win rate isn't great.

(Laughter) Quantum computers win most of the time.

The few times I lost was due to an internal computer error.

(Laughter) So how did you pull off that incredible winning streak?

It sounds like magic or hoax, but it's really just quantum physics at work.

Let me explain how it works

Ordinary computers simulate the sides of a coin with bits, which represent 0 or 1 or not flipped inside the computer chip.

Quantum computers are completely different

Qubits are more fluid and less binary.

It can exist as a superposition of the possibility of being 0 and the possibility of being 1, that is, a combination of 0 and 1.

In other words, the entity is a continuous entity.

So, for example, 70% of the time it's 0 and 30% of the time it's 1, or 80% and 20% of the time, or 60% and 40% of the time.

there are infinite combinations possible

The key idea is to let go of the idea that it's either 0 or 1, and accept uncertainty.

In this game, a quantum computer can create a mixture of fronts and backs, or 0s and 1s, so that the superposition state doesn't change regardless of the player's choice, which is to flip it or not.

It's like stirring a mixture of two liquids.

It's the same as if a liquid were mixed, whether you stirred it or not.

(Laughter) It's understandable that you think it's a little strange.

A mixture of obverse and reverse sides is unheard of in ordinary coins.

In everyday life, we never experience this fluid quantum reality.

If you're confused by quanta, don't worry, you'll soon understand.

(Laughter) Even if you don't experience quantum weirdness, you can actually see the effects.

you've seen the data for yourself

Quantum computers won because they exploited superposition and uncertainty, and these quantum properties are powerful enough not just to win coin games, but to build future quantum technologies.

Here are three applications that could change the way we live our lives.

First of all, quantum uncertainty could be used to generate private keys, cryptographic keys that use quantum uncertainty to prevent an eavesdropper from secretly copying a perfect key while encrypting a message from one place to another.

Eavesdropping on cryptographic keys requires breaking the laws of quantum physics.

Such unbreakable encryption is already being tested by banks and other institutions around the world.

There are currently 17 billion devices connected to the internet worldwide.

Imagine the future impact of quantum cryptography

Second, quantum technology may also transform medicine and medicine.

Molecular design and analysis in drug development, for example, is a current challenge because accurately describing and calculating all the atoms in a molecule and the quantum properties of those atoms is a daunting task that is beyond the computational power of even a supercomputer.

But a quantum computer might work, because it's operating using the same quantum properties as the molecules we're trying to simulate.

Large-scale quantum simulations in future drug development may enable treatments for many life-threatening diseases such as Alzheimer's disease.

And the third is my favorite application, teleportation of information from one place to another, without physically transmitting the information.

It sounds sci-fi, but it's possible. It's the fluid nature of quantum particles that transcends space and time, creating 'quantum entanglement', where when you change one particle, it affects the other, creating a teleportation channel.

It's already been demonstrated in the lab and could be a building block of the future quantum internet.

We don't have such a network yet, but our team is working on that possibility by simulating quantum networks on a quantum computer.

We've designed and implemented interesting protocols, such as teleportation between different users on a network, efficient data transmission, and even a secure voting protocol.

A lot of fun for me as a quantum physicist.

I recommend it to everyone

(Laughter) We're going to be explorers in a quantum wonderland.

Who knows what applications we'll find next

As we build our quantum future, we must move carefully and responsibly.

And I don't see quantum physics as just a tool for building quantum computers.

We see quantum computers as a way to explore the mysteries of nature and to unveil a world beyond our experience.

The beauty of us humans is that despite our relatively limited access to space, we can see beyond it by using our imagination and ingenuity.

The universe responds by showing us how interesting and amazing the universe can be.

The fundamental uncertainty of the future is what excites me so much.

thank you

(applause)

From the smallest single-celled organisms to the largest organisms on Earth, all organisms are shaped by genes.

The DNA in our genes acts like the blueprint for our cells.

Four basic building blocks called bases, arranged in a precise order, determine the behavior of our cells and fundamentally shape all of our characteristics.

But recent advances in gene-editing technology have allowed scientists to alter the fundamental nature of living things in record time.

We were able to produce drought-tolerant crops and apples that didn't fade.

We might even be able to prevent outbreaks of infectious diseases and develop treatments for genetic diseases.

CRISPR is the fastest, easiest and cheapest gene-editing technology, and it's driving the craze in this new scientific field.

But where did this amazing medical technology come from?

How does that work?

And what can we do with this?

Amazingly, CRISPR is a naturally occurring process that has been functioning in the immune system of bacteria since time immemorial.

Originally discovered as a defense system against viral invasion in single-celled organisms and archaea, naturally occurring CRISPR utilizes two components.

The first are short, repetitive segments of DNA that are "clustered, regularly spaced short palindromic repeats," or CRISPRs for short.

The second is Cas, a CRISPR-related protein that cuts DNA like molecular scissors.

When a virus invades a bacterium, the Cas protein snips off a portion of the viral DNA and embeds it in the bacterium's CRISPR region, holding it as a "chemical signature" of infection.

The viral code is then replicated into piecemeal RNA.

RNA plays many roles in our cells, but in CRISPR, RNA binds to a special protein called Cas9.

The resulting complex acts like a scout, sticking to floating genetic material and looking for matches to the virus.

If the virus invades again, the reconnaissance complex quickly recognizes it, and Cas9 quickly destroys the viral DNA.

Many bacteria have this type of defense mechanism.

But in 2012, scientists discovered a way to artificially exploit the machinery of CRISPR to target not just viral DNA, but almost any DNA in any organism.

With the right tools, the immune system against viruses has become a tool for precise gene editing, allowing DNA to be altered or targeted for a specific gene, as easily as correcting a typographical error.

I'm going to show you how to do it in the lab, where you make a guide RNA that corresponds to the gene you want to edit, and you bind it to Cas9.

Similar to the viral RNA seen in the CRISPR immune system, the guide RNA directs Cas9 to the target gene, and molecular scissors made of proteins cut the DNA.

This is the secret to the power of CRISPR: by simply inserting a short guide RNA into Cas9, you can edit virtually any gene in the genome.

Once the DNA is cut, the cell tries to repair it.

Generally, proteins called nucleases cut off the broken ends and reconnect them.

But this kind of repair process, called non-homologous end joining, is error-prone and can lead to mismatched base numbers.

Repaired genes often become useless and are no longer used.

But if you add another DNA template to the CRISPR cocktail, proteins in the cell repair the DNA in a different way, called homologous recombination repair.

This template DNA is used like a blueprint for the reconstruction process, repairing defective genes and even inserting entirely new genes.

The ability to repair DNA also means that CRISPR can also develop new treatments for diseases, such as cystic fibrosis and sickle cell disease, which are caused by specific genetic abnormalities.

And it can be applied to everything, not just humans.

CRISPR could create large-fruited plants, produce non-malaria-carrying mosquitoes, and even reprogram cancer cells to become drug-resistant.

This is a powerful tool for studying the genome, allowing us to see what happens when a gene becomes inactive or mutates inside the cell.

But CRISPR isn't perfect yet.

Because it doesn't always change genes as intended, and because the long-term effects of CRISPR gene editing are difficult to predict, this technology raises serious ethical controversies.

It's up to us to decide how best to develop CRISPR beyond the confines of single-celled organisms and into laboratories, farms, hospitals, and the rest of the world.

On May 27, 1941, the German battleship Bismarck sank after a fierce firefight of 2,200 crew members, of whom only 118 survived.

But when British destroyers seized prisoners, they discovered an unexpected survivor: a black-and-white cat clinging to a floating plank.

Over the next few months, the cat hunted mice and boosted British morale, but a sudden torpedo attack shattered the hull and sank the ship.

Black and white cat miraculously survived

The cat, named "Unsinkable Sam," traveled to Gibraltar with the rescued crew and served as the "Sailor Cat" on three more ships, one of which sank, and retired to the seafarers' quarters in Belfast.

Many people don't think of cats as helpful sailors or supportive companions.

But cats have been cooperating and helping each other for thousands of years.

So how did this solitary creature go from wild predator to naval officer to couch companion?

The modern domestic cat can be traced back to the Fertile Crescent more than 10,000 years ago, at the beginning of the Neolithic period.

People in those days had learned how to control nature and produce far more food than farmers could eat.

Neolithic farmers stored excess grain in large pits or short clay silos.

But the stored food attracted many rodents, as well as their predator, the African wildcat, a wildcat found in North Africa and Southwest Asia.

These wild cats were agile, ferocious carnivorous hunters.

They were very similar in size and appearance to modern domestic cats.

The main difference is that ancient wild cats were more muscular, had striped fur, and were less social with other cats and humans.

The granaries ravaged by rodents have attracted the usually solitary feral cats for their bountiful prey.

Farmers are thought to have similarly tolerated cats in exchange for free pest control because feral cats have learned to tolerate the presence of humans and other cats during their meals.

The relationship turned out to be so profitable that cats migrated from Anatolia to Europe and the Mediterranean with Neolithic farmers.

A mouse brought great calamity on the seven seas

From eating food to chewing on ropes, cats have long been indispensable companions on voyages.

Around the same time that the globe-trotting Anatolian cats left, the Egyptians also domesticated the local cats.

Capable of hunting poisonous snakes and birds and rats, Egyptian cats became objects of worship, and domestic cats became an important part of religious culture.

Cats were mummified with their owners in frescoes, hieroglyphs, sculptures, and even immortal in tombs.

Egyptian sailor cats kept poisonous river snakes in their coves and accompanied them on cruises on the Nile.

As larger ships came along, the cats began to migrate from port to port.

During the Roman Empire, ships sailing between India and Egypt carried species of the steppe wildcat lineage from Central Asia.

Centuries later, in the Middle Ages, Egyptian cats sailed to the Baltic Sea aboard Viking ships.

The wild cats of the Near East and North Africa - probably domesticated at this time - continued their journey across Europe, eventually beginning their voyages to Australia and America.

Most domestic cats today are of the African wildcat lineage from the Near East or Egypt.

But a closer look at the genome and fur patterns of modern cats shows that, unlike dogs that have undergone centuries of selective breeding, modern cats are genetically very similar to ancient cats.

And other than making cats more sociable and manageable, humans have done little to change their natural behavior.

In other words, modern cats are, more or less, wild animals from the past.

They are ferocious hunters who don't see us as their guardians.

Combined with the long history, the cat may be right.

Paula Stone Williams: I was the president of a large religious nonprofit, I spoke at some of the biggest churches in America, I appeared on television for 70 different needs, but most of all I just wanted to be a good parent.

I've told all three of my children, "When things get tough, take the narrow road that's less traveled."

I didn't realize at the time how difficult it was

I knew from the time I was three or four years old that I was transgender.

I knew that if I came out, I would lose everything

But I came to believe that the guide to my true self was divine and for the greater good, and that the truth would not only set you free, it would set everyone free.

i decided to risk my life

That's why I came out

What I've learned is that if you've spent most of your life working in a conservative religious world, coming out as transgender isn't really good for your career.

(Laughter) Isn't that surprising?

(Laughter) In less than seven days, I lost all my jobs.

The family was supportive but distressed.

Most of my friends and former colleagues rejected me, and those who didn't were confused.

A friend said to me, "You really caused me trouble."

When I replied, "You too? Then line up."

"You were the only boss and kind person to me."

I thought "that's right"

i was a brave leader

and was kind

If it was hard for my friend, how hard was it for my son?

Jonathan Williams: Distance wasn't an option

It was Father's Day, and my daughters gave me a bottle of craft beer and homemade pickles, the perfect Father's Day gift.

(Laughter) I was still wondering, should I call my dad?

If you call me, I'll be in denial and pretending that my father is still my father.

If you don't call me, you'll be admitting that everything has changed.

For years, I was tortured, heartbroken and unacceptable, but I hoped that in the end we would be reconciled.

There's no manual for "when a father becomes a woman after 30+ years."

But my father taught me one thing

Always choose the narrow path that leads to salvation

So I decided not to call that day, and a few months later, my wife and I met up with Paula at a hotel in New York.

I knocked on the door and a woman answered

was never a father

"Nice to meet you" she said

I didn't hear my father's voice

At the restaurant where I went for lunch, a waiter came

"Ladies, please order," I said, but my wife was the only woman sitting at the table -- no, there were two women.

My dad ordered some lettuce or something, and I had fries on my plate.

Does dad like french fries? can't remember

i think i liked it

but i don't eat now

The woman there knew everything about me and I didn't know anything about her.

I don't even remember saying goodbye

Paula: I remember that day, it was late September, it was New York, and I was wearing white jeans.

(Laughter) No one in New York wears white after Labor Day, right?

I heard a knock on the door and all I could think about was standing out of place.

And there were those big blue eyes that I love so much, and they were staring at me in disbelief.

I was like, "This won't be easy."

When a family member transitions, the whole family is forced to change, whether they like it or not.

Well, it was a simple matter for those around me.

Liberals said, "Great!

Glad she got to the truth."

Conservatives say "I'm crazy, I'll let you go"

(Laughter) But my family was neither of those extremes.

Family anger, pain, love and loyalty - all of these had to be tested.

Jonathan: Was it all a lie?

Playing catch in the yard or a Mets annual ticket—was it with my dad or with her?

I remember when my dad and I were riding bikes in Heckscher Park, and he taught me about sex.

Explained parts of my body that I wish I hadn't.

Did I have a father in the first place?

Now with grief there is no order

Sorrow borrows cars without asking, breaks them to pieces, doesn't apologize

I was shattered

this was serious

I became withdrawn

got angry

i felt betrayed

In retrospect, I should have predicted that my father, who had raised me to be a Mets fan, was setting me up for some pretty big despair in my life. (Laughter)

It's true

I played catch, I got an annual ticket to the Mets, and every Saturday I went to the best bagel shop on Long Island for a bacon and egg sandwich with cheese.

My father lived this life I didn't want, but it was because I needed him.

I decided to stop wondering if my father was there.

He existed -- voluntarily, intentionally, and always existed while I was growing up.

i am grateful for that

Paula's body was already hers, the transition was complete, but mine was just beginning.

I had another challenge, another journey, a choice to take my father's advice and take the narrow road.

Paula: I believed in God most days.

Tuesdays and Thursdays are going to be tough, and any day on the New Jersey freeway.

don't you

(Laughter) It's hard to believe in God when your soul is in the wrong body.

But for some reason I got into the priesthood

I lost my job not because of a personal grudge.

because that's what religious groups do

They believe that groups need enemies to survive, so where there are no enemies, they create enemies.

Sexual minorities are the enemy now, and my departure was swift and certain.

I was amazed when my son left his teaching job in West Philadelphia to pursue a career in the ministry.

I never expected

I wondered, "What are you going to do?"

It didn't take me long to find the answer

Six months after my first visit, he invited me back to New York.

Jonathan: The designers of the Brooklyn Bridge had a bad day.

John Roebling died shortly after construction began on the bridge.

My son Washington took over, but he suffered from decompression sickness.

His wife, Emily, became the acting executive engineer and oversaw the completion of the bridge.

Father and son John and Washington were exhausted at work.

On a sunny May day, my father and I sat under the shade of the Brooklyn Bridge.

Are our lives, like the Roeblings, both father and son squandered by work?

My father thought his church friends would help him on his transition journey, but they didn't.

The church people have abandoned her and turned to me.

I was pastor of a new church in Brooklyn.

This wonderful group of positive people was financially involved with a fairly conservative church.

To secure Paula's seat is to threaten our church's livelihood.

I was torn between these hostile worlds.

So I said to my father, "Father, I'm still living and working in your old world."

"Aren't you going to make peace for me?"

Her response was filled with passion

My father said to me, "Do you know how it feels when you finally reveal your true self to a true friend and are completely rejected?

to live by deceiving yourself

Do you know the feeling that is being said? ”

I didn't understand that feeling

but i was determined

It was a decision to continue down a narrow path in the dark, but only then did I see a ray of light.

You can't ask your father to be anything else but yourself.

(Applause) Paula: And that day, by the river, Jonathan spoke of his pain, his suffering, his sorrow, his confusion.

In that conversation, he laid it all out, and it broke my heart to learn that he had caused me so much pain.

But as we talked, I felt something that would lead to salvation, salvation on a narrow road full of possibilities, albeit tense.

He said, "There will always be hard days ahead.

always

But I love you, Dad."

my son is irreplaceable to me

Brave and strong, sensitive and caring

You could also say that he's the "boss and kind man"

Jonathan: Now it's my daughter's turn to meet Paula.

When we got back to my apartment, she was coloring at the dining room table, and there was an awkward silence.

Finally, my youngest daughter asked one dignified question.

"Grandpa, do you have a penis?"

(Laughter) And then, when the tension had subsided and the laughter had subsided, the girls took Grandpa to their room and started showing her new toys, and gave her a new christening name.

"Big Paula"

(Laughter) Paula: This summer, all five of my granddaughters came to my house at the foot of the Rocky Mountains.

I swam in the cool waters of the river, the river that runs through our little town.

One day, one of Jonathan's daughters asked, "Big Paula, can I ride your tube?"

I said, 'Well, you should wait until your father comes.

I think it's your father's decision,' he said.

And she said, "But big Paula daddy would say the exact same thing.

She looks just like Paula."

(Laughter) And I thought, "Oh, you look just like me." We're both determined to take the narrow path, heading straight for the light through the long, dark darkness.

Jonathan: Have you noticed that a stable child, a child who knows love, can dance?

They wave their hands and kick their feet to the music that only they can hear.

It's safe, clean, and really loved children's music.

The day my children met the big Paula, she took them to the donut shop, and I watched them walk down the street, and they took their father's arm and danced.

my father's arms were swinging

As usual, I bought a little too much -- (Laughter) -- she took a bite of the donut, jumped twice, and spun around.

it was perfect

This narrow road is a series of burdens and challenges.

It's just that I'm convinced that I can move on to salvation.

I looked at my father, and I saw my daughters dancing and eating donuts, and I said to no one, and I said, "This is...

It's God's view of my father."

my father was literally reborn

And by choosing the narrow path to salvation, I was reborn with her.

thank you

(Applause)

How will you remember us in 200 years?

Every year in my small town of Princeton, New Jersey, we celebrate one of the most important events in Princeton history -- the Battle of Princeton.

George Washington won the first battle -- a turning point in the Revolutionary War.

In a battle that happened 225 years ago

A disaster for Princeton

The town burned down because it was the middle of winter and it was a very harsh winter.

About 25 percent of Princeton's citizens died of hunger and cold that winter, but no one remembers.

I remember winning big, beating the British, we won, and a nation was born.

The pain of childbirth is quickly forgotten, and only the newborn is remembered.

I know it hurts

now we have a similar experience

I'd like to talk a little bit about the future of biotechnology.

(Laughter) I think we should emulate the methods that made the electronics industry so successful. It was the toys that made the computer a global success. As soon as computers became toys and children could go home and play with them, the electronics industry began to grow.

So many -- (Laughter) (Applause) There are so many people around the world who are doing life sciences in a wide variety of fields. Dog breeders, pigeon breeders, orchid breeders, rose breeders, they're all doing their own life sciences, and they're passionate about creating beautiful creatures, plants, animals, pets.

should be able to blow away quite a bit of objection

As this technology becomes more widespread, there will be biotech do-it-yourself kits to try and make your own dog or cat.

(Laughter) (Applause) You buy the software and you design it yourself. Without saying the rest -- I think you can imagine that it's happening, and we need to take these steps before biotechnology becomes ubiquitous, used as part of a treatment, or familiarized and widely accepted.

Let's move on to the next topic

On a very different topic, I'd like to tell you about astronomy, something I know very well.

I'm interested in searching for life in space.

I've found a new way to do this, and I'll talk about it for ten minutes, as time permits.

Here's an important fact: much of the land within our reach -- we're not talking about the stars in the night sky. We're talking about the solar system. We're talking about the land that's within spaceship reach and telescopic distance from Earth. Most of the land in space is very cold and far from the Sun.

If you look at the solar system as we know it now, there are planets near the sun that we live on.

In addition, there are quite a few asteroids between Earth's orbit and Jupiter's orbit.

Asteroids are also huge amounts of land in space, but they're not that big, and they're not likely to be very habitable, because they're mostly rocks and metals, especially rocky.

Also, it's not only cold, but it's also dry.

I don't expect much from asteroids

But if you look a little further out, there are some interesting places: Jupiter's moons, Saturn's moons.

Of particular interest is Europa -- one of Jupiter's moons, because it's covered in such smooth ice that it appears to float on the ocean.

Europa is believed to have deep oceans

That's why it's such an interesting place to explore.

The ocean is probably the place with the highest probability of life originating. It's the same as on Earth.

But it's hard to do. Unfortunately, the ice is too thick.

We don't know how thick it is, but it's probably many kilometers deep, so it's very expensive and extremely difficult to get a submarine or anything else under the ice to explore it.

No technology like this yet

Plans come up, but execution is difficult

If you go a little further, farther than the orbit of Neptune, far from the Sun, you'll find the true land.

It's home to millions, billions, or even trillions of objects -- the Kuiper Belt, or the Oort Cloud -- a cloud of tiny objects that you see as comets as they move toward the Sun.

If life is going to be able to settle there, then the essential ingredients are there -- the chemical conditions, the sunlight -- everything is there.

So what I'm proposing is that we should be looking for life there instead of Mars, which is, of course, a very promising and interesting place.

We can explore the outer edge of the solar system cheaply and easily.

I'll tell you a little bit about it

If life arose on Europa -- it's been in the ocean for billions of years

It's entirely possible that life could escape the ocean and come to the surface, just like it did on Earth.

After living and evolving in the ocean for two billion years -- when they finally came out on land, they were, of course, much more free-spirited than before, and evolved into a greater variety of creatures than would have been possible in the ocean.

Evolution from underwater to land is not easy, but it has been achieved

If there's life in Europa's oceans, it could be on the surface.

The surface is a vacuum, so there is no air.

It's a cold world outside, but it can come out

It grows through cracks in the ice and grows further on the surface -- think plants like seaweed.

What does it take to grow on the surface?

The first thing you need is a thick skin to prevent water from escaping through the surface.

I need skin like a reptile

But more importantly, we have to collect sunlight.

The sunlight that shines on Jupiter and its moons is 25 times weaker than the light that shines on Earth, because Jupiter -- five times farther from the Sun than Earth.

There must be organisms on Europa's surface that have lenses and mirrors that collect sunlight, and that's what I call sunflowers, and that's what keeps them warm on the surface.

Otherwise, minus 150 degrees would not be suitable for the development of life, or at least not for life as we know it.

But if tiny lenses or mirrors that collect sunlight grow like leaves, we can live warmly on the surface.

We can enjoy the benefits of the sun, our roots can reach the ocean, and life can flourish.

Let's explore, of course, it's unlikely that there is life on Europa's surface --

It's unlikely that the creatures I just mentioned exist, but my philosophy is to look for the discoverable, not the sure.

It's often happened in the long history of astronomy, radio astronomy being the best example.

When radio astronomy began, Jansky at Bell Labs detected radio waves coming from the sky.

Ordinary astronomers ridiculed this report by saying,

"We can detect radio waves coming from the sun. Realistically, the only object in the universe that is close enough and bright enough to be detected is the sun. Simple math shows that even the radio waves from the sun are very weak. Other bodies are millions of times farther away than the sun, so it's impossible to detect.

Therefore, there is no point in investigating

That set back the progress of radio astronomy by about 20 years.

There's nothing to look for

But when someone actually looked into it -- about 20 years later -- radio astronomy kicked off in earnest, because the universe is full of these incredible things -- radio waves, which radiate much more intensely than the sun does.

I think the same thing can be said about the life in the colder planets that I talked about earlier. I wonder if there's actually a lot of this kind of life in the universe, and it's just that we haven't found it because we didn't try to find it.

Finally, I will tell you how to discover

There is a technique called pit ramping

That's what I heard from my son George, he's here too.

It's an expression used in Canada.

When I'm hunting animals at night, I take my mining lamp with me, and this is the pit lamp.

If you put this lamp on your forehead, you can see the light reflected by the animal's eyes, and if you go outside in the middle of the night and turn on your flashlight, the animal will be illuminated.

You can see the animal's eyes glowing red, and it's a flashlight reflection.

That's how unsportsmanlike people shoot animals and take them home.

It's illegal in Canada, but it's legal in New Zealand, because that's how farmers in New Zealand get rid of rabbits, because rabbits get in the way of sheep in New Zealand.

Farmers would go out in the middle of the night in their heavily armed jeeps, turn on their headlights, and shoot anything that didn't look like a sheep.

(Laughter) I've suggested that we should take a similar approach to searching for life in space.

These organisms that live on cold surfaces -- whether they're on Europa, or on more distant bodies, or on any celestial body that can live on cold surfaces -- they need reflectors.

It must be equipped with lenses and mirrors that collect sunlight to keep it warm.

When you shine sunlight on these creatures, they reflect light in the same way that animal eyes do.

Creatures emerge brightly in a cold environment

The further away you are from the sun, the stronger the reflection, so if you use this method, the farther you go, the easier it is to find life, because the light reflectors have to be stronger, so the reflected light looks better in the dark.

The farther away from the sun, the more intense the reflected light, which means --

You can see these creatures from Earth using an astronomical telescope.

why not? it's just that nobody thought of it

But I'd like to take this opportunity to invite you to take a look. You probably won't find anything.

But it's an opportunity, because if we find life, it will fundamentally change the way we think about life.

Because if there's life on a distant object, that means it's much more likely to live on that object than on a planet.

It's very difficult to move from planet to planet

It's extremely difficult to do that now, and it's hard for life on a planet to leave.

Especially if you're breathing, it's hard to get from planet A to planet B, because there's no air between the planets.

But if you live in a vacuum to begin with -- you happen to live on the surface of, say, an object in the Kuiper Belt, or Pluto, or some of the smaller planets around Pluto, and you get knocked off the surface in an impact, it doesn't change much.

You can stay in the sun while riding on a piece of ice, and you can live while traveling from planet to planet.

And when it encounters another body, it can live there and reproduce. This is how life spreads from one body to another. So if there is life in the Kuiper belt, it's likely to be widespread. And then -- the competition between organisms will increase, and Darwinian evolution will occur, and organisms that can migrate from one body to another without collisions -- will have a huge advantage, and it will also be an advantage in spreading long vegetation like seagrass.

Such plants are called sunflowers.

Because I think it looks like a sunflower

It must always face the sun, and the gravitational pull of such a body is so weak that it should be able to spread out all over the universe.

This plant collects sunlight over a large area.

it's easy to discover

I hope that within the next 10 years we'll be able to find something like this, and that, of course, will change the way we think about extraterrestrial life.

Even if you can't find it, you can make it

(Laughter) There are such wonderful opportunities opening up.

As our understanding of genetic engineering grows, one option is to use home-made genetic engineering kits (Laughter) to design organisms that can live on cold moons like Europa, and then populate Europa with these organisms.

this looks funny

(Laughter) But in the long run, doing so will also allow us to colonize space.

Ultimately, not only will human settlements spread out into space, but life will move out of Earth and into the kingdom of life. And by kingdom, of course, I mean space.

In the long term, if we don't have life, we'll make it ourselves.

Make the universe richer and more beautiful than it is now.

The future we welcome is a grand and wonderful world.

thank you

(applause)

Together with my colleagues Art Aron and Lucy Brown, I tested 37 people who were in love with an MRI scanner.

17 people are in love, 15 people have just been dumped, and we're just starting our third experiment, but we're also studying people who are still in love after 10 to 25 years of marriage.

I'm going to talk about that research today.

There is a temple in the Guatemalan jungle Tikal

Built by the great Sun King, a magnificent national city, the greatest civilization in North and South America, the Mayan King.

The name of the king is Khasau Chan Kawir

180 cm or taller

He lived into his 80s - was buried in this ruins in 720 AD.

According to Mayan inscriptions, the king fell in love with his wife and built her a temple facing his temple.

The king fell in love with his wife and built her temple in front of his temple.

Every year on the vernal and autumn equinoxes, when the sun rises on the side of the king's temple, his shadow gently caresses his wife's temple.

When the sun sets on the wife's temple side, the wife's shadow gently caresses the king's temple.

Even now, 1,300 years later, the two are still hugging and kissing over the stone monument.

all over the world people fall in love

Sing to love, dance to love, write love poems and stories

Talk about myths and legends of love Fall in love with love Live for love

kill people and choose death

Walt Whitman Quote: "I'd bet everything for you"

Anthropologists confirm love in 170 countries

It exists without exception in any society.

But love isn't always happy

In a study, a college student asked a lot of questions about love, and two that stood out to me were, "Have you ever been dumped by someone you love?"

Another one is "Have you ever dumped someone who loves you?"

Nearly 95% of men and women answered yes to both

In other words, love is almost never fruitful...

Before we talk about the brain, let me read a little bit about the most powerful love poem on the planet.

There are many good poems, but I don't think there's a better one than the Kwakiutl Indians of Southern Alaska.

1896 I told the evangelist

Read for the first time in public

"Pain of love like fire

The flame of love turns into pain and runs through my body

My love for you breaks my heart, my love for you burns me

i remember your words

I think of your love Your love breaks my heart

where are you taking my love

More pain, I heard you're leaving

Leave me alone and you'll lose your senses with grief

don't forget my words

goodbye darling goodbye

Emily Dickinson Quote: “If you go through a breakup, you know hell.”

How many people have suffered during the evolution of mankind?

How many people on this planet are dancing with joy right now?

Love is one of the most powerful senses

So a few years ago, I started researching the brain and the madness of love.

Happy love studies have been published Happy love studies have been published So I won't go into details.

In a region called the ventral tegmental area near the base of the brain, the A10 cell group

We found that they were becoming more active, the cells that make dopamine, the excitatory substance your body makes, which releases dopamine into your brain.

The ventral tegmental area is part of the brain's reward system.

much deeper in the realm of cognitive thought processing

lower than the area that processes emotions

It's a part of the reptilian brain that's associated with desire, motivation, concentration, and craving.

The same areas are activated when you get high on cocaine.

Love beats a cocaine high because the ecstasy is temporary with cocaine

Love is obsession and it controls people

I can't help but lose myself and think of others

someone is sitting in my head

In the 8th century, a Japanese poet said, "My love and life must die."

love is madness

Being shaken makes attachment worse

Currently, I'm working with neuroscientist Lucy Brown to study the test results of recently dumped people.

It was hard to get these people scanned.

anyway in 3 areas of the brain

We saw activity in areas of the brain associated with intense romantic relationships.

It's a bad deal

When you're heartbroken, you want to forget about the other person and live on, but you end up loving them even more.

The Roman poet Terrence said, "The lower the hope, the more the fire." Now we know why.

Two thousand years later, I can explain

The brain's reward systems, such as desire, motivation, craving, and focus, become more active when they're not available.

In this case, the biggest prize of your life is the perfect mating partner.

We found activity in other regions, brain regions associated with profit and loss calculations.

As I look at the pictures in my brain scanner, I wonder what went wrong and what I lost.

do some calculation

I have a funny story with Lucy

In David Mamet's play there are two fake artists, a woman cheats on one, and the man says to the woman, "You're a bad pony, I won't bet on you."

When you're counting your profits and losses, a part of your brain called the nucleus accumbens kicks in.

The same brain regions are active when you risk big money and risk.

We also found activity in a region of the brain associated with deep attachment to others.

No wonder people suffer all over the world, and so many crimes are motivated by passion.

When you're heartbroken, you don't just get tormented by romantic feelings, you feel a deep sense of attachment.

Brain circuits work for rewards, giving you a surge of energy, focus, motivation, even a willingness to take risks, to win the biggest prize of your life.

What did you learn from this experiment? What do you want to tell the world?

At first, I thought that love is an instinct and a desire for mating.

It's not sexual desire.

In love, the target is one person at a time, and instead of wasting your mating energy on others, you initiate the act of mating with one partner.

I think the best summation of all the love poems I've ever read comes from Plato 2,000 years ago.

“The god of love exists because of necessity.

A demand, an instinct, a permanent imbalance

Like hunger and thirst, eradication is nearly impossible.”

I also think that love can be addictive. When it's good, it's a lovely addiction. When it's bad, it's a nightmare.

In fact, you can see all the symptoms of poisoning.

Focusing on one person, thinking obsessively about that person, coveting, distorting reality, and taking risks to obtain.

There are 3 cardinal symptoms of addiction: Perseverance - I miss you more I can't help but withdraw and relapse I have a girlfriend who is recovering from a broken heart.

She's been driving for eight months the other day.

I heard a song on the radio and suddenly I thought of him.

Not only did my yearning for him return, but I pulled over and couldn't help but break down in tears.

So I want the medical community, the legal community, the academic community to understand that love is an extremely addictive substance.

And even animals have love

No animal on earth mates indiscriminately.

If you don't find the other person attractive, you won't mate.

Unless you're isolated in a laboratory. If you spent your whole life in a cramped cage, you wouldn't be so picky about who you mate with.

Ethologists know

There are eight or more preferences in "animal preference": courtship preference, mating partner selection, female selection and sexual selection.

In fact, there are three academic theories that have focused on this attraction. The attraction disappears after a few seconds, but it's definitely the attraction of love. Perhaps it has something to do with reward-related brain regions, or reward-related substances.

I think the gravitational attraction of animals is instantaneous, and there are instances of an elephant courting another elephant in an instant.

I think this is exactly the prototype of "love at first sight."

I am often asked if there have been any downsides in my personal life.

answer no

I know all the ingredients for a chocolate cake, but when I sit down to eat it, the cake is still delicious.

And I make mistakes just like everyone else, but I've grown more understanding and more compassionate towards people.

Given the struggles of the brain system, the sight of an infant in a stroller

Sometimes I feel pity, sometimes I feel sorry for the chicken for dinner, sometimes I feel sorry for the chicken for dinner.

There's also a new experiment underway, started with the idea of ​​my colleague Art Aaron, to use MRI scanners to examine long-term people who say they're still in love.

I've already tested five people, and the results are the same, and their love isn't fake.

Twenty-five years later, there was still activity in the area of ​​the brain associated with intense love.

There are still unanswered questions and answers about love.

An ongoing study, to put it simply, is why you fall in love with "that person" out of the crowd.

I never thought about it, but three years ago, a dating site asked me this question.

I answered that I don't know

I know what your brain does when you fall in love, but you don't know why it's "that person."

I've been researching it for the last three years

There are countless reasons to fall in love with one person, and psychologists tend to agree.

Same socioeconomic background, same level of intelligence, same level of physical appearance, religious values, etc.

Childhood also plays a role

But that's all I know

We haven't reached a definitive conclusion, such as a compatible personality pattern.

And that's where I started to think, maybe I'm biologically attracted to certain types of people.

So we created a questionnaire and looked at the production of substances like dopamine, serotonin, estrogen, and testosterone.

We devised four broad personality traits associated with the ratios of the four substances in the brain.

At Chemistry.com, a dating site that I created, I started by taking surveys to see how much of these four substances were produced and how they chose their romantic partners.

3.7 million survey respondents in the US

600,000 people responded in 33 countries

We're gathering data now. There will always be magic in love, but we're getting closer to certainty. You walk into a venue, and everyone has the same social background, the same level of intelligence, and the same level of appearance, but not everyone is attracted to you.

there will be a biological

I think in a few years we'll understand how all brains work, why we're attracted to certain people.

It's time to wrap up. This picture is an older colleague.

Faulkner Quote: "The past is not dead, not even the past"

The fact is, humans live with years of baggage in their brains.

This picture shows what drives me to understand human nature.

two women

Female intimacy differs from male

face-to-face conversation

Face-to-face, I feel a sense of intimacy.

intimacy for women

I think it's because for millions of years we've been soothing, soothing, scolding, and educating infants by our faces.

(Laughter) One looks in that direction, the other looks in the other direction.

(Laughter) Because for millions of years, we've been standing and sitting in thickets, looking straight ahead and chasing buffaloes with stones in our hands.

(Laughter) Since ancient times, men have faced enemies and sat side by side with friends.

Finally love lives in people

deeply embedded in the brain

Our challenge is to understand each other. Thank you.

(applause)

Can you see how out of place this is for me as a clergyman?

I feel like a fish out of water or an owl down from the sky

(Laughter) When I was preaching in San Jose, through my friend Mark Kwame, who introduced me to this conference, I had the opportunity to have breakfast meetings with CEOs and leaders of Silicon Valley companies.

I was very inspired at that time.

It was very, very, very eye-opening to hear them talk about the future of the world, which would be made possible by technology and science.

Some of you may be wondering why this conference, which is about to close, will have speakers who represent the realm of religion.

I'd rather leave the answer to Richard, who made that decision.

A few years ago, I was on an elevator going down in Philadelphia.

I was going to speak at a conference at a hotel.

A man riding with me said, "I heard that Billy Graham is staying at this hotel."

Another man looked at me and said, "Yes, you are in this elevator."

And the first man stared at me for about 10 seconds, and then said, "No, this is so disappointing!"

(Laughter) My hope is that this moment will not be a disappointment for all of you.

A few years ago, I was on a plane in the eastern United States, and on the other side of the aisle was Charlotte, North Carolina.

Mayor John Berg was on board, as you may know.

There was a drunk man on the same flight who would get up from his seat two or three times and do something that would offend the other passengers.

He touched and pinched the stewardess who was passing by, causing trouble for other passengers.

John Berg saw this and said, "Do you know who is sitting over there?"

"No, who are you?"

"It's Billy Graham, the missionary."

The drunk answers "Is that true!"

He said to me, "Shake my hand!"

"Your preaching made me a better person," he said.

(Laughter) Maybe it's the same for thousands of other people.

(Laughter) Now, I'm here to give you a glimpse of what you think the future might look like, and I'd love to see what that future looks like.

But I can't do that, and I'm 80 this year, so I know I don't have much time left.

Now, I have phlebitis in both legs, and they helped me a little bit to get up to the table. On top of that, I have Parkinson's disease, and I have other disabilities that I won't talk about.

(Laughter) But this isn't the first technological revolution for humanity.

there was more

I would like to mention one

In just one generation, the nation-state of Israel has undergone dramatic, leaps and bounds, becoming a great power in the Near East.

A man named David took the throne, and King David became one of the greatest leaders of his generation.

he was a man of great leadership

he was blessed by god

He was a gifted poet, philosopher, writer and soldier whose strategies in warfare and conflict are still being studied today.

But the Hittites, who lived about two centuries before David, invented the art of iron smelting and processing, and the art gradually spread.

But the Israelis weren't allowed to look at the technology or get their hands on it.

But David changed all that and brought Israel into the Iron Age.

The Bible tells us that David stored up a large amount of iron, which archaeologists have found in what is now Palestine and which is evidence of that generation.

Thus, instead of crude sticks and pebbles, Israel had iron plows, sickles, hoes, and weapons.

And in just one generation, Israel was transformed.

In some ways, the introduction of iron has had an impact similar to what microchips have had on our generation.

And David realized that there were many problems that technology could not solve.

many problems still remain

Those issues remain unresolved even now, and even at this conference, no speeches were heard addressing these issues.

Now, how should we solve the next three problems that I want to address?

The first problem that David raises is the evil of man.

Where does it come from?

How can we solve this?

In the Psalms of the Bible, which British politician Gladstone calls the greatest book in the world, David speaks again and again about human evil.

On the other hand, he says, "The Lord will bring my soul back to life."

What a contradiction human beings are!

We're exploring the deepest secrets of the universe and dramatically pushing the technological frontiers, and this conference is proof of that.

We can explore three miles under the sea and observe galaxies trillions of years away.

But there's something crazy about it

Our battleships, our soldiers are now on the front lines, preparing for war with Iraq.

What is it caused by?

Why wars occur in every generation and in every part of the world

Will there be a revolution?

We can't keep friends

We are paralyzed by this self-defeating habit.

Racism, injustice and violence run rampant in this world, with tragic consequences of heartache and death.

Even the most sophisticated people find themselves helpless in the face of this vicious cycle.

If Oracle tackled this problem, would it solve the problem, or what if some other technical genius?

How can we change people so that they don't lie, they don't cheat, and the stories that flood the newspapers don't turn into the kind of misconduct in business, labor, and sports?

The Bible says the problem is within us, in our hearts and souls.

Our problem is that we are so far removed from what we call our Creator, God, and we need to restore our souls, and only God can do that.

Jesus said, "Evil thoughts come out of the heart: murder, adultery, fornication, theft, perjury, and blasphemy."

English philosopher Bertrand Russell, who wasn't religious, said, "Evil is in our hearts, and we must pluck it out of our hearts."

Albert Einstein... I met Einstein when he gave a talk at Princeton University.

He explained that he didn't have a PhD, and that's because no one was qualified to award him one.

(Laughter) But he suggested,

"It's easier to change the nature of plutonium than to change the evil hearts of humans."

Of course, I'm sure many of you have been thinking about these things and worrying about them.

There are some human beings who distort and exploit useful technological developments, like the Internet you heard about tonight.

Talented people can create computer viruses that can take down entire systems.

The Oklahoma City Federal Building Bombing is a terrifying application of a simple technique.

the problem is not the technology

The problem is the people and people using the technology.

King David says he knows the depths of his soul

So I couldn't escape from personal problems and personal evils like murder and adultery.

Yet King David pleads with God for forgiveness, saying, "You will restore my soul."

So the Bible teaches that we are more than just bodies and brains.

we are the soul

And there is something within us that is beyond our comprehension.

That's the part that craves God or wants more than technology.

Your soul is that part of you that craves for the meaning of life, that part of you that seeks something beyond this life.

It's the very God-hungry part of you.

I see young people all over the world wanting something.

They don't know what that is.

I'm going to give a talk at Harvard again in three or four months... no, two months.

You'll probably get the same questions as last time.

And it will be something like, Where did I come from? why are you here where are you going?

What is life? why are you here

Even people who have no religious beliefs sometimes wonder if there is something else.

Thomas Edison said, "For everything that happens in science and how the universe works, you can't deny that there is a captain on the bridge."

One time, I sat next to Mrs. Gorbachev at a White House dinner.

I know the Russian Ambassador to the United States, Dobrynin.

When I visited Russia when the Communist Party was in power, he gave me a degree of freedom that I never expected.

I was on good terms with Ambassador Dobrynin, so I asked him, "Tonight, I'm going to sit next to Mrs. Gorbachev.

What topic would you like to discuss?"

Then came the surprising answer

"It would be good to talk about religion and philosophy

He's very interested."

I was a little surprised, but that evening we had a very stimulating conversation about religion and philosophy.

Then she said, "I'm an atheist, but I believe there is something higher than us."

The second problem that King David realized was that the problem of human suffering is irresolvable.

In the Book of Job, the oldest book in the world, it is written, "When a person is born and suffers troubles, it is like sparks flying upwards."

Indeed, science has been very helpful in helping humans resist some forms of suffering.

But I... in a few months I'll be 80.

I'm grateful to advances in medicine that have allowed me to live a relatively healthy life for many years.

My doctor at the Mayo Clinic has told me not to travel to this conference.

In fact, I haven't given any talks in the last four months.

If you're used to giving talks three or four times a day like I am, it's kind of dull.

So this time, I'm using this lectern, and I've got my notes.

You may have heard me speak on television or elsewhere, and it was always ad-lib.

I never read the text I never read the speech

I've never read a speech, a lecture, a lecture, etc.

I'm always improvising

But I have a note tonight, just in case I forget, because sometimes I forget, so that I can refer to it.

And to get back to you, poverty exists among us, even in the most advanced societies in the world.

We have families that destroy themselves, we have friends that betray us.

The unbearable psychological pressure weighs heavily on me

I have never met a person in this world who had no troubles or worries.

why do we suffer? This is an old unanswered proposition.

But how many times did David turn to God?

Says "The Lord is my shepherd"

The final problem David admits he can't solve is that of death.

Many commentators say death is a forbidden subject for our generation.

Most people live as if they'll never die

Technology gives us the illusion that we can control human mortality.

For example, people in movies

Marilyn Monroe, for example, appears on screen as she once was, and some young people mistakenly think she's still alive.

they don't know she's dead

Actors such as Clark Gable

The stars of the old days come to life on screen

And they're still great on screen at the time.

but death cannot be avoided

Not long ago, last year, I had the opportunity to speak at a joint session of the United States Congress.

The meeting was held in that room with the sculpture.

About 300 parliamentarians gathered

And I said, "Everybody in this room has one thing in common: Republicans, Democrats, all parties."

"We all die"

"And that's what we have in common with the great figures of the past who are looking down on us now," he continued.

It's very difficult for young people to understand this.

It is difficult for them to understand death

The ancient author Koheleth wrote, "There is an appointed time for every event under heaven.

When you are born When you die

I have been present at the deathbeds of several prominent figures.

talk to them

I've seen them threatened with death.

But had the idea of ​​death crossed their minds a few years earlier?

Last week, I had the opportunity to speak with a woman whose father was a famous doctor.

Her father was an atheist who never thought about God, never talked about God, never believed in God.

But, she said, when faced with death, the doctor got up in bed one day and asked the nurse to call the pastor.

And for the first time in his life, he thought about inevitability and God.

Does God Exist?

A few years ago, a college student asked me, "What has surprised you most about your life?"

My answer is that the thing that surprised me the most in life is how short life is.

life goes by fast

But it doesn't have to be

Werner von Braun concluded after the Second World War, "Science and religion are not antagonists.

Rather, you could say that they are sisters."

it was a familiar problem for him

I was on good terms with Dr. von Braun.

“Individually, in the face of a vast, boundless and mysterious universe, we only strengthen our faith in the Creator.”

He also said, "Through our efforts to know God, we have come to believe that the life of Jesus Christ should be the focus of our efforts and inspiration.

The reality of Christ's life and resurrection is the hope of mankind."

I have had the opportunity to speak in many countries, including Germany and France, a total of 105 countries.

And then one day, I received an invitation from Chancellor Adenauer, who is considered the founder of modern post-war Germany.

He asked me, "Young man, do you believe in the resurrection of Jesus Christ?"

I said yes I believe

The Prime Minister said, "I also believe."

And he said, "After my term is over, I want to write about why Jesus Christ was resurrected and how important it is to believe in it."

In one of Alexander Solzhenitsyn's plays, there is a man on the brink of death who tells the crowd at his death bed, "The worst time to feel regret is when you're dying."

How should I live so that I don't feel regret when I die?

Blaise Pascal, who lived in 17th-century France, pursued exactly that question.

Pascal was called the founder of modern civilization.

As a teenager, he was known as a brilliant scientist at the forefront of mathematics.

Many consider him the founder of probability theory and the creator of the first models of computers.

Of course, I'm sure you're familiar with the computer language named after him.

Pascal explored the human dilemmas of evil, suffering, and death.

What stunned him was the phenomenon we're considering here today: that while humans can reach extraordinary heights in science and art, they're also angry, hypocritical, self-loathing creatures.

Pascal's vision of man was a mixture of astonishing genius and self-deception.

On November 23, 1654, Pascal had a powerful religious experience.

His memorandum read: "Jesus Christ I submit completely to my Savior."

Two centuries later, a French historian said, "It is rare that such a giant of intelligence has so humbly submitted to the authority of Jesus Christ."

Pascal believed that by the love and protection of God, not only could a person be brought back into harmony with God, but he would be forgiven of his sins and mistakes, and after death go to a place called Heaven.

The experience was beyond scientific observation and reason.

As he wrote, "The heart has its own reasons that reason does not know."

Also known as Pascal's wager

It's like this: "If you bet that God is real and you accept His love, you have nothing to lose if you're wrong.

But if you bet that God doesn't exist, you could lose everything in this life and the life to come."

For Pascal, scientific knowledge was no match for knowing God.

Knowing God was beyond all the thoughts that came to my mind.

When Pascal died at the age of 39, he was ready to face God.

King David lived to be 70 years old, quite a long life back then.

But he still had to face death, and he wrote, "Though I walk through the valley of the shadow of death, I fear no evil, for you are with me."

This is David's answer to the triple dilemma of evil, suffering and death.

This can be your answer too, if you seek the living God and allow Him to fill your life and give you hope for the future.

I was born and raised on a farm in North Carolina, and when I was 17, I milked cows every morning.

Every night after I got home from school, I would milk the same cow.

It was my responsibility to take care of 20 cows, and I had to study while working on the farm.

I never got good grades in high school.

I didn't do very well in college, until I suddenly had a change in my heart.

One day, I came face to face with Christ.

Christ said, "I am the way, the truth, and the life."

Imagine "I am the truth

I am the embodiment of all truth

I can't help but think you're a liar

or you're insane

Maybe he's right

Which one is correct?

I had to make a decision

couldn't prove it

You can't bring it into the lab and experiment with it.

But by faith I answered, "I believe in the Lord" He entered my heart and changed my life

And now I'm ready to be called before God

Thank you God bless you all

(Applause) Thank you for this opportunity. It was great.

Richard Wurman: You did it.

thank you

(applause)

At dawn in a mobile city of 10,000 tents, Empress Boraktin was suddenly awakened.

A stray sheep slipped past his servants and guards, ran into her tent, jumped onto her bed, and meowed in her ear.

Despite being the extraordinary Hatun (Empress) of a vast kingdom within the Mongol Empire called the Jochi Urs, Borakchin is a field-oriented ruler.

Borakchin married Genghis Khan's formidable grandson, Batu Khan, when she was 15. While her husband was away on a raid, she remained at home to manage herds, family, and empire.

So she's the caretaker and mover of a city of thousands of people.

Twice a year, under Borakchin's command, the city moves between two encampments each season.

That way, you'll always have water and green grass in the summer, and you'll be protected from the harsh winds in the winter.

The move will require weeks of meticulous planning, communication with other factions on her estate, strategic assignment of duties, and the patience to move at the speed of a sluggish livestock.

Today is moving day, and she must lead her horde of maids, leaders, slaves and livestock to the upper reaches of the Volga, where she spends the summer.

When Boraktin came out, there was a commotion, and the uninvited guest was now running around his servants.

The servant is trying to keep her belongings neatly packed in the carriage.

Boraktin orders the chaos settled, but in the end it is she who is quick to catch the stray sheep.

He then supervises the handmaidens, who dismantle her tent and place it on a custom-made carrier.

It takes 20 bulls to pull this carriage, and Boractin won't let anyone else take the reins.

Then Borakchin followed the sheep and met the guards.

I command you to keep an eye on my husband's special reception tent and portable throne as he moves.

They also act as heralds, and Borakutin orders them to secure the route, surround her and guard her, and keep an eye on her livestock to keep her from escaping.

But when the sheep manages to escape and runs to the pasture, the guards can't catch up, it slips through the tent clearers and escapes.

Frustrated, Borakutin drives himself to the pasture.

When I got to the pasture, I could see the fragile sheep trying to blend in with the flock.

I followed the sheep and found it lying beside its mother ewe.

The ewe is pregnant and seems to be in pain.

Boraktin suddenly realized that this ewe's impending birth had been lost in the chaos of moving day and forgotten.