You know Siri, right?

Siri understands your intentions and acts on your behalf to help you get things done.

But what many may not know is that we designed Siri as a humanistic AI, designed to give people a conversational interface that enables them to use mobile computing, regardless of their personality or abilities.

Well, for most of us, the impact of this technology is to make things a little easier to use.

But for my friend Daniel, the impact of AI on these systems is life-changing.

As you know, Daniel is a very gregarious guy whose visual impairment and quadriplegia make it difficult for him to use the devices we all take for granted.

The last time I went to his house, his brother said, "Wait a minute, Daniel isn't ready yet.

He is on the phone with a woman he met online. ”

It's like, "That's cool, how did he do that?"

Daniel uses Siri to manage his social life, including emails, text messages, and phone calls, without relying on his caregiver.

This is kind of interesting.

The irony here is great.

A man whose relationship with AI has helped him develop a relationship with a real human being.

And this is humanistic AI.

Another example with life-changing results is a cancer diagnosis.

If doctors suspect cancer, they will take a sample and send it to a pathologist, who will examine it under a microscope.

Today, pathologists examine hundreds of slides and millions of cells every day.

So, to support this task, some researchers have created AI classifiers.

Now the classifier decides, "Is this cancer or is it not cancer?"

The classifier was pretty good, but not as good as the people who got it right most of the time.

However, combining machine and human capabilities yielded an accuracy of 99.5 percent.

Adding that AI to the partnership has eliminated 85 percent of the errors that a human pathologist would have made if working alone.

This is a large amount of cancer that would otherwise have been left untreated.

Now, for the curious, it turns out that humans were good at rejecting false positives and machines were good at recognizing those hard-to-find cases.

However, the lesson here is not which agent is better at this image classification task.

Those things change every day.

The lesson here is that combining human and machine capabilities has created a partnership that delivers superhuman performance.

That is humanistic AI.

Now let's look at another example of turbocharging performance.

This is the design.

Well, let's say you're an engineer.

I want to design a new frame for my drone.

Grab your favorite software tool, your CAD tool, enter your forms and materials, and analyze your performance.

You now have one design.

Give AI the same tools and it can generate thousands of designs.

This video by Autodesk is great.

This is real.

This will change the way you design.

When a human engineer says what the design should achieve, the machine says, "This is a possibility."

Today, the engineer's job is to use his human judgment and expertise to select the design goals that he knows best as a human being.

In this case, the winning form resembles what nature designed, minus millions of years of evolution and unnecessary fur.

So let's see where this humanistic idea of ​​AI leads us if we take it beyond speculation.

What extensions do we all want?

But what about improving cognitive function?

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

Ask, "How smart will our machines make us?"

For example, consider memory.

Memory is the basis of human intelligence.

However, human memory is notoriously flawed.

We are good at telling stories, but we can't accurately convey details.

And our memory decays over time.

So where did the 60's go? can i go there too?

(Laughter) But what if you had a memory of your life that was as good as the memory of your computer?

What if you could remember everyone you've ever met, how their names were pronounced, family details, your favorite sport, or the last conversation you had?

If you had this memory for a lifetime, you could ask the AI ​​to take a long-term view of all your interactions with people and help you look back on your long relationship trajectory.

What if you could have an AI read every song you've ever read and listen to every song you've ever heard?

It can help you search everything you've ever seen or heard, starting with the tiniest clues.

Imagine how that would affect your ability to make new connections and form new ideas.

And what about our bodies?

What if we could remember all the food we eat, the pills we take, the results of all the late nights?

We could do our own science based on our own data about what makes us feel good and stay healthy.

And imagine how this could revolutionize the way allergies and chronic diseases are managed.

I believe that AI will improve personal memory.

I can't say when and what form factors will be involved, but I think it's inevitable. Because what makes AI successful today — comprehensive data availability and the ability for machines to understand that data — can be applied to the data in our lives.

And those data are here today, available to everyone because we live our digital lives on mobile and online.

In my opinion, personal memories are personal memories.

We can choose what is remembered and retained and what is not remembered.

It is absolutely necessary to keep this very secure.

Now, for most of us, the impact of personal memory enhancement will be improved psychic benefits and perhaps, hopefully, a little more social grace.

But for millions of people suffering from Alzheimer's disease and dementia, the difference that enhanced memory can make is the difference between a life of solitude and a life of dignity and connection.

We are in the midst of an artificial intelligence renaissance right now.

So, in the last few years, we've begun to see solutions to AI problems we've been wrestling with for literally decades, such as understanding speech, understanding text, and understanding images.

We have a choice in how we use this powerful technology.

We can choose to use AI to automate and compete with us, or we can choose to use AI to empower us and work with us to overcome our cognitive limitations and help us do better at what we want to do.

And when we discover new ways to give machines intelligence, we will be able to distribute that intelligence to every AI assistant in the world—everyone, regardless of the situation.

That's why every time machines get smarter, we get smarter too.

It's an AI worth spreading.

thank you.

(applause)

Imagine that you and a friend are strolling through an art exhibition and come across an impressive painting.

To you bright red seems like a symbol of love, but your friend is sure it's a symbol of war.

And where you can see the stars in the romantic sky, your friends interpret the pollutants that cause global warming.

To settle this dispute, you turn to the Internet. It says the painting is a replica of the artist's first-year art project. Red is her favorite color and the silver dots are fairies.

I now know the exact intention behind the creation of this piece.

Would it be wrong to enjoy it as something the author didn't intend?

Now that you know the truth, do you enjoy it less?

How much does the painter's intentions influence your interpretation of the painting?

This is a question that has been debated by philosophers and art critics for decades, with no consensus.

In the mid-20th century, literary critic W.K. Wimsat and philosopher Monroe Beardsley argued that artistic intent was irrelevant.

They called this an "intentional fallacy." It is a belief that it is wrong to assess the artist's intentions.

Their argument was two-fold. The first is that the artists we study are either no longer alive, have never documented their intentions, or are simply unable to answer questions about their work.

Second, even with the abundance of relevant information, Wimsat and Beardsley believed it distracted us from the nature of the work itself.

They compared art to dessert. When tasting a pudding, the chef's intentions do not affect whether one enjoys its flavor or texture.

All that matters, they say, is that the puddings "work."

Of course, what "works" for one person may "not work" for another.

And since different interpretations appeal to different people, the silver dots in our painting could reasonably be interpreted as fairies, stars, or pollutants.

According to Wimsatt and Beardsley's logic, the artist's interpretation of her own work is but one of many equally acceptable possibilities.

If you find this problematic, you might agree with Steven Knapp and Walter Ben-Michaels, two literary theorists who denied intentional fallacy.

They argued that the artist's intended meaning is not just one possible interpretation, but the only possible interpretation.

For example, if you are walking along the beach and find a series of marks in the sand with a line of poetry spelled out.

Knapp and Michaels believed that the poem would lose all meaning if it turned out that these marks were not the work of man but rather strange coincidences caused by waves.

They believed that it was the intentional author who made poetry an object of understanding.

Other thinkers argue for a middle ground, suggesting that intent is just one piece of a larger puzzle.

Contemporary philosopher Noel Carroll took this position, arguing that the artist's intentions are as relevant to the audience as the speaker's intentions are to the conversation partner.

To understand how intent works in conversation, Carroll said imagine someone holding a cigarette and asking for a match.

You give them a lighter and respond with the understanding that their motive is to light a cigarette.

The words used in a question are important, but the intent behind the question determines your understanding and, ultimately, your response.

So which end of this spectrum do you lean towards?

Do you, like Wimsat and Beardsley, believe that when it comes to art, the evidence should be in the pudding?

Or do you think an artist's plans and motivations for their work influence its meaning?

Artistic interpretation is an intricate web that will probably never give a definitive answer.

Here is an interesting fact.

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

6 to 8 years is longer.

That's a big gap.

In 2015, The Lancet published an article showing that men in wealthy countries are twice as likely to die as women at any age.

But there is one place in the world where men live as long as women.

It's a remote mountainous area, a blue zone where super longevity is common to both men and women.

This is the Blue Zone of Sardinia, an Italian island in the Mediterranean Sea between Corsica and Tunisia. Six times as many people over the age of 100 live here as on mainland Italy less than 320 miles away.

There are ten times as many centenarians in North America.

It is the only place where men can live as long as women.

but why?

My curiosity was piqued.

I decided to study the science and customs of the place, starting with the genetic profile.

I soon discovered that genes account for only 25 percent of a person's lifespan.

The remaining 75 percent is lifestyle.

So what do you need to live to be over 100 years old?

what are they doing right?

What you are looking at is an aerial view of Villa Grande.

I visited to investigate this in a village at the epicenter of the Blue Zone, and as you can see, architectural beauty is not its main beauty, but rather densely packed houses, interwoven alleys and streets.

It means that the villagers' lives are always intertwined.

And as I walked through the village, I felt hundreds of eyes watching me from doorways, behind curtains, behind shutters.

Like other ancient villages, Vilagrande would not have survived without its structures, ramparts, cathedral and village square. Because defense and social cohesion defined its design.

As we transitioned towards the industrial revolution, cities' priorities changed as infectious diseases became a modern risk.

But what about now?

Well, social isolation is a modern public health risk.

Today, a third of the population say they rely on two or fewer people.

But by contrast, now go to Villa Grande to meet the centenarian.

Meet Giuseppe Moulinu. He is 102 years old, a supercentenarian, and has lived in the village of Vilagrande all his life.

He was a sociable person.

He likes to tell stories about how he lived like a bird on what he found on the forest floor during not one but two world wars, and how he and his wife, who also lived to be over 100, raised six children in a small homey kitchen, and I interviewed him there.

Here he is with his sons Angelo and Domenico, who are in their 70s and in the care of their father, who were frankly very suspicious of me and my daughter who accompanied me on this research trip. Because the flip side of social cohesion is the wariness of strangers and outsiders.

But Giuseppe, he had no doubts.

He was a very cheerful, very sociable, positive-minded person.

And then I wondered. So, is it necessary to think positively and live to be over 100 years old?

Not really.

(Laughter) Meet Giovanni Collias. He's 101 years old and the grumpiest person I've ever met.

(Laughter.) And he lied to the idea that to live long you have to be positive.

And there is evidence for this.

When I asked him why he lived so long, he stared at me under his hooded eyelids and grunted, "Nobody needs to know my secrets."

(Laughter.) But despite his sullenness, his niece, who lived with him and looked after him, called him "Il Tesoro," that is, "my treasure."

And she respected and loved him, and when I questioned this apparent loss of freedom, she said:

It is a pleasure to take care of this person.

It's a great privilege for me.

This is my legacy. ”

And indeed, wherever I went to interview centenarians, I found kitchen parties.

This is Giovanni with his two nieces, Maria above them, and next to them is his great-niece Sarah. They came when I brought in fresh fruits and vegetables.

And as soon as I was there, I realized that in the Blue Zone, as people get older, and indeed throughout their lives, they are always surrounded by extended families, friends, neighbors, priests, bar owners, grocers.

People are always there or stopping by.

They are never forced to live alone.

This is unlike any other developed country where, as George Burns quipped, "happiness is having a big loving and caring family in another city."

(laughter) Well, so far we've only met men, long-lived men, but we've also met women. And here we have Zia Teresa.

Over 100 years old, she taught me how to make a local delicacy called culluzione. It's a large ravioli-like pasta pocket this size, stuffed with high-fat ricotta and mint and drizzled with tomato sauce.

And she showed me how to make a proper crimp so it wouldn't open. She makes them with her daughters every Sunday and gives out dozens of them to neighbors and friends.

And then I discovered that a low-fat, gluten-free diet wasn't what I needed to live to be 100 years old in the Blue Zone.

(Applause.) Now, listening to these 100+-year-old stories and the science that backs them up, I'm starting to ask myself some questions, too. For example, when will I die and how can I postpone that date?

As you can see the answer is not what we would expect.

Julian Holt-Randstad, a researcher at Brigham Young University, tackled this very question in a series of studies involving tens of thousands of middle-aged people, much like this audience here.

And she looked at every aspect of their lifestyle, including their diet, exercise, marital status, frequency of doctor visits, and whether they smoked or drank alcohol.

She recorded all this, after which she and her colleagues sat and waited for seven years to see who was still breathing.

And what reduced the odds of dying the most among those stranded?

That was her question.

So let's summarize her data from strongest predictor to strongest predictor.

OK？

Clean air is great, but how long we live is unpredictable.

It is a good thing if you are being treated for high blood pressure.

Not yet a strong predictor.

Whether you're skinny or fat, you don't have to feel guilty because you're only in third place.

How much exercise you do next is important, but still only a moderate predictor.

Even though I have had a cardiac event, I have been in rehab and exercise and am doing well now.

Whether you have received the influenza vaccine.

Did any of you here know that getting a flu shot is more protective than exercising?

Whether you used to drink or quit or are a moderate drinker, whether you do not smoke, whether you smoked, whether you quit, and whether you approach the top predictors are two characteristics of your social life.

First, your intimate relationship.

People you can ask for a loan when you suddenly need money, people who call your doctor when you're sick, people who take you to the hospital, people who stand by you when you're in a life-or-death crisis, when you're in despair.

Those people, that little group, are powerful predictors of how long you'll live, if you have any.

And what struck me was something called social integration.

This means how much you interact with people throughout the day.

How many people are you talking to?

And these mean both your weak and strong ties. I mean, do you talk not only to people who are very dear to you, but also, for example, the man who makes you coffee every day?

Talk 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 do book clubs?

These interactions are one of the strongest predictors of your life expectancy.

Now, this leads me to my next question. Given that we now spend up to 11 hours a day online more than we spend in other activities, including sleep, that's one hour more than last year. By the way, does it make a difference?

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

For example, if you are in constant contact with your children through text messages, is that the same as being there?

Well, the short answer to your question is "No, they are not the same thing".

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

So just making eye contact, shaking hands, or giving someone a high five releases oxytocin, which increases trust levels and lowers cortisol levels.

thus reducing stress.

Dopamine is then produced to give you a little high and make the pain go away.

It's like naturally occurring morphine.

With all of this now passing through the radar of our consciousness, we confuse online activity with in-person activity.

But we now have evidence, new evidence, that there is a difference.

So let's take a look at some of the neuroscience.

Neuroscientist Elizabeth Redkay of the University of Maryland has tried to map the difference between what happens in our brains when we're interacting directly and when we're looking at something static.

She then compared the brain activity of the two groups of people. People live with her or have dynamic conversations with one of her research associates. We also compared it to the brain activity of people watching her talking about the same subject in canned videos such as YouTube.

By the way, if you want to know how she was able to put two people in the MRI scanner at the same time, tell me later.

So what's the difference?

This is your brain on actual social interaction.

What you are seeing is the difference in brain activity between interacting directly and ingesting static content.

Orange indicates areas of the brain associated with attention, social intelligence—predicting what others are thinking, feeling, and planning—and emotional reward.

And these areas become even more involved when interacting with a live partner.

Now, these more abundant brain signals may be why recruiters at Fortune 500 companies evaluating candidates think they're smarter when they hear a candidate's voice than when they're just reading a pitch in a text, email, or letter.

Well, our voice and body language convey rich signals.

It shows that we are human beings who think, feel, and have sentience far beyond algorithms.

Well, this study by Nicholas Epley of the University of Chicago Business School is pretty amazing. Because it teaches us simple things.

If someone hears you, they think you're smart.

So it's very simple.

So back to the beginning, why do women live longer than men?

And one of the main reasons for that is that women are more likely to prioritize and organize face-to-face relationships over life.

Emerging evidence indicates that these direct friendships create a biological forcefield against disease and decline.

And that applies not just to humans, but to their primate relationships, and our primate relationships as well.

Anthropologist Joan Silk's research shows that female baboons with female friends at their center have lower stress levels due to cortisol levels, live longer, and produce more offspring.

At least 3 stable relationships.

It was a magic number.

please think about it.

I hope you all have three.

It is thanks to the power of such face-to-face contact that dementia rates are lowest among socially engaged people.

This is why women with breast cancer are four times more likely to survive than lonely women.

Why do men who have had a stroke meet regularly to play poker, drink coffee, play old-fashioned hockey - I'm Canadian (laughter), so social contact is better protected than medicine.

Why men who have had a stroke meet regularly – this is a very powerful thing they can do.

While this face-to-face contact offers incredible benefits, nearly a quarter of the population now says they have no one to talk to.

There is something you can do about this.

Just like Sardinian villagers, it is biologically imperative to know that we belong, not just women.

Incorporating face-to-face interaction into our cities, workplaces, and agendas strengthens our immune systems, pumps feel-good hormones into our bloodstreams and brains, and helps us live longer.

I call this building a village, but building and maintaining it is a matter of life and death.

thank you.

(Applause) Helen Walters: Susan, come back. I have a question.

I'm wondering if there is a middle way.

You talk about neurotransmitters connecting face-to-face, but what about digital technology?

We have seen significant improvements in digital technologies such as FaceTime.

Does it work too?

So I met my nephew.

He's playing Minecraft and yelling at his friends.

It seems to connect quite well.

Will it help? Will it help?

Susan Pinker: Some of the data is just emerging.

Data is so fresh that the digital revolution is happening and health data is lagging behind.

So we are still learning, but I think there are some things the technology can do better.

For example, laptop cameras are at the top of the screen, so when you're looking into the screen, for example, you're not really making eye contact.

So even just looking into a camera can increase neurotransmitters, and so can something as simple as changing the position of the camera.

I mean, it's not exactly the same, but I think the technology is getting closer.

HW: Great. Thank you very much.

SP: Thank you.

(applause)

I'm a meteorologist by degree, and I'm a meteorologist with a card because I have a bachelor's, master's and PhD in physical meteorology.

And it always comes with four questions.

This is one prediction that I'm sure will come true.

(Laughter.) And those questions are, "Marshall, what channel are you watching?"

(laughter) "Dr. Shepard, what will the weather be like tomorrow?"

(Laughter) And oh, I love this. "My daughter is getting married next September, it's an outdoor wedding.

Will it rain? "

(Laughter) No kidding, I know that, but I don't know the answer. Science does not exist.

But what I get a lot these days is, "Dr. Shepard, do you believe in climate change?"

"Do you believe in global warming?"

Now I have to calm myself down every time I get that question.

Because it's an inappropriate question. Science is not a belief system.

My son, he's 10 years old - he believes in the Tooth Fairy.

And I'm losing dollars so he needs to get over it fast.

(Laughter) But he believes in the Tooth Fairy.

But think about it.

Bank of America building in Atlanta.

I never hear a voice say, "If you go to the roof of that building and throw a ball, do you believe it will fall?"

Gravity exists, so you never hear about it.

So let's ask the question, "Do you believe in gravity?"

But, of course, we also hear the question, "Do you believe in global warming?"

Now consider these facts.

The American Association for Scientific Advances (AAAS), one of the leading organizations in the scientific field, asked scientists and the public questions on various scientific topics.

Here are some of them, including genetically modified foods, animal research, and human evolution.

And look at what scientists say about those subjects and what the people who actually study those subjects say. See what the public thinks in red and gray.

How did you get there?

How did you get there?

Scientists and the general public are far apart on these scientific issues.

Now, I would like to get a little closer to the issue of climate change, which is familiar to me.

87% of scientists believe humans are responsible for climate change.

But only 50 percent of the population?

How did you get there?

So the question arises: What constitutes our perception of science?

That's an interesting question and I've been thinking about it quite a bit too.

I think one of the things that shapes the public perception of science is belief systems and prejudices.

Belief systems and prejudices.

Let's go together for a moment.

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

These sound like big, fancy academic terms, and they are.

But when I describe them, you think, "Ah!"

I recognize it. I know people who do that too. ”

confirmation bias.

Finding evidence to support what we already believe.

Well, we all probably feel a little guilty about that from time to time.

take a look at this

i'm on twitter

And when it snows, I often get this tweet back.

(laughter) "Hey Dr. Shepard, there's 20 inches of global warming in my yard. What are you guys talking about, climate change?"

In fact, I often get that tweet too.

It's a cute tweet, it also makes me laugh.

But it is fundamentally scientifically flawed.

It shows that the person tweeting does not understand the difference between weather and climate.

I often say, "The weather is your mood, the climate is your personality."

Think about it.

The weather is your mood and the climate is your personality.

Your mood today doesn't necessarily tell you anything about your personality, nor does a cold day tell you anything about climate change, or even a hot day tells you anything about climate change.

Dunning Kruger.

Two academics at Cornell University invented the Dunning-Kruger effect.

If you look through the peer-reviewed papers on this, you'll see all kinds of fancy terminology. It's the illusory sense of superiority that we think we know.

In other words, people think they know more than they actually do.

Or you underestimate what you don't know.

And then cognitive dissonance ensues.

Cognitive dissonance is funny.

We recently had Groundhog Day.

Now, there's no better definition of cognitive dissonance than intelligent people asking me if rodent predictions are accurate.

(Laughter) But you always know that.

(Laughter) But I also hear about the Farmer's Almanac.

We grew up with the Farmers Almanac and people know it all too well.

The problem is that it's only about 37% accurate, according to a Penn State University study.

But we've entered the age of science, and we can actually predict the weather.

Believe it or not, some of you might be thinking, "That's right." Our forecasts are over 90 percent accurate.

You just remember failing once in a while, sure.

(Laughter.) Confirmation bias, Dunning Kruger, and cognitive dissonance.

I think they shape the prejudices and perceptions people have of science.

But on the other hand, there is also literacy and misinformation that keeps us in a frame.

During the 2017 hurricane season, media companies actually had to appoint reporters to dismiss disinformation about weather forecasts.

It's that kind of era.

I deal with this all the time on social media.

Someone will tweet the forecast -- it's for Hurricane Irma, but here's the problem. It's not from the Hurricane Center.

But people were tweeting and sharing this. It went viral.

It wasn't from the National Hurricane Center.

So, before I came to the University of Georgia, I spent a 12-year career at NASA, where I chaired the Earth Sciences Advisory Board. I was just in Washington DC last week.

And I saw some really interesting things.

This is scientific data from NASA models and satellites showing the 2017 hurricane season.

Can you see Hurricane Harvey?

Look at the dust that rises from Africa.

Take a look at wildfires in the northwestern United States and western Canada.

Hurricane Irma is coming.

This appeals to me.

But admittedly I'm a weather geek.

But more importantly, it shows that we have the technology to not only observe the weather and the climate system, but to predict it.

Since we have a scientific understanding, we don't need the perceptions and prejudices we've been talking about.

we have the knowledge

But think about this...

This is Houston, Texas after Hurricane Harvey.

Now, as a regular contributor to Forbes, I wrote an article a week before Hurricane Harvey made landfall, "40 to 50 inches of rain likely."

I wrote it a week before it happened.

Still, when I speak to people in Houston, they say, "I didn't expect it to be this bad."

I just...

(sigh) (laughter) A week ago.

But as funny as it sounds, the reality is that we all have trouble recognizing things outside our level of experience.

People in Houston it rains all the time and floods all the time.

But they have never experienced it.

Houston receives about 34 inches of rain annually.

50 inches in 3 days.

It is an anomaly and out of the ordinary.

belief systems and prejudices, literacy and misinformation.

How do we get out of the box that drives our perceptions?

You don't even have to go to Houston, you can come right to our house.

(laughs) Remember "Snowpocalypse"?

(laughs) Snowmageddon?

with snow?

It doesn't matter what you want to call it.

It's all 2 inches.

(Laughter) Two inches of snow shut down Atlanta.

(Laughter) But the reality is that we were wary of winter storms, and we had a winter weather warning, and many people saw it as a downgrade and thought, 'Well, it won't be that bad.'

There was actually a realization that it wouldn't be that bad, but it really was an upgrade.

Things got worse as the models arrived.

This is an example of how we can become trapped in our own perceptions.

The problem then becomes how to expand the scope of activities.

The area of ​​the circle is "pi r squared".

Increase the radius and increase the area.

How can we broaden our understanding of science?

Here are my thoughts.

Take stock of your own prejudices.

And I challenge you all to do it.

Take stock of your own prejudices.

where did they come from?

Your background, your political views, your beliefs, what shapes your own prejudices?

Next, rate your sources. Where do you get your information about science?

What do you read and listen to to get information about science?

And speaking up is important.

Talk about how you assessed your own biases and evaluated your sources.

Listen to this 40-second clip by one of America's top television meteorologists, Greg Fischel of Raleigh, Durham.

He is well respected in the area.

But he was skeptical of climate change.

But hear him out about speaking up.

Greg Fischel: The mistake I was making, which I didn't realize until very recently, was that I was only looking for information that supported what I was already thinking, and didn't listen to opinions to the contrary.

So I woke up one morning with a question in my mind, "Are you suffering from confirmation bias, Greg?"

Are you only looking for information that confirms what you already think?"

And if I've been honest with myself and tried to do so, I've allowed it to happen.

So the more I talked to scientists, read the peer-reviewed literature, and tried to behave myself the way I was taught to behave at Penn State as a student, the more difficult it became to claim that I was not, at least to some degree, effective.

Perhaps there were still doubts as to how much, but it was not my responsibility as a scientist or as a human being to say "nothing".

JMS: Greg Fischel talked about expanding the scope of our understanding of science.

And when we expand our reach, it's not about creating a better future, it's about protecting life as we know it.

So when we think about expanding the reach of our understanding of science, it's important for Athens, Georgia, for Atlanta, Georgia, for Georgia, and for the world.

So widen your radius.

thank you.

(applause)

Name one thing that everyone in this room will be.

elder.

And most of us are horrified at the prospect.

How do you feel when you hear those words?

I felt the same way.

What was I most worried about?

You end up drooling in the corridors of some gruesome facility.

And I learned that only 4 percent of older Americans live in nursing homes, and that percentage is declining.

What else were you worried about?

dementia.

It turns out that most of us have no problem thinking through to the end.

The incidence of dementia is also declining.

The real epidemic is the fear of amnesia.

(laughs) I also thought that the old people were depressed because they were getting old and dying soon.

(Laughter) I've found that the longer people live, the less fear they have of dying, and the happiest beginning and end of life.

This is called the U-Curve of Happiness and has been proven by numerous studies around the world.

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

This curve is a function of the effects of aging itself on the brain.

So I started feeling a lot more at ease about getting older and becoming obsessed with why so few people know these things.

The reason is ageism, age-based discrimination and stereotypes.

We experience it every time someone thinks we are too old to do something, instead of knowing who we are and what we can do or if we are too young.

Ageism cuts both ways.

All isms are socially constructed concepts, racism, sexism, homophobia, etc., which means we make them up and can change over time.

All these prejudices set us against each other to maintain the status quo, like US auto workers competing with Mexican auto workers instead of organizing for better wages.

(Applause.) We know it's not good to allocate resources by race or gender.

Why is it okay to weigh the needs of the young against the needs of the elderly?

All prejudices rely on 'othering', on seeing groups of people as something other than themselves: other races, other religions, other nationalities.

The strange thing about ageism is that the Others are us.

Ageism feeds on denial, a reluctance to admit that one is becoming such an old person.

When you try to look younger, when you believe in anti-aging products, when you feel like you're betraying yourself just because your body is changing, it's denial.

Why, then, do we stop celebrating our ability to adapt and grow as we move through life?

Why does growing older mean struggling to look and act like your younger self?

Until you're not ashamed of it, it's embarrassing to be called older, and it's not healthy to live your life in fear of the future.

The sooner we get out of this hamster wheel of age denial, the better off we are.

Of course, stereotypes are always wrong, but especially when it comes to age, because the longer we live, the more different we are from each other.

right? please think about it.

Nonetheless, we tend to think of all nursing home residents as the same age, the old. (Laughter) It can be as long as 40 years.

Can you imagine thinking that way about the 20-60 age group?

When you go to parties, do you go to people who are your age?

Have you ever complained about qualified millennials?

Have you ever refused a haircut, dated someone, or gone out because you thought you were too young?

For adults, this is not the case.

All these actions are ageist.

We all do that, and we can't fight prejudice unless we are conscious of it.

No one is born ageist, but that's because the media and popular culture bombard us with negative messages about later life at almost the same time that attitudes about race and gender begin to form in early childhood.

right? Wrinkles are ugly.

I feel sorry for the old man.

It's sad to get old.

Look at Hollywood

A recent study of Best Picture nominations found that only 12 percent of the characters spoken or named were over the age of 60, many of whom were portrayed as disabled.

Older people can be the most ageist of all. Because we've spent our entire lives internalizing these messages and never thought to challenge them.

I had to admit it and stop the collusion.

For example, a joke about "senior moments." When I lost my car keys in high school, I realized I didn't call it a "junior moment" and stopped making it.

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

My other knee doesn't hurt and I'm the same age.

(Laughter) (Applause) We all worry about some aspect of aging, like running out of money, getting sick, or being lonely, but those fears are legitimate and real.

But what most of us never realize is that the experience of reaching old age can be good or bad depending on the culture in which it occurs.

The absence of a vagina makes life difficult for women.

It's sexism.

(Applause.) What makes gay life more difficult is not loving men.

It's homophobic.

And it's not the passing of time that makes getting older harder than it needs to be.

It's age discrimination.

When labels are hard to read, there are no handrails, and jars can't be opened, we blame ourselves for not aging well, rather than ageism that shames natural change and makes that barrier acceptable.

Satisfaction alone does not make money, but shame and fear create markets, and capitalism always needs new markets.

Who said wrinkles are ugly?

The multi-billion dollar skin care industry.

Who said peri-menopause, low T values, and mild cognitive impairment are medical conditions?

The trillion-dollar pharmaceutical industry.

(cheers) The more clearly we see these forces at work, the easier it is to come up with alternative, more positive, more accurate stories.

Aging is neither a problem to be solved nor a disease to be cured.

It is a natural and powerful lifelong process that unites us all.

We know it's hard to change culture, but culture is in flux.

See how the position of women has changed in my lifetime, or the incredible progress the gay rights movement has made in just a few decades.

(Applause) Look at gender.

We used to think of it as being binary, male or female, but now it's understood to be a spectrum.

The time has come to abandon the dualism of men and women of all ages.

There is no line between old and young on the sand, after that it's all downhill.

And the longer we wait to challenge that idea, the more damage it does to ourselves and our place in the world, including in the ageist workplace.

In Silicon Valley, engineers get botox injections and tweezers before big interviews, but these are skilled white men in their 30s, and imagine the effects happening further down the food chain.

(Laughter) The personal and financial impact is devastating.

Not a single stereotype about older workers holds up under scrutiny.

A younger workforce doesn't mean a company is more adaptable or creative. Nevertheless, they are adaptable and creative.

Companies -- (Laughter) (Applause) We know that a diverse company is not just a great place to work. they work better.

And just like race and gender, age is also a measure of diversity.

A growing body of intriguing research shows how the way we think about aging affects how our minds and bodies function at the cellular level.

When we talk to older people like this (speak louder) or call them "sweetie" or "young lady" (this is called elderspeak), they quickly look old, walking and speaking poorly.

People with more positive feelings about aging walk faster, do better on memory tests, heal faster, and live longer.

Some kept their sharpness to the end, even though their brains were full of plaque and brain tangles.

What do they have in common?

sense of purpose.

And what are the biggest obstacles to having a sense of purpose in later life?

A culture where getting older means limping off the stage.

That is why the World Health Organization is developing a global anti-ageism initiative to extend not only life expectancy but healthy life expectancy.

Women experience aging differently because they experience the double whammy of ageism and sexism.

There's a double standard at work here -- shocking -- (laughter) the concept that aging improves men and devalues ​​women.

Women reinforce this double standard when we compete to stay young, which is also a punishing and losing proposition.

Does any woman in this room really believe she's a lesser version of who she used to be: no longer interested, no fun in bed, no worth?

This discrimination affects our health, well-being and income, and the impact grows over time.

They are further complicated by race and class, which is why everywhere in the world, the poorest of the poor are old women of color.

What can we learn from that map?

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

Longevity is a fundamental feature of human progress.

All these seniors represent a vast, unprecedented and untapped market.

Nevertheless, capitalism and urbanization have spread age inequality to every corner of the globe, from Switzerland, where the elderly have the greatest wealth, to Afghanistan, which ranks at the bottom of the global age-monitoring index.

Half of the world's countries aren't on that list because they're not young anymore and don't need to bother collecting data on millions of people.

Nearly two-thirds of people over the age of 60 worldwide say they have trouble getting medical care.

Almost three-quarters say their income does not cover basic services such as food, water, electricity and decent housing.

Is this the world we want our children who may live to be 100 to inherit?

All ages, genders and nationalities, everyone is or will be elderly and unless we put an end to it, ageism will oppress us all.

And that makes them an easy target for collective advocacy.

With so many people, especially racism, calling for action, why add another “ism” to the list?

The point here is that you don't have to choose.

When we make the world a better place to age, we make the world a better place for people from other places, people with disabilities, gay people, people who aren't wealthy, people who aren't white.

And when we join at all ages in the cause that matters most to us: save whales and save democracy, we not only make that effort more effective, but we dismantle ageism in the process.

Longevity will continue.

A movement to end ageism is underway.

I am also participating, so please join us.

(Applause and cheers) Thank you. let's do it! let's do it!

(applause)

I am guilty of stacking dishes in the sink and leaving them there for hours.

I fact-checked this with my boyfriend.

He says it's days, not hours, but that's not the point.

The point is that sometimes I don't finish the job until the stack gets high enough to go over the rim of the sink and my inner love of cleanliness has lost it.

This glamorous habit was picked up in college and I had a lot of excuses.

"I'm running to class!"

"What are those dirty dishes in the sink?"

Or my favorite is "I think it will save me time and water if I do it all together later".

(Laughter) But I didn't need that excuse. Because no one called me about it.

I wish I had.

Looking back now, I realize that every time I finished a task that I started without putting the dishes in the dishwasher, it became more natural to me and I wondered less why I was doing it.

Now that I'm in my 30s and a certified dirty dishes person, I'm having a hard time breaking this habit.

So when I'm not at home and avoiding sinks, I work with large, complex organizations to transform leadership in times of change.

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

But what interests me these days more than senior leaders is what's happening to junior leaders.

We call them 'middle managers', a term we hope to change. Because they're the talent pipeline to future executives, they're starting to leave their dishes in the sink.

While organizations are hiring people like me to redevelop future senior leaders, outdated leadership habits are forming before our very eyes among the middle managers who will one day succeed them.

This is a big problem, so middle management and senior leaders need to work together.

Organizations are evolving rapidly and we expect future leaders to lead with greater speed, flexibility, trust and collaboration than they do today.

I believe there is a window of time during the formative years of middle management where such leadership groundwork can be laid, but we are missing it.

why?

Because our future leaders are learning from the example of those who are not yet ready to do so, much less change the systems that have made them successful.

Middle management and senior leaders need to work together to define new ways of teaching and grow each other to get through the situation.

One of my favorite senior clients (I'll call her Jane) epitomizes today's outdated leadership.

She was promoted to executive positions based on outstanding personal performance.

Through hell and tidal waves, Jane got the job done and is on track today.

She has a hard time keeping up, doesn't have much time for things that aren't mission critical, and has less trust in the judgment of others than in her own.

Needless to say, Jane is in action bootcamp.

These deeply ingrained habits are at odds with her organization's direction.

The command-and-control behavior that once rewarded her doesn't work in a fast-moving, flatter, more digitally interconnected organization.

What brought her here cannot take her there.

But what I want to talk about is John, a very talented and up-and-coming manager working under Jane. because her habits are affecting him.

Recently, he and I were strategizing a decision that needed to be submitted in front of the CEO, Jane's boss, and other Jane's colleagues.

He said to me, "Liz, you don't like this, but decisions around here are made in meetings before meetings."

I counted

That means having 1:1 meetings with 8 people per board member to make sure each board member is fully involved so that things run smoothly in the actual meeting.

“It doesn't matter what you do in the future, it's what you have to do today,” he promised.

John was right on both counts.

At his company now, pre-work meetings have become a necessary evil, and I didn't like it at all.

Sure, it would be inefficient and cumbersome, but what bothered me most was his confidence that it wasn't the way to go in the future.

How could he be so sure?

If it wasn't for him, and now who was going to change that when?

What was the impetus?

And when that happens, would he even know how to have an effective meeting without a pre-meeting?

He confidently hinted that if he became the boss, he would change the rules and do things differently, but all I could see was a pile of plates in the sink and a man making a lot of good excuses.

Or worse, the man who may one day lose his job because he learned too late how to lead the organization of tomorrow.

For an agile, high-potential manager like John, these stories really resonate. Because they are perhaps the most capable of making waves and redefining how leaders lead from within.

But what we have found is that they are often trying to impress and make their jobs easier for the senior leaders who promote them, so they are doing their best work by not rocking the boat and challenging the system.

As someone who likes to get promoted, I can't blame him.

It's Catch 22.

But they are also overconfident that they can change their behavior if they gain the power to do things differently, which is the trap.

Because if I've learned anything from working with Jane, one day John will wonder how he could be different in a high-stakes, high-pressure executive job without jeopardizing his own and the organization's success, and wish it hadn't felt so safe and easy to keep doing things the way they always did.

So my leadership development expert asks: How can we better intervene during the formative years of the soon-to-be senior leaders?

How can you capitalize on the fact that Jon and his cronies want to take charge of their professional destiny and be ready to lead the organization of the future, rather than succumbing to a catch-22 that perfectly prepares them to lead the organization of the past?

We must begin by embracing a very real paradox. That is, the best form of learning is on the job, not through classrooms or electronic modules.

And two things we rely on to shape learning in the field are role models and the work environment.

And, as I said earlier, our role models are currently in behavioral bootcamps, and our work environment is undergoing unprecedented disruption.

We are systematically changing just about everything about how our organizations work, but because system change takes time, we still generally measure and reward behavior based on old metrics.

So it's John's responsibility to not miss this critical development window, even if he can't fully rely on role models and systems at this point.

Yes, you'll need Jane's help to do that, but the risk really belongs to him, so the responsibility is on him.

Either he takes over an organization that is failing because of stubborn, old-fashioned leadership, or he himself is unable to build the capacity to lead a transformed organization while playing it safe.

Now the question is, where does John start?

If I were John, I would get him to start flying planes.

For my 13th birthday, my grandfather, a former Navy pilot, gave me the gift of being able to fly a very small plane.

After we took off safely, the pilot flipped the control stick, folded his hands and let me fly.

It was utterly terrifying.

It was exhilarating, but it was also on-site learning with a safety net.

And because it was real, I really learned how to do it myself.

Similarly, in the workplace, every meeting led and every decision made becomes a practice flight for those who can put their learning experience to work, an opportunity to find their own way of doing it.

So rather than opening a cave, John should knock on Jane's door, suggest creative strategies for holding meetings without eight pre-meetings, show Jane that he's weighed the tradeoffs, and enlist Jane's support in another way.

This will not be easy for Jane.

Not only does she have to trust John, but she has to accept that if John has a little more room to take the lead, he will inevitably start taking leadership in a much more John-like way than Jane.

And this is not her accusation.

rather individualistic.

that would be progress.

And it could be a chance for Jane to learn something to take her own leadership game to the next level.

Another senior client I work with summed up this dilemma beautifully when he and his colleagues were talking about why they don't give more decision-making power to those below them.

"We're not doing it because we don't believe they're going to make the right decision," he said.

But again, how could that be?

We never gave them a decision about practice. ”

So I'm not advocating for Jane to hand over control and join hands forever. But what I mean is that Jane can never do what Jane does, much less what Jane does, if she doesn't incorporate learning and practice into John's day today.

Finally, we're going to push the two of them out of their comfort zones, so we need some outside coaches to make sure this isn't a case of blind leading blind.

But what if we started coaching interactions between students instead of using coaches to teach each student individually to be more effective?

If I could wave a magic wand, I would have the coach present at the occasional team meeting that Jane and her direct reports have and report back only on how well they worked together that day.

I include a coach in regular feedback sessions between Jane and John, providing advice and observations on how the conversation can improve going forward, much like a couples therapist coaches on communication.

Did Jane simply reinforce what Jane would do?

Or did Jane really help John figure out what to do for the organization?

This is very difficult guidance to offer, and even the best leaders need help to do it. That's why we need more coaches coaching more leaders in real time, rather than one leader behind closed doors.

About 20 years ago, Warren Buffet said in a school lecture, "The chains of habit are too light to feel, but too heavy to break."

I couldn't agree more either. I see the same thing happening in the training of our future leaders.

Could we and them do more to build their leadership abilities while they were still open and enthusiastic and not so far down the road of bad habits we fully foresaw coming?

I wish my college roommate and I were calling each other for food back then.

It would have been much easier to nip that bud than to change that habit today.

But I still believe in my future full of shiny sinks and busy dishwashers. That is why we are working on that future together every day, moment by moment, one dirty plate at a time.

thank you.

(applause)

The philosopher Plato once said: “Music gives soul to the universe, wings to the mind, flight to the imagination, life to everything.”

Music has always been a big part of my life.

Making and performing music connects people across countries and lifetimes.

It connects you with the people you play with, the audience, and yourself.

When I am happy, sad, bored or stressed, I listen to and make music.

I used to play the piano when I was younger. After that, I picked up a guitar.

When I entered high school, music became part of my identity.

I've been in every band and attended every music art event.

Music surrounded me.

It made me who I am and gave me a place to belong.

Well, I've always had this with rhythm.

When I was young, I remember walking down the school corridors and tapping my feet and tapping my teeth to keep the rhythm.

I had a nervous habit and was always nervous.

I think I liked the repetition of the rhythm. It felt soothing.

Then in high school I started music theory and it was the best class I ever took.

We were learning about music, theory, history, things I didn't know.

It was basically a class where we just listened to a song, talked about what it meant to us, analyzed it, figured out what excites the song.

I used to do something called "rhythmic dictation" every Wednesday, and I did pretty well.

The teacher gave us the amount of bars and the time signature, then we had to say the rhythm and we had to write it down with the proper rests and notes.

This way: ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta, ta.

And i loved it.

Despite their rhythmic simplicity (basic 2- to 4-bar lines), each one seemed to tell a story, as if adding a melody was enough potential.

(Guitar) Rhythm creates the basis for melody and harmony on which to play.

Gives structure and stability.

Now, music, like our lives, has elements of rhythm, melody and harmony.

Music has rhythm, we have routines and habits that help us remember what to do and stay on track.

And although you may not realize it, it's always there.

(Guitar) It may look simple, it may look boring in itself, but it gives the tempo and the pulse.

And what's in your life adds to it and gives it some texture. It can be your friends, your family, and anything that creates harmony, rhythm, polyphony, or anything else that creates a harmonic structure in your life or in your songs.

It creates beautiful chords and patterns.

(guitar) And there you are.

You play on rhythms and beats, in addition to everything else. Because you are the melody

And things may change and evolve, but no matter what we do, we are still the same people.

The melody develops throughout the song, but it's still the same song.

No matter what you do, your tempo, heart rate, and other rhythms don't change.

Until I left home, went to college, and it all disappeared.

When I first came to college, I felt lost.

Don't get me wrong. Sometimes I loved it and it was great, but other times I felt like I was left alone to protect myself.

It was as if I had been taken out of my natural surroundings and put in some new place, where the rhythm, the harmony, the form had disappeared and there was only me - silence (of the guitar) and my melody.

And even that started to falter. Because I didn't know what I was doing.

I had no chords to build myself, no rhythms or beats to know the tempo.

(Guitar) And then I started hearing all the other sounds.

(Guitar) And they were off-time, off-key.

And the closer I got to them, the more my melody started to sound like theirs.

And I slowly started to lose myself, like I was swept away.

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

And I could feel it.

And it was me.

And here I was

And although it was different, it wasn't even worse.

Only a little has changed.

Music is my way of coping with the changes in my life.

There is a beautiful connection between music and life.

It binds us to reality and at the same time allows us to escape it.

Music lives inside me.

You create it and you are created by it.

Our lives are not only run by music, they are made up of music.

It might seem like a bit of an exaggeration, but hear me out. Music is a fundamental part of us and everything around us.

Music is my passion now, but I used to be interested in physics as well.

And the more I learned, the more I saw the connection between the two, especially with regard to string theory.

I know this is just one theory out of many, but it really resonated with me.

So, in the simplest form of string theory, matter is made up of atoms, and atoms are made up of protons and neutrons, and electrons are made up of quarks.

And here comes the string part.

These quarks are probably made up of tiny coiled strings, and it is the vibration of these strings that shapes everything.

Michio Kaku once explained this in a lecture called "Overview of the Universe," where he said, "String theory is the simple idea that the four forces of the universe, gravity, electromagnetism, and two powerful forces, can be viewed as music.

Little rubber band music. ”

In this lecture I will continue to explain physics as the laws of harmony between these strings. Chemistry as a melody that can be played on these strings. And he says the universe is a "symphony of strings".

These strings determine the world. They make up everything we see and everything we know.

They are musical notes, but they make us who we are, they unite us.

So it's all about music.

(Guitar) Looking at the world, we are surrounded by music.

When you look at yourself, you can see music.

And my life was defined by music.

I found myself through music.

Music is everywhere and in everything.

And it changes, grows and declines.

But it is always there, supporting us, connecting us and showing us the beauty of the universe.

So when you get lost, stop and listen to your song.

thank you.

(applause)

Algorithms are everywhere.

They classify and distinguish between winners and losers.

The winner is given a job or provided with a good credit card.

Losers either don't get an interview or end up paying more premiums.

We are scored by a secret formula we don't understand, and often without an appeal system.

That's where the question arises. What if the algorithm is wrong?

To build the algorithm, we need two things. One is data, what happened in the past, and the other is the definition of success: what you are looking for and often want.

To train an algorithm, you have to see and understand.

Algorithms determine what is associated with success.

What conditions lead to success?

In fact, everyone uses algorithms.

You just don't formalize it with your written code.

Let's take an example.

I use algorithms every day to make meals for my family.

The data I use is what I have in my kitchen, my time, my ambitions, and I'm picking those data.

I don't count small packages of ramen as food.

(Laughter) My definition of success is if the kids are eating vegetables, the meal is successful.

Much different than if my youngest was the one in charge.

He says that if you can eat a lot of Nutella, you are successful.

But I can choose success.

I am in charge. My opinion matters.

That's the first rule of the algorithm.

Algorithms are opinions embedded in code.

That's quite different from what most people think of algorithms.

They believe algorithms are objective, truthful and scientific.

It's a marketing trick.

It's also a marketing technique that uses algorithms to intimidate you into trusting and fearing math because you trust and fear them.

Blind faith in big data can lead to many things going wrong.

Kiri Soares. She is the principal of a high school in Brooklyn.

In 2011, she told me that teachers were graded with a complex secret algorithm called a "value-added model."

I said to her, 'Well, figure out what that formula is and show it to me.

Let me explain. ”

``I tried to understand the formula, but an official from the Ministry of Education told me it was math and I couldn't understand it,'' she said.

becomes terrible.

The New York Post filed a Freedom of Information Act to get the names of all the teachers and all the scores, and published it as teacher humiliation.

When I tried to get the formulas and source code in the same way, I was told that it was not possible.

was denied.

As it turned out, no one in New York City had official access to it.

No one could understand it.

That's where a really smart guy, Gary Rubinstein, came in.

He found 665 teachers who actually had two scores in the New York Post data.

If you're teaching 7th grade math and 8th grade math, it can happen.

He decided to intrigue them.

Each dot represents a teacher.

(laughter) What is it?

(Laughter) It should never have been used for personal assessment.

It's almost a random number generator.

(Applause.) But it was.

Sarah Wysocki.

She, along with 205 other teachers, was fired from the Washington, D.C. school district despite receiving excellent endorsements from the principal and the children's parents.

I know what many of you here are thinking, especially data scientists and AI professionals.

You're thinking, "Well, I wouldn't make such an inconsistent algorithm."

But algorithms can go wrong, and even well-intentioned ones can have serious devastating effects.

And while a badly designed plane crashes to Earth and everyone witnesses it, a poorly designed algorithm can go on for long periods of time and silently wreak havoc.

Roger Ailes.

(Laughter) He founded Fox News in 1996.

More than 20 women complained of sexual harassment.

They said they weren't allowed to succeed at FOX News.

He was sacked last year, but recently found problems persisting.

This raises the following questions. What should FOX News do next to move forward?

So what if we replaced the hiring process with machine learning algorithms?

i like it.

please think about it.

Data, what is data?

A reasonable choice would be to apply for the last 21 years to Fox News.

Appropriate.

What about your definition of success?

A reasonable choice would be who is successful on FOX News.

Someone who has been there for say four years and has been promoted at least once.

Sounds reasonable.

Then the algorithm is trained.

It will be trained to seek out people who learn what has led to success and what applications have historically led to success according to that definition.

Now let's consider what happens when we apply this to our current pool of applicants.

Women are excluded because they don't look like successful people in the past.

You can't make things fair just by applying algorithms lightly and blindly.

They don't do things fair.

They repeat our past practices and patterns.

They automate the status quo.

It would be nice to have a perfect world, but it doesn't.

I also add that most companies have not filed embarrassing lawsuits, but their data scientists have been told to track data and value accuracy.

Consider what that means.

Because we are all biased, it means that we may be codifying sexism and other types of prejudices.

It's a thought experiment. I like them, so a totally segregated society, racially segregated, in every town, in every neighborhood, only sending police to minority neighborhoods to investigate crime.

Arrest data will be highly biased.

On top of that, what if you could find a data scientist and pay them to predict where the next crime will occur?

Ethnic Minority Neighborhood.

Or to predict who the next criminal will be?

Minority.

Data scientists brag about how awesomely accurate their models are, and they're right.

Well, the reality is less dramatic, but serious racism exists in many cities and towns, and there is plenty of evidence of biased police and justice system data.

And we're actually predicting hotspots, where crime happens.

And indeed we predict individual criminality, individual criminality.

The news outlet ProPublica recently investigated one of the so-called "recidivism risk" algorithms used in sentencing by judges in Florida.

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

Dylan, right, 3 out of 10.

10 out of 10, high risk. 3 out of 10, low risk.

Both were brought in for drug possession.

They both had criminal records, but Dylan had a felony charge while Bernard was acquitted.

This is important because the higher your score, the more likely you are to be given a longer prison sentence.

what happened?

data laundering.

This is the process by which engineers hide an ugly truth inside a black box algorithm and call it objective. We call them meritocracies.

If they are secret, important, and destructive, I have coined these algorithms with the term "weapon of mathematics destruction".

(Laughter) (Applause) It's everywhere, and it's not wrong.

These are private companies building private algorithms for private purposes.

Even the ones I spoke to for teachers and police, they were built by private companies and sold to government agencies.

They call it "secret sauce". That's why they can't tell us about it.

It's my power too.

They exercise the authority of the mysterious to their advantage.

Now, since all this stuff is private and there is competition, you might think that the free market would solve the problem.

It won't.

There is a lot of money to be made from injustice.

Also, we are not an economically rational entity.

We all have prejudices.

We are all racist and prejudiced in ways we wish we weren't, and in ways we don't know.

But on the whole we know this, because sociologists have consistently demonstrated this in these experiments they have constructed, where they send a ton of applications for jobs that have the same qualifications but some have white-ish names and some have black-ish names, and it's always a disappointing result.

In other words, we are the biases, and by choosing the data we collect, we are injecting those biases into our algorithms. Just like I tried not to think about ramen noodles, decided it was irrelevant.

But can we expect the algorithm to emerge unscathed by choosing a definition of success, relying on data that actually picks up on past practice?

Can not do that. I have to check them.

We have to check if they are fair.

The good news is you can check if they are fair.

Algorithms can ask questions, and algorithms always tell us the truth.

and you can fix them. we can make them better.

I call this algorithmic auditing. I will explain the procedure.

The first is a data integrity check.

In the case of the recidivism risk algorithm I spoke of, data integrity checks mean having to accept the fact that whites and blacks smoke cannabis in equal proportions in the United States, but blacks are much more likely to be arrested, four to five times more likely in some regions.

What does this bias look like in other crime categories, and how can it be explained?

Then you need to think about your definition of success and audit it.

Remember the Hiring Algorithm? We talked about it.

Who gets promoted once after four years of service?

A successful employee, but also an employee who is supported by the culture of the company.

That said, it can also be quite biased.

A distinction must be made between the two.

Let's take a blind orchestra audition as an example.

That's where the people auditioning are behind their seats.

The idea, then, is that the listeners have decided what is important and what is not, and are not distracted by it.

When auditions for the blind orchestra began, the number of women in the orchestra increased fivefold.

Next, we need to consider accuracy.

This is where the value-added model for teachers immediately fails.

Of course, no algorithm is perfect, so all algorithm errors must be considered.

How often does the error occur? Who does this model fail for?

What is the cost of that failure?

And finally, we have to consider the long-term effects of the algorithm, the feedback loops that occur.

It sounds abstract, but what if Facebook engineers considered that before deciding to only show what your friends posted?

I have two more messages. One is for data scientists.

Data Scientist: We should not be arbiters of truth.

We should be translators of ethical debates in the larger society.

(Applause.) And the rest of you, non-data scientists, this is not a math test.

This is a political battle.

We need to demand accountability from the rulers of algorithms.

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

thank you very much.

(applause)

A young perspective on the future, a present perspective on the future and the future, a mature perspective on the future -- tonight I'd like to combine all three tenses into one identity.

And the poet, in many ways, can be said to look to what I call the "conversational nature of reality."

And you ask yourself: What is the conversational nature of reality?

The conversational nature of reality is the fact that everything you want in the world, in your partner in marriage or in a relationship, in your children, in the people who work for you or with you, or in your world, doesn't happen exactly the way you want it to.

But in the same way, what the world wants of us, what it demands of our partners, our children, our colleagues, our industry and our future, will not come true.

And what really happens is the line between what you think you are and what you think you're not.

And the frontier of actual encounters between what we call the self and what we call the world is, in fact, the only place where things are real.

But it's absolutely amazing how little time we spend on this frontier of conversation, and how little strategy has been abstracted from it.

I entered the US last year through immigration, which is a very strict border at the moment. And you know, when you got off an international flight across the Atlantic, you weren't in the best place. You are not the most mature mentally.

In fact, you are quite impatient with the rest of humanity.

So when I got to immigration with my shirt collar off and my beard grown for the day, with very little patience, the immigration officer looked at my passport and said, "Mr. White, what are you doing?"

I said, "I'm working on the conversational nature of reality."

(Laughter.) And he leaned over the rostrum and said, "I needed you last night."

(Laughter) (Applause) And I said, "I'm sorry, but my abilities as a poet and a philosopher are limited.

I don't know if I can—" But we found ourselves absorbed in a conversation about his marriage.

Here he was in his uniform, but interestingly, he was looking up and down the line of officers so that his superiors wouldn't notice that we were having a real conversation.

But we are all living in this frontier of dialogue with the future.

Put yourself in the shoes of your Irish niece, Marlene McCormack, standing on the edge of a cliff on Spain's west coast overlooking the vast Atlantic Ocean.

The 23-year-old has just walked 500 miles from Saint-Jean-Pied-de-Port, on the French side of the Pyrenees, all the way across northern Spain to this very famous old-modern pilgrimage route called the Way of Santiago de Compostela (Road to Santiago of Compostela).

And when we get to Santiago, it can actually be kind of an anti-climax. Because 100,000 people live there and they don't necessarily applaud you when you come to town.

(Laughter) And 10,000 of them are trying to sell memorabilia from your trip.

But you may have three more days to go to this place where Marlene stood ("finisterre" in Spanish, "finisterre" in English), where the ground turns into the sea, which in Latin means "end of the earth". Where your present turns into your future.

And Marine has walked this path. At 23, she has just graduated from the University of Sligo with a degree in Irish Theater.

And she said to me, "I can't believe the world's biggest companies are knocking on my door."

I said, ``Listen, I've worked in companies all over the world for decades.

(Applause.) But she said, "Anyway, 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.

So to give myself courage, I walked the Camino to step into my future. ”

And I said, "What's your most powerful moment on the entire Camino, your most powerful moment?"

“There were many powerful moments, but the most powerful was the three days after the Camino, from Santiago to this cliff edge,” she said.

Then go through three rituals.

The first ritual is to eat the scallop tapas plate. Or, if you're a vegetarian, contemplate scallop shells.

(Laughter) Because the scallop shell was the icon and badge of your walk, and all the arrows you saw along the way pointed down the scallop shell.

So this first ritual is saying, "How did you get to this place?"

How did you find your way here?

How do you talk about life when you're not surrounded, bullied, or left alone?

How do you hold the conversation of life that brings you to this place?

And the second ritual is to burn what you bring.

I said, "What did you burn, Marlene?"

"I burned a letter and two postcards," she said.

I said, "It's amazing.

I'm 23 and have paper.

That's unbelievable. ”

(Laughter) I think there's a Camino app that lets you delete traumatized text.

(Laughter) Shine the flashlight, color it, and disappear into the flames of the fireworks.

But bring the letter or write it there and burn it.

And, of course, we intuitively know what those letters and postcards say.

It's a form of affection and love that no longer exists, right?

And then there's the third ritual. Between all these fires is a large pile of clothes.

And you left the clothing that helped you get here.

And I said to Marlene, "What did you leave behind on the edge of the cliff?"

She said, "I forgot my boots, actually the very ones I was walking in.

They are very beautiful boots and I really liked them, but after 7 weeks of walking they were finished.

So I put on my trainers and walked away but left my boots there. ”

“It was really incredible,” she said.

The most intense moment was when the full moon rose behind me while the sun was about to set.

And the full moon was so powerfully lit by the fading Sun that even after it had fallen below the horizon, the Moon could still see the Sun.

And I had a moon shadow and I was watching my moon shadow walking across the Atlantic, this sea.

And so I thought. That is the new self that faces the future. ’ But suddenly I noticed that the sun was leaning further.

The moon lost its reflection and my shadow faded.

The most powerful moment on the entire Kamino was when I realized that I had to walk that unknown sea into the future. ”

Well, I was so fascinated by this story that I wrote this article for her.

We were driving at that time. I got home, sat on the couch and wrote until 2am - everyone was asleep - and gave it to Marlene at breakfast time.

It is called "Finisterre" after Marlene McCormack.

"The last road through the way the sun went through The last way through the way the sun entered the west sea Through the way the sun entered the west sea The last way through the way the sun entered the west sea And the moon Standing where the ground turned into the sea The moon rises behind you Now there's no way to your future But now the way your shadow goes, Walking in front of you, walking on the water, going where the shadow goes, there's no way to understand a world that doesn't let you through, no way to see the end." There's no other way but to tell you the way you came, taking out each letter you brought, lighting its bright corners, reading it drifting in the slow western light, emptying the bag to empty, sorting this, leaving that, sorting this, leaving this, promising what you've always had to promise, promising what you've always had to promise, throwing the shoes that brought you here down by the water, not because you gave up, Because now you find a different way to step.Through it all, a part of you keeps walking on the waves no matter what."

"Finisterre".

Marlene McCormack -- (Applause), she's already done her third play Off Off Off Off Broadway in Dublin.

(Laughter) But she's on her way.

This is the final work.

This is the goal that we envision as the sum of all our efforts.

In terms of Santiago itself, it could be Santiago, it could be Mecca, it could be Varanasi, it could be Kyoto, or it could be the threshold you set for yourself, the disturbing approach to achieving all your goals.

And one of the difficulties about stepping into your life, fully entering this body, this world, is that you begin to realize that you have created three enduring illusions that other humans have shared with you since time immemorial.

And the first illusion is that you manage to build a life in which you are not vulnerable.

You can somehow escape all the hardships, ill health and losses to which humanity has been exposed since time immemorial.

If we look at the natural world, there is no part of it that does not go through the cycle of initial, or concealed, then growth, fullness, and first of all beautiful extinction, and then very solemn and complete extinction.

We look at it and say, "That's beautiful, but can you just give us the first half of the equation?"

And when the disappearance occurs, close your eyes and wait for a new cycle to come. ”

So most humans are at war with reality 50% of the time.

A mature identity can stay alive in a complete cycle.

The second illusion is that you can build a life that doesn't break your heart.

The first thing we start with is romance.

When you're just starting out in a new relationship or marriage, you say, 'I've found someone I can't break my heart'.

I'm sorry; you unwittingly selected them precisely because of their core competencies.

(Laughter) They will break your heart.

why?

Because you care about them.

You're thinking about parenting, right?

Parenting: "I would be the perfect mother and father."

Your children will break your heart.

And you don't even have to do anything flashy or dramatic.

But usually they do something spectacular and dramatic that breaks your heart (laughs).

And for years they will live with you as spies and saboteurs, watching your every psychological move and finding every weak spot.

And then one day, when they're like 14, and you're in the kitchen with your back to them and you're making something -- (laughter) the psychological stiletto comes in.

(Laughter) (Applause) And you say, 'How did you know exactly where to put it?'

(Laughter) And they say, "I've been watching you for years (Laughter)."

And we hope that our professional personalities in armor will keep us from getting heartbroken on the job.

However, if you are sincere in your work, your heart should break.

You should hit a threshold where you don't know how to proceed.

You don't know how to get from here to there.

what does it do?

It brings you into a proper relationship with reality.

why?

Because you have to ask for help.

Lovelorn.

We have no choice about heartbreak. The only option we have is to get heartbroken over a person, thing, or project that we hold dear to our hearts.

And the final illusion is that you can somehow plan enough and put things in order so that from where you are standing, to the horizon, to the end, you can see the road.

But come to think of it, the only environment in which it is possible is a flat desert devoid of other life.

But even in a flat desert, the curvature of the earth will keep the road away from you.

So no. I can see the road, I can't see it again, I can see it again.

So this is "Santiago" due to arrive and at the same time a kind of return to the beginning.

We have this journey experience in all of the great spiritual traditions of pilgrimage.

But really just standing firmly on the ground in my life, not trying to abstract myself into a strategic future, really just an escape from my heartbreak in the present. The ability to stand on the ground of your life and see the horizon that pulls you toward you. In that moment you are the whole journey.

you are the whole conversation.

"Santiago"

"The path seen, and the path not seen, and the hillside not seen hides and reveals the way to go, The path seen, the hillside not seen hides and reveals the way to go, The path goes away from you as if it leaves you and walks in the air, and catches you, catches you, picks you up, when you think you're going to fall, catches you, picks you up, when you think you're going to fall, and the way you go, the way you go, in the end the way you always came, The road you go on is always the last one you came, the one you took, the one that took you to the future, the one that got you to this place, the one that took you to this place, even if it had to rob you of promises every now and then, even if it had to break your heart all the time along the way, the feeling that you walked out from deep within yourself to revelation, the feeling that you risked yourself for something that seems to be inside and far beyond you, and that's the last one you can follow. Called you back to the only way, walked like you've been, the rags of love walked like you, put on your rags of love, and spoke in that voice, became a prayer of safe arrival in the night, so one day you realized that what you wanted had actually already happened, and what you wanted had already happened long ago, and in the abode you lived in before you started, and every step along the way, every step along the way, you first That you carried the heart and the spirit and the promise that set you off and then pulled you, and with it you realized that you became more mare A simple wish to find a way You were better than the golden roofs of any destination you could reach As if from the beginning you thought it might be, when you turn a corner at what you thought was the end of the road, you turn around as if you found just a simple reflection and a clear revelation, with another invitation under and under your face, glimpsed all at once, like the person or place you've been looking for forever, like the bold field of freedom beckoning you beyond. It's like another life, and it's still on its way. ”

(Applause.) Thank you.

(Applause.) Thank you.

(Thank you for applause. thank you.

You're very kind. thank you.

(applause)

Tired of your boss?

(Laughter) Tired of working for other people and making money?

And who are those people in the first place?

These are the people who make money from your work.

Well, they are capitalists.

They have capital and will use your labor to earn more capital.

So if you're sick of going to work and making money for other people, you're probably just as sick of capitalism as I am.

Ironically, because I'm a capitalist.

(Laughter) I run a small business in Compton called Rco Tires.

When I read Van Jones a few years ago, he wrote, "Let's build green collar jobs in rural areas," and I took his words seriously.

So I co-founded, owned and ran a tire recycling company and I'm really proud of what we've done so far.

To date we have recycled 100 million pounds of rubber.

This translates to 21 million gallons of oil diverted from landfills to new products.

(Cheers) We also employ about 15 men. Mostly people of color, most of them felons, and they pay above minimum wage. And we are now proud members of the National Steel Workers Union.

(Applause.) Now, Rco is not a cooperative now.

We are a community-based private company, but we want to be like that.

I want them to fire that boss and that's me.

(Laughter) I'll tell you why, but first let me tell you how we got started.

So many people ask, "How did Rco come about?"

And I have to be really honest.

I took advantage of my white privilege.

Well, here's how white privilege worked for me and Rco.

My white grandmother was born in 1918 on the family farm in Arkansas.

She traveled west with her white father after the oil boom.

And he had various union oil jobs that would never have been given to my black great-grandfather had he lived here at the time.

Grandma became a hairdresser and took out a loan with her husband to build a house in West Los Angeles. A loan that was never given to black families at the time.

And my grandmother was able to keep the house after my grandfather died because she received pensions and health care from state jobs, which were also never given to black men before the anti-discrimination laws of the 1960s.

Fast forward 30 years and I'm out of college, heavily in debt, with a credit card, no experience in the tire industry, and wanting to start my own business.

But I had something that most people don't.

I had a clean, safe and free place to live.

I was able to move in with my grandmother, rent my first warehouse, buy my first truck, and pay my first employee. Because I didn't have to worry about paying for myself and I didn't have to feed myself. Because I am a direct beneficiary of generations of white privilege.

Now, talking about white privilege is important. Because people often say "Oh, we want more companies like you.

We want more RCOs, more black-owned businesses, more women-led triple-bottom lines, Ban the Box, green manufacturing companies. ”

But the question we must ask is where is the wealth?

where is the money

Where is the capital in the community to build the kind of business we want?

And telling the story of the white side of my family required a dozen ways that the white side of my family could gain access and traction and build wealth while blacks would be excluded from the economy...

That's largely because racism and capitalism are best buddies. But what that means is when you ask yourself, "Why is our community falling apart?" -- Well, we're not bankrupt just because we're bankrupt. We are bankrupt for some reason.

Historical background is really important.

But our history also tells another story.

There is a wonderful book called "Collective Courage". This is the story of how thousands of African Americans were able to build whole communities and sovereign economies -- businesses, schools, hospitals, farm cooperatives, banks, financial institutions -- without spending a lot of capital.

And they did so not only by working together to leverage their community's assets and benefit by any means necessary, but by trusting each other and putting unity first.

And I didn't have to wait for celebrities and athletes to pay me back.

However, if you are a celebrity or athlete and are listening to this, feel free to bring your money.

(Laughter.) But they knew capitalism would never fund black liberation, so they did it through the co-op economy.

There are many great examples in this book. Please read it. Because it answers the question I asked earlier, where does the wealth come from to build the type of business we want?

And the answer must be cooperative economics.

There are many versions of cooperativeism.

Today I'm talking about worker ownership.

You may not have heard of worker ownership, but it has been a great tool for black economic liberation for a century and is still working around the world today.

You may have heard of Black Wall Street and Zapatistas, but let me give you a more familiar example.

Now in the South Bronx is the country's largest worker-owned company.

It's called Cooperative Home Care Associates and was founded by black and Latino home care workers. They are now able to pay a living wage themselves, have full-time jobs, and receive benefits and pensions through their membership as a unit of the SEIU.

And these female business owners now receive annual dividends on their ownership if the company is profitable, which is the case most years.

So, having fired their boss, they can truly enjoy the fruits of their labor.

They don't have big investors.

There are no fat cat CEOs or absentee owners out there who want to profit from the company.

They paid about $1,000 each over time to take ownership and now own their jobs.

Hundreds more examples of such companies are now springing up across the country.

And I am so inspired by their efforts. Because it replaces the current type of economy that exploits us all.

It is also an alternative to waiting for big investors to bring chains and blockbuster stores into our community. Because, let's be honest, this kind of development steals resources from our community.

They put our private businesses out of business, make our entrepreneurs wage earners, take money out of our pockets and send it to shareholders.

So I was so inspired by all these stories of resistance and recovery that I got together with some people here in Los Angeles to found LUCI.

LUCI stands for Los Angeles Union Cooperative Initiative and our goal is to create more worker-owned businesses here in Los Angeles.

So far in the last year we have established two companies. The power company, Pacific Electric, and the Vermont Gage Carwash here in the South Central. Some of you may know.

Over the years, the car wash is now owned and operated by 20 employees, all of whom are union members.

(Applause.) So you may be wondering why we focus on unions and worker ownership, but there are plenty of good reasons for the labor movement to naturally align with the worker ownership movement.

It takes a few things to build the kind of company we want our community to have.

You need money, people, and training.

Unions have them all.

For decades, America's working class has paid union dues, and our unions have built dignified, decent, and democratic workplaces for us.

But union employment is plummeting and it is time we start calling on unions to really put all of their financial and political capital into creating new union living wage jobs in our communities.

There are also many union members in the union hall who understand the importance of solidarity and the power of collective action.

Start a union business with them because they are the type of people who wish there were more union businesses.

Learning from our union, learning from our past, learning from our colleagues are all critical to our success. That's why I'd like to leave you with one last example and a vision for the future...

And that vision is Spanish Mondragon.

Mondragon, Spain is a community built around worker cooperatives.

There are over 260 companies here, making everything from bicycles to washing machines to transformers.

The group of companies now employs 80,000 people and generates annual revenues of more than €12 billion.

And every company there is owned by the people who work there.

They also built universities, hospitals and financial institutions.

I mean, imagine if we could build a facility like this in the Mid-South.

The late Mayor Jackson had similar thoughts.

He wanted to transform the entire city into a Mondragon-like co-op economy, calling his ambitious plan "Jackson Rising."

And Mondragon is a great example of what working-class people can do when they work together and make decisions for themselves, each other, and their communities.

What's really cool about mondragons is that while we dream of them, they dream of us too.

This community in Spain has decided to launch an international effort to create more similar communities around the world by partnering with trade unions, supporting organizations like LUCI, and educating people about the worker-owned model.

Here's what you can do to get involved:

If you're a union member, go to union meetings to see what unions do for worker-owned initiatives and be a part of it.

If you are an entrepreneur, run a small business, or are interested in starting a business, please partner with LUCI or another organization like us to help you get started in a collaborative model.

If you're a politician, work for a politician, or just love talking to politicians, pass the necessary city, state, federal, and county legislation to fund and support worker-owned businesses.

And for everyone else, learn about our history, learn about our model, look for us. So you can support us, buy from us, invest in us, lend to us, join us. Because it really takes us all to build the more just, sustainable and resilient economy we want for ourselves and our children.

Now I would like to quote the words of Arundhati Roy. she writes...

"Our strategy should not only be to confront the Empire, but to besiege it.

for oxygen deprivation.

to ridicule it.

to shame.

Our art, our literature, our music, our brilliance, our joy, our utter ruthlessness, and our ability to tell our own stories.

It's not the kind of story we're brainwashed to believe.

The corporate revolution will collapse if we refuse to buy what they sell—their ideas, their version of history, their wars, their weapons, their sense of inevitability.

For they are the few and we are the many.

They need us more than we need them.

Not only is another world possible, she's on her way.

And on quiet days you can hear her breathing. ”

thank you.

(applause)

These are pictures from when I volunteered at an orphanage in Cambodia in 2006.

When I took these pictures, I thought I was doing something really good and I was really helping the kids.

I learned a lot.

It all started when I was 19 when I backpacked through Southeast Asia.

When I arrived in Cambodia, I felt uneasy spending my vacation surrounded by poverty and wanted to give something back.

So I visited some orphanages and donated clothes, books and money to help the children I met.

But one of the orphanages I visited was hopelessly poor.

Never in my life have I encountered such poverty.

They didn't have enough food, clean water, or money for medical care. And the sad little faces of those children were heartbreaking.

So I had to do something more helpful.

I raised money in Australia and returned to Cambodia the following year to volunteer at an orphanage for several months.

I taught English, bought water filters, food, and took all my kids to the dentist for the first time.

However, the following year, I found that the orphanage I was supporting was terribly corrupt.

The director had embezzled all donations to the orphanage and while I was away the children suffered so much neglect that they had to catch mice for food.

It was later discovered that the director had physically and sexually abused the children.

I didn't want to turn my back on the children I knew and cherished and go back to life in Australia.

So I worked with local teams and local authorities to set up a new orphanage to rescue children and give them safe new homes.

But here my story takes an unexpected turn.

As I adjusted to my new life running an orphanage in Cambodia, I became fluent in Khmer. So now I can speak Khmer fluently.

And once I was able to communicate properly with my children, some strange things started to become apparent.

Most of the children we took away from orphanages weren't actually orphans.

They had parents, and a few orphans had living relatives, such as grandparents, uncles, uncles, and other siblings.

So why were these children living in an orphanage when they weren't orphans?

Since 2005, the number of Cambodian orphanages has increased by 75 percent and the number of children living in Cambodian orphanages has almost doubled, even though the majority of children living in Cambodian orphanages are not orphans in the traditional sense.

They are poor children.

Therefore, the term "orphanage" is really just a euphemistic name for residential care homes, when the majority of children living in orphanages are not orphans.

These facilities are also known as 'shelters', 'safe houses', 'children's homes', 'children's villages' and even 'boarding schools'.

And this problem is not limited to Cambodia.

This map shows some of the countries where the number of residential care homes and the number of children in institutions has increased dramatically.

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

And the problems that institutionalize children don't just involve corrupt and abusive institutions like the ones I rescued children from.

The problem lies in all forms of residential care.

Over 60 years of international research have shown that children raised in even the best institutions are at serious risk of developing mental illness, attachment disorders, growth and language delays, and that many will not be able to reintegrate into society later in life and will struggle to develop healthy relationships as adults.

These children sometimes struggle to raise their own children because they grow up without a family model or knowing what good parenting looks like.

So when you put a lot of children into institutions, it affects not only this generation, but the generations to come.

We learned these lessons before in Australia.

That's what happened to our "stolen generation," the Indigenous children who were taken away from their families because they believed we could parent them better.

Imagine for a moment what institutional care is like for a child.

First, caregivers rotate regularly, with a new one every eight hours.

On top of that, visitors and volunteers keep coming, showering you with the love and affection you so desperately need and leaving, arousing all sorts of feelings of abandonment and proving time and time again that you are unworthy of being loved.

There are no more orphanages in Australia, America and England. There are very good reasons for that. One study found that institutionalized youth are 10 times more likely to engage in sex work, 40 times more likely to have a criminal record, and 500 times more likely to kill themselves than other young people.

An estimated 8 million children live in orphanages and other institutions worldwide, but about 80 percent of them are not orphans.

Most people have family members who can take care of them with the right support.

But for me, the most shocking thing to realize is that it is us – tourists, volunteers and donors – who are contributing to this boom in the unnecessary institutionalization of so many children.

It's the well-meaning support of people like me in 2006, who visit children, volunteer and donate, but they unwittingly fuel an industry that exploits children and divides families.

It is no coincidence that these institutions are primarily established in areas that tourists visit and are often tempted to volunteer in exchange for donations.

There are 600 so-called orphanages in Nepal, over 90% of which are located in the most popular tourist destinations.

The cold and harsh truth is that the more money rushed in to support these institutions, the more institutions opened and the more children separated from their families to fill beds.

It's just the law of supply and demand.

I had to learn all these lessons the hard way after setting up an orphanage in Cambodia.

I had to eat a large slice of humble pie to admit that I had made a mistake and had inadvertently become part of the problem.

I was an orphanage traveler, a volunteer traveler.

After that, I founded my own orphanage and promoted orphanage tourism to raise funds for the orphanage.

I learned that no matter how good my orphanage was, it could never give my children what they really needed: a family.

I know it can be incredibly depressing to know that helping vulnerable children and overcoming poverty is not as easy as we've been led to believe it should be.

Thankfully, there is a solution.

These problems are reversible and preventable, and the more we know, the better we can respond.

The organization I run now, the Cambodian Children's Trust, is no longer an orphanage.

In 2012, we changed our model to favor family-based care.

I am currently leading an amazing team of Cambodian social workers, nurses and teachers.

We work together within our communities to untangle the web of social problems and help Cambodian families lift themselves out of poverty.

Our main focus is to prevent the separation of some of the most vulnerable families within our community.

However, when children are unable to live with their biological family, we support them in foster homes.

Family-based care is always better than placing a child in an institution.

Remember the first photo I showed you earlier?

Can you see the girl trying to catch the ball right now?

Her name is Tone. She is a strong, brave and very intelligent girl.

But when I first met her in that corrupt and abusive orphanage in 2006, she had never been to school.

She suffered from severe parental neglect and longed for the warmth and love of her mother.

But here's a photo with Tone's family today.

Her mother now has a stable job, her siblings are doing well in high school, and she is about to complete her nursing degree in college.

For Tone's Family -- (Applause) For Tone's family, the cycle of poverty has been broken.

The family-based care model we developed at CCT has been so successful that it is now being advocated by UNICEF Cambodia and the Cambodian government as a national solution for keeping children in their families.

And one of the best ways, one of the best ways we can contribute to solving this problem, is to give these 8 million children a voice and become advocates for family-based care.

Together, we can raise awareness and let the world know that we need to end the needless institutionalization of vulnerable children.

How can we achieve that?

By directing our support and donations from orphanages and residential care homes to organizations committed to keeping children in their families.

We believe we can do this in our lifetime. As a result, developing regions will thrive and vulnerable children around the world will have the families that all children need and deserve.

thank you.

(applause)

Before I get into most of what I have to say, I would like to say a few words about myself.

I'm not the mystical, spiritual type of person.

i am a science writer.

I studied physics at university.

I used to be NPR's science correspondent.

That said, in the process of working on the NPR article, I received advice from an astronomer that shook my perspective and quite frankly changed my life.

As you know, this story was about a partial solar eclipse that was due to cross this country in May 1994.

And the astronomer, I interviewed him, explained what was about to happen and how to observe it, emphasizing that while partial eclipses are interesting, total eclipses, which are much rarer, are something completely different.

During a total solar eclipse, the moon completely blocks the face of the sun for a few minutes, creating what he described as one of nature's most awe-inspiring sights.

Here is the advice he gave me: "Before I die, I am obligated to experience a total solar eclipse," he said.

To be honest, I was a little uncomfortable hearing that story from someone I didn't know very well. It felt kind of intimate.

But I was curious, so I looked it up.

Now, the important thing about total eclipses is that if you wait for a total eclipse to happen, you'll be waiting a long time.

A total solar eclipse occurs anywhere on Earth about once every 400 years.

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

There I learned that a few years later, in 1998, a total solar eclipse would cross the Caribbean Sea.

Today, total solar eclipses can only be seen along a narrow road about 100 miles wide, where the moon casts its shadow.

It is called the "Way of Wholeness".

And in February 1998, the path of wholeness was crossing Aruba.

So I discussed it with my husband and thought, "February?" Aruba?

Sounded like a good idea anyway.

(Laughter.) So we headed south to enjoy the sun and see what happens when the sun is a little hidden.

Well, on the day of the eclipse, we and many others waited for the show to start on the beach behind the Hyatt Regency.

And we wore eclipse glasses with cardboard frames and very dark lenses and could safely see the sun.

A total solar eclipse begins as a partial solar eclipse when the Moon moves in front of the Sun very slowly.

So at first it looked like there was a small notch on the edge of the sun, but then the notch grew larger and larger, turning the sun into a crescent moon.

All were very interesting, but not great.

That is, the day was still bright.

If I hadn't known what was going on overhead, I wouldn't have noticed anything out of the ordinary.

Now, about ten minutes before the total eclipse began, strange things began to happen.

A cool breeze blew.

Sunlight looked weird and shadows got very weird. It looked strangely sharp, as if someone had turned up the contrast knob on the TV.

Then I looked offshore and saw the boat's running lights, and although I didn't realize it, it was clearly getting dark.

Well, soon it was obvious that it was getting dark.

I felt like my eyesight was declining.

And suddenly the lights went out.

Oh yeah, at that moment there was a cheer from the beach and I took off my eclipse glasses as it was safe to look at the sun with the naked eye at this point in the total eclipse.

And when I looked up, I was just dumbfounded.

Well, at this point I was in my mid-thirties.

I have lived on earth long enough to know what the sky is like.

I mean -- (laughter) I've seen blue skies, gray skies, starry skies, angry skies, and pink skies at sunrise.

However, there was a sky that I had never seen before.

First, there was color.

The sky above was a dark purplish-gray, like twilight.

But the horizon was 360 degrees, orange like the setting sun.

And above, in the twilight, bright stars and planets appeared.

So there was Jupiter, there was Mercury, there was Venus.

They were all in a row.

And along this line there was this wonderful, perplexing thing.

It looked like a wreath woven of silver threads, it just hung in space and shimmered.

It was the outer atmosphere of the sun, the solar corona.

And photos just can't do it justice.

It is not just a ring or halo around the sun. It has a fine texture that makes it look like it is made of silk thread.

And it didn't look like our sun at all, but of course we knew it was what it was.

So we had the sun, we had the planets, and we could see how the planets revolved around the sun.

It feels like leaving the solar system, standing somewhere in another world and looking back at creation.

And for the first time in my life, I felt an intuitive connection to the universe in all its vastness.

It felt like time stopped or didn't exist at all, and what I saw felt like an illusion, not just seeing.

And I stood in this nirvana for 174 seconds, less than 3 minutes, and suddenly it was over.

The sun popped out, the blue sky returned, the stars, the planets and the corona disappeared.

The world has returned to normal.

But I was different.

So I became an umbrafil, an eclipse follower.

(Laughter) This is how I spend my time and my hard earned money.

Every few years, I head to where the moon's shadow falls, experience a few more minutes of cosmic bliss, and share the experience with others, my Australian friends, and the entire German city.

In Munich in 1999, I joined hundreds of thousands of people who filled the streets and rooftops and cheered in unison when the solar corona appeared.

And over time, I became an eclipse evangelist for something else.

I see it as my job to apply the advice I received many years ago into the future.

So let me tell you. Before you die, you are obligated to experience a total solar eclipse.

It is the ultimate awe experience.

Today, the word "great" has become so overused that it has lost its original meaning.

True awe, a sense of wonder and insignificance, in the face of something huge and magnificent, is rare in our lives.

But once you experience it, it's powerful.

Awe melts the ego.

It makes us feel connected.

In fact, it promotes empathy and generosity.

Well, there's nothing quite like a total solar eclipse.

Unfortunately, few Americans have witnessed this. Because it's been 38 years since I last reached the mainland and 99 years since I last crossed the United States.

But that is about to change.

Over the next 35 years, there will be five total solar eclipses over the continental United States, three of which will be particularly spectacular.

Six weeks from now on August 21, 2017 -- (Applause) The moon's shadow will travel from Oregon to South Carolina.

On April 8, 2024, the moon's shadow will move north from Texas to Maine.

On August 12th, 2045, the road will cut from California to Florida.

I say "What if I make this vacation?"

What if we -- (laughter) (applause) as many people as possible stood together in the moon's shadow?

Perhaps this shared experience of awe can heal our divisions and allow us to treat each other a little more humanly.

Now, it is true that some people consider my evangelization a little out of the way. My obsession, eccentric.

I mean, why pay so much attention to something so short?

Why cross the globe for 3 minutes?

As I said earlier, I am not a spiritual person.

i don't believe in god

I wish I had.

But when I think about my own mortality, and as I often do, about all the people I lost, especially my mother, it's the awe of that moment in Aruba that soothes me.

I imagine myself looking at that sky on that beach, and I remember how I felt.

My existence may be temporary, but that's okay. 'Cause see what I'm part of

This is a lesson I learned that applies to life in general. In other words, duration and influence of experience are not equal.

One weekend, one conversation, one glance can change everything.

Cherish and prioritize moments of deep connection with other people and the natural world.

Yes, I chase eclipses.

You may be chasing something else.

But it's not a matter of 174 seconds.

It's about how they change the years that follow.

thank you.

(applause)

This is a work in progress based on some comments made at TED two years ago about the need to store vaccines.

(Video): [1.6 billion people on Earth do not have access to electric refrigeration or stored fuels, affecting the spread of disease, food and medicine storage, and quality of life.

So, here's the plan...Electric, propane, gas, kerosene, or cheap refrigeration without consumables uses time for the story of thermodynamics and intermittent absorption refrigerators] Adam Grosser: Twenty-nine years ago I had this thermo teacher talk about absorption and refrigeration.

It was invented by Ferdinand Carré in 1858, but the tools of the time prevented him from actually making anything with it.

A crazed Canadian named Powell Crossley commercialized something called the Icy Ball in 1928.

This was a really great idea. I'll explain later why it didn't work, but here's how it works.

There are two spheres, some distance apart.

One with the working fluid, water and ammonia, the other with the condenser.

Ammonia evaporates and recondenses on the other side.

When it cools down to room temperature, the ammonia re-evaporates and combines with the water back on the hot side, creating a powerful cooling effect.

I mean, it was a great idea, but it just didn't work.

they exploded.

(Laughter) Because you're using ammonia, if you heat it wrong, it can create very high pressure. Over 400psi.

But it was kind of an interesting idea.

The great thing about 2006 is that there is a lot of really cool computational work that can be done.

So we involved the entire thermodynamics department at Stanford University, a lot of computational fluid dynamics.

We have proven most of the ammonia refrigeration tables wrong.

We have found some non-toxic refrigerants that work at very low vapor pressures.

We brought a team together from the UK and found that there were a lot of good refrigeration engineers in the UK, built a test rig and proved that we could actually build a low pressure, non-toxic refrigerator.

This is how it works.

Place it over the cooking fire.

Almost everyone in the world has a fire for cooking, whether it's camel dung or wood.

Heat for about 30 minutes and cool for 1 hour.

This is a story about sugar and cancer.

I first became interested in sugar when I was in college.

It's not that kind of sugar.

It was the sugar that biology professors taught us in the context of cell coating.

Maybe they didn't know that cells are coated with sugar.

I didn't know that either until I took these courses in college, but back then, this was the 1980s. People didn't know much about why our cells were coated with sugar.

And when I dug through my notes, I realized I had written it down. That is, the glycocalyx of our cells resembles that of peanut M and M.

And people thought that the glycocalyx on our cells was somehow like a protective membrane that made them stronger and tougher.

But decades later, we know it's much more complicated than that, and that the sugars on our cells are actually quite complex.

And if we could reduce ourselves to tiny miniature airplanes and fly along the surface of our cells, we might end up with something like this with geographic features.

And now the complex sugar is these trees and bushes, the weeping willows that sway in the wind and move with the waves.

And when I started thinking about the leaf-like complex sugars on our cells, it became one of the most interesting problems I've encountered as a biologist and chemist.

And now we tend to think of sugars on the surface of cells as language.

A lot of information is stored in complex structures.

But what are they trying to tell us?

We can say that we know some of the information we get from these sugars, which are already proving to be very important in the medical world.

For example, one thing sugar can tell us is our blood type.

Blood cells, or red blood cells, are therefore coated with sugars, and the chemical structure of those sugars determines your blood type.

For example, I know my blood type is O.

How many people have blood type O?

please raise your hand

This happens all too often, so if you don't see many people raising their hands, you either aren't paying attention or you don't know your blood type, which is bad.

(Laughter) But for those of you who have blood type O like me, what this means is that we have this chemical structure on the surface of our blood cells. In other words, three simple sugars combine to make a more complex sugar.

And that, by definition, is a blood type.

How many people have blood type A?

here.

This means that there is an enzyme inside the cell that adds another building block, red sugar, to build more complex structures.

How many people have type B blood?

Quite a few.

You have slightly different enzymes than people with type A blood, so you build slightly different structures. Type AB individuals have enzymes from their mother and enzymes from their father, and currently make both of these structures in roughly equal proportions.

And when this was discovered, now back in the last century, it made possible one of the most important medical procedures in the world, of course blood transfusions.

Knowing your blood type also helps ensure that if you need a blood transfusion, the donor's blood type is the same, so you don't see foreign sugars that your body hates and will definitely reject.

What else are cell surface sugars trying to tell us?

Well, maybe those sugars let us know you have cancer.

So decades ago, correlations began to emerge from analyzes of tumor tissue.

And a typical scenario is that a patient detects a tumor, the tissue is removed in a biopsy procedure, sent to a pathology lab, where the tissue is analyzed for chemical changes, and informs an oncologist about the best course of treatment.

And what has been discovered from such studies is that sugars changed as cells transitioned from healthy to diseased.

And those correlations have popped up again and again.

But the big question in this area is “why?”.

Why are there different sugars in cancer and what is their significance?

Why does it happen, and what can we do if it turns out to be related to disease progression?

So one of the changes we're studying is an increase in the density of certain sugars called sialic acids.

And I think this is going to be one of the most important sugars of our time, so I encourage you all to familiarize yourself with the term.

Sialic acid is not the type of sugar we eat.

They are different sugars.

It is a type of sugar that is actually present at some level in every cell in the body.

In fact, it's very common in your cells.

But for some reason, cancer cells, at least in successful progressive disease, tend to contain more sialic acid than normal, healthy cells.

why?

what do you mean?

Well, what we've learned is that it has to do with the immune system.

So let's talk a little bit about the importance of the immune system in cancer.

And I think this has been in the news a lot lately.

The term “cancer immunotherapy” is becoming more and more popular.

And some of you may know someone who is benefiting from these very new cancer treatments.

What we do know now is that immune cells, white blood cells that circulate in your bloodstream, routinely protect you from evil, including cancer.

In this picture, the small green spheres are immune cells and the large pink cells are cancer cells.

These immune cells then tour the body and taste every cell in the body.

that is their job.

And most of the time the cell tastes fine.

However, in some cases, the cell tastes bad.

Hopefully it's a cancer cell and when the immune cells go rogue, they launch an all-out attack and kill the cells.

So we know it.

We also know that if we could enhance that taste, if immune cells could actually remove the big old scars from cancer cells, it would have the effect of protecting us from, and possibly even curing, cancer every day.

And there are now several drugs on the market that work by exactly this process, used to treat cancer patients.

They activate the immune system so that it can be more active in protecting us from cancer.

In fact, one of those drugs may have saved President Jimmy Carter's life.

Remember, President Carter had melanoma that had spread to his brain, and his diagnosis was usually accompanied by numbers like "months to live."

However, being treated with one of these new immunostimulants, the melanoma now appears to be in remission, which is surprising given the situation just a few years ago.

In fact, it's quite remarkable that people are making provocative statements about these new immunotherapeutic agents, such as "cancer is penicillin's time."

So it's an incredibly bold statement to make about this disease that we've been fighting for so long and have almost been defeated.

So this is very exciting.

Now, what does this have to do with sugar?

Now let me tell you what we learned.

When immune cells snuggle up to cancer cells and get a taste, they look for signs of disease. Finding that sign activates the cell and launches a missile attack to kill it.

However, when the cancer cells are densely packed with sialic acid, which is a sugar, it tastes pretty good.

Immune cells have a protein that captures sialic acid, and when that protein is retained at synapses between immune cells and cancer cells, it puts the immune cells to sleep.

Sialic acid tells immune cells, “Hey, this cell is fine.

Look somewhere else. ”

So, as long as our cells have a thick coat of sialic acid, they look great, right?

very.

And what if you could strip the coat and remove the sugar?

Yes, your immune system may be able to recognize what that cancer cell really is, the one that needs to be destroyed.

This is what I do in my lab.

We are developing new drugs that are basically like lawn mowers on the cell surface. This molecule simply reaches the surface of cancer cells and cleaves the sialic acid, allowing the immune system to do its best to eliminate the cancer cells from the body.

Finally, let me remind you again. Your cells are coated with sugar.

Sugar tells the cells around that cell whether the cell is good or bad.

This is important because our immune system needs to leave healthy cells alone.

Otherwise, you will get an autoimmune disease.

However, in some cases, cancers acquire the ability to express these new sugars.

And now that we know how these sugars lure the immune system, we can devise new drugs that wake up those immune cells and tell them, "For cancer, ignore the sugars and eat your cells and eat your delicious treats."

thank you.

(applause)

Mother Earth: Our end was imminent, but finality was loose.

Wind, water, and fire are gently revived. You and I reconciled, the rhythm readjusted, the blues blue.

Your consideration for saving in exchange for my fruit and replenishing this picturesque restoration of painted skies, rolling mountains and forest cover, there is no more warming.

The purity and simplicity of our former self.

do you remember me

All I give to mankind?

Homes, lands, seas, birds, beasts and all of mankind are truly interfaces where you and the elements meet and vibrate in harmony.

(piano plays) (violins play) (music) (music speeds up) (violins play) (music) (violins play) (music) (music ends) (applause) My beauty changes, my waters become murky, fields are laid bare, interiors are irreparably damaged, our memories are eroded.

You were once obsessed with my skeleton and how I was born. My nature, its polarity--how my sweet wind whispers softly upon the sea.

do you remember me

All I give to mankind?

Houses, land, seas, birds, beasts and all of humanity - just an interface where you and the elements meet and vibrate in harmony.

Invisible travelers pass forever, carrying life, moving, feeling the shade of the earth, hearing, powerful, stirring, blowing the wind.

Breathe in the clean breeze gently and quietly.

The rising and falling source is forever here. it's air.

Rhythmic currents, fluid graces, waves of tranquility, strings of smooth purity, rapid replenishment of rain, rivers of dreams, raging springs that richly cover the earth, dissolution of the universal solvent, drink, liquid, life and power: water.

Born when the universe was formed, it warms and illuminates humanity, its colored rays illuminating the incandescent embers, giving off a powerful and radiant glow.

The sacred son of air, the father of wrath, the heat that dances wildly between perfection and beauty.

Sparks of unbridled agility, fast and flashy ingenuity blaze.

(Chunk One Star Dances) (Choir Chorus) (Drums) (Drums and Chants) (Drums and Chants) (Drums and Chants) (End of Music) (Applause) (Violin Play) (Music) (End of Music) (Applause)

Have you ever seen a flock of birds working together?

Thousands of animals fly in perfect synchronization. Isn't it attractive?

What I think is remarkable is that if all birds had to follow one leader, these birds cannot.

Their reaction speed would simply be too slow.

Instead, scientists believe these birds are coordinated based on a few simple rules that allow them all to make autonomous decisions while flying in perfect harmony.

Their coordination enables autonomy, and autonomy makes it fast and flexible.

Now what does this have to do with us?

This is one way to describe what I believe are the most important changes needed in the way we work today.

As the world becomes faster and more complex, we need a new way of working – one that creates purposeful alignment, eliminates bureaucracy and empowers people to make decisions truly fast.

But the question is, what are we willing to give up to get there?

A few years ago, I was working with a bank that wanted to embark on a digital transformation.

They wanted their product to be simpler, more intuitive, and more relevant.

Now, I don't know how many of you have seen a bank from the inside, but let me illustrate what many traditional banks look like.

Lots of people in suits taking elevators to their departments, marketers sitting with marketers, engineers sitting with engineers.

In a meeting with 20 people, sometimes nothing is decided.

Great idea? They end up in PowerPoint's parking lot.

And handovers between departments are endless.

It can take forever to get something done.

As such, the bank knew that transformation would also require a drastic change in the way people work to reduce time to market.

But how?

For inspiration, we decided to go and explore companies that seemed more innovative: Google, Netflix, Spotify, Zappos.

And I remember in December 2014 when a team of management consultants and bankers were walking down the hallway of one of these companies.

We felt like strangers in a strange land, surrounded by beanbags and hoodies and many smart and creative employees.

So we asked, "How is your company organized?"

And we expected to get an org chart.

But instead, they used strange diagrams with funny names like "squads," "chapters," and "tribes" to explain how organizations were organized.

So we tried to translate it into our world.

We asked, "How many people do you work with?"

"it depends."

"Who are you going to report to?"

"it depends."

"Who decides your priorities?"

"it depends."

You can imagine our surprise.

We asked them what they thought were some of the guiding principles of the organization, and the answer was "it depends".

Well, after that day, we have a better understanding of their model.

They believed in the power of small, autonomous teams.

Their team was like a small startup.

With product people and IT engineers on the same team, we were able to design, build, and test ideas with our customers independently of the rest of the company.

No interdepartmental handover was required.

They had all the necessary skills within the team.

Well, at the end of the day we had a reflection session.

And we were starting to like their model, so we were already thinking about how to apply some of these ideas to banks.

However, one of the hosts, a man who hadn't spoken a word all day, suddenly said, "I mean, you seem to like our models.

But I have one question, what do you want to give up? ”

What are we willing to give up?

I didn't get an immediate answer, but I knew he was right.

Change is not just accepting new things. It's also about letting go of some old things.

Well, over the last five years, I've been working with companies around the world to change the way they work.

And obviously every company is skeptical about why this is not working.

"Our product is more complex" or "They don't have legacy IT like we do" or "Regulators won't allow this in our industry".

But change was possible, both for this bank and for other companies with which I have since worked.

Within a year, we've completely destroyed the old silos between marketing, products, channels, and IT.

3,000 employees were reorganized into 350 multidisciplinary teams.

So instead of just product people sitting with product people and engineers sitting with engineers, product people and engineers became members of the same team.

You may be part of a team responsible for account opening, mobile banking apps, etc.

Some shook hands for the first time on the new organization's opening day, but it turns out they'd been sending each other emails and updates over the past decade, even though they were sitting two minutes away from each other.

"Oh, you're the one I've always been looking for answers to," you might hear.

(laughs) But now we have coffee together every day.

If a product person has an idea, they can just pitch it in and get input from the engineer sitting right next to them.

They can immediately decide to test with customers. There are no handovers, no powerpoints, no complicated procedures, just work.

Well, getting there is not easy.

And after all, "What can I give up?"

Exactly the right question.

Autonomous decision-making requires multidisciplinary teams.

We want the team to make the decisions, rather than making decisions up and down the organization.

But doing so requires all the skills and expertise to make that decision within the team.

And this brings a difficult trade-off.

Can you physically co-locate employees who are now working in different buildings, different cities, or even different countries?

Or should we invest in better video conferencing?

And how do you ensure consistency in how things are done across these teams?

We still need some kind of management matrix.

Now, changing all these structures, processes and procedures is not easy.

But in the end, it turns out that the hardest thing to change is our own behavior.

Let me explain.

If you want these teams to be as fast, flexible, and creative as small startups, they need to be empowered and autonomous.

But this means that leaders cannot tell their subordinates what to do, when to do it, or how to do it.

No micromanagers.

But it also means that every employee needs to be a leader, regardless of formal title.

It is important that we all take the lead.

Now, obviously we can't afford to run all these teams in different directions. Because it definitely leads to confusion.

Therefore, like a flock of birds, we need coordination and autonomy at the same time.

In an organizational environment, this requires new behavior, but with each new behavior comes the abandonment of the old.

Leaders need to ensure that everyone in their organization is aligned on overall purpose (why) and overall priorities (what).

But then you have to let go and trust your team to make the right decisions on how to get there.

Now, creating alignment requires open and transparent communication.

But did you know that it is said that information is the source of power?

Well, for some admins, sharing information may feel like giving up that source of power.

And it's not just managers.

Teams also need to communicate openly and transparently.

In these companies, teams typically work in short sprints and hold demo sessions at the end of each sprint to transparently share the results of their work.

And each day, we provide updates on what each member of the team is working on individually.

Now, all this transparency can be offensive to people. Because suddenly there is no place to hide.

Everything we do is transparent to everyone.

Coordination is therefore not easy and providing autonomy is not so obvious.

Another company executive likes to describe how he used to be a master at tracking milestones.

Well, today, instead of looking at the status report, he has to walk over to the team floor and attend one of the sessions to find out how things are going.

And instead of telling people what to do, look for ways to help them.

This is a dramatic change for someone who was a master of milestone tracking.

But in the old world, this executive said, "I had only the illusion of being in control.

In practice, many projects run overtime and over budget anyway.

We now have much more transparency and can make early course corrections if necessary. ”

And middle management must change too.

First of all, the absence of handoffs and PowerPoints reduces the need for middle management.

And in the old world there was the idea of ​​the thinker and the doer.

Employees just follow orders.

But now middle managers are expected to be players and coaches, not just managing other people.

Imagine that for the last ten years you were just telling others what to do, but now you are being asked to do things yourself again.

Clearly, this model isn't for everyone, and some of the best people leave the company.

But the result was a new culture with less hierarchy.

And all this is a lot of work.

But it's worth it.

The companies I worked with were used to introducing new product features several times a year.

We now have releases every few weeks, no handoffs, no bureaucracy, and a more efficient organization overall.

And finally, walking through the halls of these companies today, you will feel a new energy.

It feels like walking through the hallways of a large startup company.

Now, to be fair, these companies can't claim victory yet.

But at least this new model is much more prepared for change.

The world is getting faster and more complex, and we need to reboot the way we work.

And the hardest part of the change isn't in the structures, processes, and procedures, nor is it the sole responsibility of senior executives.

Leaders will be everyone in your organization who embraces change.

All of us must lead the change.

So the question is, "What can I give up?"

thank you.

(applause)

Today we will talk about AI and us.

AI researchers have always said that machines take over only menial tasks, so we humans don't need to worry.

is that true?

People who have lost their jobs will find new ones as AI creates new jobs.

of course.

But the real question is how many of those who could lose their jobs to AI will find new jobs, especially if AI can learn better than most of us.

Let me ask you a question. How many people think AI will pass the entrance exams of top universities by 2020?

Oh, there are many. OK.

So some of you might be thinking, "Of course!"

Now the singularity is a problem.

Also, some might say, "Maybe it's because the AI ​​has already beaten a top shogi player."

Others might say, "No, never. Hmmm."

So you still don't know the answer, right?

Therefore, I launched the "University of Tokyo Robot Project" to create an AI that will pass the entrance examination of the University of Tokyo, Japan's top university.

This is our University of Tokyo robot.

And, of course, the robot's brain is running on a remote server.

I am currently working on a 600 word essay on 17th century maritime trade.

how does that sound?

Why did I use the entrance exam as the standard?

That is because I thought it was necessary to study the performance of AI in comparison with humans. In particular, I saw a need to study skills and expertise that are thought to be only acquired by humans and acquired only through education.

To enter the University of Tokyo, the University of Tokyo, you must pass two types of exams.

The first is a nationally standardized multiple-choice test.

In order to take the secondary written exam prepared by the University of Tokyo, it is necessary to take seven subjects and obtain a high score (percent correct answer rate of 85% or more).

So let's start by explaining how modern AI works, using Jeopardy! as an example. Challenge as an example.

This is the typical "danger!" Question: "Mozart's last symphony has the same name as this planet."

Interestingly, the "Jeopardy!" question is always asked and always ends with "this" something. "this" planet, "this" country, "this" rock musician, etc.

In other words, instead of asking many different kinds of "Dangerous!"

By the way, do you know the answer?

What if you don't know the answer or want to know the answer?

Google, right? of course.

why not?

However, you must choose appropriate keywords such as "Mozart", "Last", "Symphony" to search.

Machines do basically the same thing.

Then this Wikipedia page will rank at the top.

Then the machine reads the page.

No, well.

Unfortunately, none of the modern AIs, including Watson, Siri, and Todai Robot, can read.

But they are very good at searching and optimizing.

You can see that there are many keywords such as "Mozart", "Last" and "Symphony" around here.

So if you can find a word that is a planet and co-occurs with these keywords, that should be the answer.

In this case Watson finds the answer "Jupiter" in this way.

Our Todai robot works similarly, but a little smarter to answer yes and no questions about history such as "Charlemagne defeated the Magyars". Is this sentence true or false? ”

Our robot will automatically start generating factual questions like "Charlemagne defeated [this type of person]".

Then, "Avar people" ranked top instead of "Majar people".

This sentence is most likely wrong.

Our robots don't read it, they don't understand it, but in many cases it's statistically correct.

The second stage written test requires you to write a 600-word essay that looks like this: [Discuss the rise and fall of maritime trade in East and Southeast Asia in the 17th century...] And, as shown earlier, our robot took sentences from textbooks and Wikipedia, combined them, and optimized them so that it could compose an essay without understanding anything.

(Laughter) But surprisingly, the student wrote a better essay than most of the students.

(laughs) What about math?

A fully automated math answering machine has been a dream since the term "artificial intelligence" was coined, but for a long time it remained at the level of arithmetic.

Last year, we finally succeeded in developing a system that solves these pre-college problems end-to-end.

This was the original problem written in Japanese, and I had to teach 2,000 math axioms and 8,000 Japanese words to accept the problem written in natural language.

And now we are converting the original problem into a machine readable formula.

Strange, but I think I'm ready to solve it now.

go and solve it.

yes! I am currently doing a symbolic calculation.

Even stranger, this is probably the most fun part about this machine.

(Laughter) Now the perfect answer is printed, but the proof is impossible for even a mathematician to read.

Anyway, last year our robot was in the top 1 percent in the second level written exam in mathematics.

(Applause.) Thank you.

Is that why you entered the University of Tokyo?

No, not as much as I thought.

why?

Because it doesn't make sense.

Here are some common mistakes in English tests.

[Nate: We're at the bookstore soon. I have a few minutes left.

Sunil: Please wait. \_\_\_\_\_\_. Nate: Thank you! It happens all the time...] Two people are talking.

For those of us who can understand the situation—[1. "We have walked for a long time." 2. "It is almost here."

3. "Your shoes look expensive." 4. "The laces are untied."] It's obvious that number 4 is the correct answer, right?

However, Tokyo University Robot chose second place despite learning 15 billion sentences of English using deep learning technology.

Okay, now you may understand what I said. Modern AI does not read and does not understand.

They're just disguised as if they were.

This is a distribution graph of 500,000 students who took the same exam as the University of Tokyo robot.

Currently, our University of Tokyo robots are ranked in the top 20% and have been able to pass over 60% of Japanese universities, but have not been accepted by the University of Tokyo.

But look how it goes beyond the volume zone for those who go white-collar.

You might think I was delighted.

After all, my robots were outperforming students everywhere.

Rather, I felt uneasy.

How can this mindless machine outperform students, our children?

I decided to find out what was going on in the human world.

I pulled hundreds of sentences from high school textbooks, created simple multiple-choice quizzes, and asked thousands of high school students to answer them.

An example is shown below. [Buddhism spread to …, Christianity spread to … and Oceania, and Islam to …] Of course, the original question was written in my mother tongue, Japanese.

[ \_\_\_\_\_\_ spread to Oceania.

1. Hinduism 2. Christianity 3. Islam 4. Buddhism] Clearly, Christianity is the answer.

It's written!

And the University of Tokyo robot also chose the correct answer.

However, a third of middle school students were unable to answer this question.

Do you think it's only in Japan?

i don't think so. That's because Japan consistently ranks high on the OECD's PISA tests, which measure math, science and reading skills of 15-year-olds every three years.

We have believed that as long as we make great learning materials available for free on the web and accessible through the Internet, everyone can learn and learn well.

However, such great materials may only be useful to good readers, and the percentage of good readers may be much lower than we expected.

We must carefully consider how we humans will coexist with AI based on solid grounds.

At the same time, time is running out and you have to think quickly.

thank you.

(Applause) Chris Anderson: Thank you, Noriko.

Noriko Arai: Thank you.

CA: Your talk did a pretty good job of showing us how AI thinks, what it can do, and what it can't do in an amazing way.

But is my reading correct? Do you really think we need a very urgent education revolution to enable children to do what humans can do better than AI?

NA: Yes, yes, yes.

Because we humans can understand it.

That's something AI is sorely lacking.

But most students are just cramming knowledge without even understanding what it means, so it's not knowledge, it's just memorization, and AI can do the same.

Therefore, we have to think about new types of education.

CA: The transition from knowledge, memorization to meaning.

NA: Hmm, hmm.

CA: Well, there are challenges for educators. Thank you very much.

NA: Thank you. thank you.

(applause)

It's Christmas Eve 1968.

The Apollo 8 spacecraft successfully completed its first three orbits around the Moon.

Launched from Cape Canaveral three days ago, it is the first time humans have flown beyond low earth orbit.

After the ship's fourth pass, the Earth slowly comes into view and emerges above the Moon's horizon.

Astronaut Bill Anders frantically asked the crew where their cameras were, picked up a Hasselblad, pointed it at the window, pressed the shutter, and snapped one of the most important photographs of all time: Earthrise.

A few days later, when the crew returned home safely, they asked about their mission.

Anders' famous answer was, "We went to the moon, but we actually discovered the earth."

What did he and his fellow crew members feel in this glorious moment?

In a study published just last year, researchers from the University of Pennsylvania examined the testimonies of hundreds of astronauts who had had the opportunity to view Earth from space.

Their analysis revealed three common sentiments. One is a deeper appreciation of the beauty of our planet. Second, it increases your sense of connection with all other living beings. And third, an unexpected and often overwhelming feeling of emotion.

Researchers believe that viewing the Earth from a distance may lead us to develop new cognitive frameworks for understanding what we are seeing.

They believe these astronauts were forever changed by this new perspective, this new perspective, this new visual truth.

This feeling is commonly called the "overview effect".

Only 558 people have ever been to space.

558 people looked down in awe and had the opportunity to marvel at our planet in an endless sea of ​​darkness.

But what if that number was much higher?

Three years ago, I embarked on my own mission. It was to see if we could bring this overwhelming sense of scale and beauty to more people using just one small computer in a tiny New York City apartment.

In 2013, he launched the Daily Overview.

Every day I use satellite imagery to create a vast bird's-eye view of the Earth.

Over 1,000 of these images have been created to date, and over 600,000 people view this perspective every day.

I create my images by handpicking photos from the vast archive of a satellite company called Digital Globe.

They operate a constellation of five satellites, each about the size of an ambulance, orbiting at 28,000 kilometers per hour, constantly taking pictures of the Earth.

So what does this mean?

Each of these satellites has a camera with a focal length of 16 meters. That's about 290x more than a DSLR camera with a standard 55mm lens.

So if you could put one of the satellites on the roof of this theater in Oxford, you'd be able to get a clear picture of the football on the stadium pitch in Amsterdam.

It is 450 kilometers away.

It's an incredibly powerful technology.

And at the start of this project, I decided to focus on where humans have impacted the planet with this amazing technology.

As a species, we dig and grind the earth for resources, produce energy, raise animals, grow food crops, build cities, travel, and produce waste.

And in the process of doing all these things, we shape landscapes, seascapes and cityscapes in an increasingly controlled and unpunished way.

With that in mind, I would like to share some of my overviews.

Here you can see cargo ships and oil tankers waiting outside the entrance to the port of Singapore.

The facility is the second busiest in the world by gross tonnage and accounts for one-fifth of the world's shipping containers and one-half of the world's annual crude oil supply.

If you look closely at this outline, you can see that there are many small specks.

These are actually cows on a feedlot in Summerfield, Texas, USA.

So when the cows reach a certain weight (about 300 kilograms) they are moved here and given special feed.

Over the next 3-4 months, the cow gains another 180 kg and is shipped to the slaughterhouse.

Perhaps you'll also like this glowing pool at the top.

Its color is obtained through a unique combination of fertilizers, chemicals, and specific types of algae that grow in stagnant water.

This is the Mount Whaleback iron ore mine in the Pilbara region of Western Australia, a beautiful yet terrifying scar carved into the surface of the earth.

Ninety-eight percent of the world's mined iron ore is used to make steel, which is used as a key component in buildings, cars and household appliances such as dishwashers and refrigerators.

This is a solar concentrator in Seville, Spain.

The facility has 2,650 mirrors arranged concentrically around a 140-meter-tall tower.

At the top of the tower is a capsule of molten salt, heated by rays of light reflected upward from the mirror below.

From there, the salt circulates to underground storage tanks, where steam is generated to spin turbines, producing enough electricity to power 70,000 homes and offsetting 30,000 tons of carbon dioxide emissions each year.

This overview shows deforestation in Santa Cruz, Bolivia, bordering on pristine rainforest.

Deforestation in the country is driven primarily by the expansion of mechanized agriculture and pastoral farming, which has led to the sacrificial destruction of rainforests in the country to meet the demands of its growing population and to feed them.

In the decade from 2000 to 2010 alone, the country is estimated to have lost 4.5 million acres of rainforest.

This is the Eixample district in Barcelona, ​​Spain.

An overview perspective is therefore very helpful in understanding how cities work and how smarter solutions for urban planning can be devised. With 4.9 billion people expected to live in cities worldwide by 2030, this will become increasingly important.

This area of ​​Barcelona features a strict grid pattern, apartments with shared courtyards, and octagonal crossings that allow for more daylight, better ventilation and additional off-street parking.

You can see that grid pattern here, but things are very different.

This is the Dadaab refugee camp in northern Kenya, the largest of its kind in the world.

To deal with the influx of refugees fleeing famine and conflict-ridden Somalia, the United Nations has built a grid area on the left, called the LFO Expansion, to accommodate the growing number of refugees who arrive and occupy these white dots. It's actually a tent, and the area gradually fills up over time.

So if you have any of these overviews, you'll be in time.

But with two overviews, you can tell a story about how time changes.

I call this feature of this project "Juxtapose". Here are some examples.

That is why the Dutch tulip fields bloom every April.

So take an image taken a few weeks ago in March and contrast it with an image taken a few weeks later.

You can see flowers blooming in this stunning colored waterfall.

It is estimated that 4.3 billion tulip bulbs are produced each year in the Netherlands.

In 2015, two dams at iron ore mines in southeastern Brazil burst, causing one of the worst environmental disasters in the country's history.

It is estimated that 62 million cubic meters of waste was released when the dam burst, destroying many villages in the process, including Bento Rodriguez, previously sighted here.

and after the flood.

The disaster ultimately killed 19 people.

With half a million people without access to clean drinking water for an extended period of time, the waste quickly flowed into the Doce River, which stretched 650 kilometers to the sea, killing untold amounts of plant and animal life in the process.

And finally, a story related to the Syria crisis, a conflict that has claimed hundreds of thousands of lives and displaced millions.

So this desert area was seen in Mafraq, Jordan when the conflict started in 2011, and compared to images taken just this year, 2017, shows the construction of the Zaatari refugee camp.

So, just as the Apollo 8 astronauts saw the Earth rise above the lunar landscape for the first time, you can't imagine what the place I just showed you would look like from space.

And while you may enjoy the beauty of an image, you may struggle with the fact that you still like it once you know what it actually looks like.

And that's the tension I want to create in my work. Because we believe that reflection and inner dialogue will lead to greater concern for our planet and greater awareness of what we are doing to it.

I think that a bird's-eye view of the earth is more important than ever.

Through the astounding technology of these high-flying cameras, we are able to see, monitor and expose the unprecedented impacts we are experiencing.

And if we, as scientists, engineers, policy makers, investors or artists, can take a broader view, embrace the truth of what is happening, and reflect on the long-term health of our planet, then we can create a better, safer and smarter future for our unique home.

thank you.

(applause)

Why do people intentionally destroy cultural heritage?

Do they believe that by doing so they are erasing our history?

Is it our cultural memory?

It is true that cultural heritage is being lost due to erosion and natural disasters, but it is difficult to avoid.

I'm here today to show you how you can use photography – your photography – to reclaim lost history using 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 fragments, some missing their heads and arms, but their clothing and poses still tell their stories.

For example, by wearing a knee-length tunic and bare feet, this would represent a priest.

However, a closer look at this particular piece reveals that this tunic is so elaborately decorated that many researchers believe that this is actually a statue of a king serving a religious role.

When the Mosul Cultural Museum in northern Iraq opened in 1952, this statue and others were installed there for preservation for future generations.

Although some statues and artefacts were moved to Baghdad after the US-led invasion of Iraq in 2003, the statue remained intact.

Then, in February last year, a video was released and went viral in an instant.

Some of you may remember seeing it.

Here's a short clip.

(video) (singing in Arabic) (song ends) It's not a very pleasant sight.

Notice anything familiar in the video?

there it is.

There, the very statue had fallen, shattered into pieces.

When Matthew Vincent and I saw this video, we were shocked.

We are archaeologists using innovative technologies for digital preservation, so an idea came to mind.

Perhaps images taken before these relics were destroyed could be crowdsourced to create a digital reconstruction.

If we can do that, we might be able to put them in a virtual museum and tell that story.

Two weeks after seeing this video, we started a project called Project Mosul.

Do you remember the picture of the statue I showed you earlier?

It was actually crowd-sourced restored before it was destroyed.

Now, many of you may be wondering how this works specifically.

The key to this technology is called photogrammetry, which was invented here in Germany.

A technology that creates a 3D model using 2D images of the same object taken from various angles.

This may sound like magic, but it's not.

Let me explain how it works.

Below are two crowdsourced images of the same statue.

What computers can do is be able to detect similar features between pictures, or similar features of objects.

Then you can start reconstructing the object in 3D, in this case using multiple photos.

In this case, the position of the camera when each image was taken is shown in blue.

Now, I admit that this is a partial rebuild, but why do you say it's partial?

Well, it was simply because the statue was placed against the wall.

I don't have any pictures taken from behind.

If you want to complete a full digital restoration of this statue, you'll need a good camera, tripod, and good lighting, which you can't do with crowdsourced images.

please think about it. How many people, when visiting a museum, take pictures of all the parts of the statue, even the back side?

Well, maybe some people find Michelangelo's David interesting -- (Laughter) But the problem is, if we can find more images of this object, we can improve the 3D model.

When we started the project, we started the project with the Mosul Museum in mind.

We got some images, some were interested, and thought we might be able to create a virtual reconstruction or two, but we had no idea it would cause something to grow so quickly.

Before we knew it, we realized it was right. This same idea can be applied to lost heritage anywhere.

So I decided to change the project name to "Rekrei".

Then, last summer, I got a call from The Economist's Media Lab.

They asked us, "Why don't we build a virtual museum to bring the restorations back inside and tell the story?"

Can you imagine us saying no?

of course not.

We said yes!

we were so excited.

This was exactly the original dream of the project.

And now, anyone can experience RecoVR Mosul on their phone with Google Cardboard, tablet or even YouTube 360.

This is a screenshot of the virtual museum.

And there it is...

Partial reconstruction of the statue and Lion of Mosul, the first reconstruction completed by our project.

The video doesn't explicitly show the Mosul lion being destroyed, but there are many other examples of large artifacts being destroyed that are too big to be stolen.

For example, the gates of Nimrud in northern Iraq.

This is a digital restoration from before, which is actually being destroyed.

Alternatively, the Lion of Al-Rat in Palmyra, Syria: formerly ...

from.

Virtual reconstruction is mainly the main focus of our projects, but some people are asking the question, "Can it be printed in 3D?"

We do not believe that 3D printing offers a simple solution to our lost heritage.

When an object is destroyed, it disappears.

But 3D printing offers additional capabilities to tell that story.

For example I can show you here...

There is a statue of Hatra and a lion of Mosul.

(Applause.) Thank you.

Now, if you look closely, some parts are printed in color, while others are printed in white or gray.

This piece was added simply to support the statue.

This works equally well if you visit a museum and find the statue in fragments. It's put together for people to see.

This is natural, right?

But we're more interested in what virtual reality has to offer for our lost legacy.

This is an example of one of the destroyed tower tombs in Palmyra.

Using Sketchfab's online viewer, I can show you that I have restored the three outer parts of the tomb, but I also have pictures of the interior, so I am starting to work on the restoration of the walls and ceiling.

There are also architectural drawings of this lost heritage, as archaeologists worked there for many years.

Unfortunately, we are not only losing our cultural heritage in conflict areas and wars, but also due to natural disasters.

Here is a 3D model of Kathmandu's Durbar Square before the earthquake last April...

And this is after.

You might think that we didn't create these 3D models using only photos of tourists, and you're right.

But what this shows is the ability of large public institutions and private industry to come together for initiatives like ours.

So one of the big challenges in our project is actually finding pictures that were taken before anything happened.

Well, the Internet is basically a database containing millions of images, right?

that's right.

So we started developing a tool that can extract images from websites like Flickr based on their location tags and complete the reconstruction.

Because not only do we lose our cultural heritage through natural disasters and wars, but we also lose it through something else.

Any ideas by looking at these two photos?

It may be a little hard to remember, but just a few weeks ago, this was an example of humanity being destroyed by human stupidity.

Because a Lisbon tourist wanted to climb this statue and take a selfie (laughs) and pulled it down together.

So we've already found a photo to complete the digital reconstruction of this one.

We must remember that the destruction of cultural heritage is not a recent phenomenon.

In the 16th century, European priests and explorers burned thousands of Mayan books in the Americas, but only a handful remain.

Fast forward to 2001 and the Taliban blew up the Bamiyan Buddha in Afghanistan.

As you know, cultural heritage is about the history of the world we share.

It helps us connect with our ancestors and their stories, but we are losing pieces of that every day in natural disasters and conflict zones.

Of course, the loss of human life is the most heartbreaking loss...

But cultural heritage provides a way to preserve people's memories for future generations.

We need your help to restore our lost history.

join us?

(applause)

My internship in Professor Ramsey's physics lab was great.

That is, until the professor accidentally steps into a time portal.

You only have a minute to jump through the portal and save him before it closes and he is left in history.

Once you go through this portal it will be closed and the only way to get back is to use the Chronojoule in the lab to create a new portal.

Activated nodules are connected to each other via red or blue tachyon tangles.

Activating more nodules will connect them to all other nodules in that area.

As soon as a red or blue triangle with a node at each point is created, the door of time opens back to the present.

However, the color of individual connections appears randomly and cannot be selected or changed.

And there is one more problem. Individual nodules create temporary instability, making portals more likely to collapse when passing through them.

So the less you bring, the better.

The portal will be closed soon.

What is the minimum number of nodules that must be brought in to reliably create a red or blue triangle and return to the present?

Pause here if you want to figure it out yourself.

Number of Answers: 3 Number of Answers: 2 Number of Answers: 1 This question is so rich in content that a whole branch of mathematics known as Ramsey Theory has evolved from it.

Ramsay's theory has some notorious challenges.

This is not easy, but it can be dealt with if you approach it systematically.

Imagine that you brought only 3 nodules.

Is that enough? No, you could have, say, 2 blue and 1 red connections and be stuck in the past forever.

Are four nodules enough? No, there are a lot of conventions here that don't show blue or red triangles.

How about 5?

I found that there is a connection placement that avoids creating blue or red triangles.

These small triangles are not counted as they do not have knots on each corner.

However, 6 nodules always create a blue or red triangle.

Here's how to prove it without classifying all possible cases.

Imagine activating the 6th node and how it connects to the other 5 nodes.

This can be done in one of six ways: five red connections, five blue connections, or a combination of red and blue.

Note that in all possibilities there are at least 3 connections of the same color from this nodule.

Let's look only at the opposite nodules of the same three-color connection.

If the connection is blue, a blue triangle will appear when a blue connection is added between these three.

So the only way you can have problems is if all the connections between them are red.

But these three red connections give us a red triangle.

Whatever happens, get a red or blue triangle to open the door.

On the other hand, if the original three connections were all red instead of blue, the same argument would work if all colors were reversed.

In other words, regardless of how the connections are colored, the six nodes always create red or blue triangles and doorways leading to the house.

There, grab the 6 nodules and jump over the portal.

You expected your internship to give you valuable life experience.

After all, it didn't take long.

Under the light of the moon, a group of young men sneak into the forest, where they ingest a mind-altering substance, switch to a romantic mood, and confront creatures from another dimension.

A Midsummer Night's Dream turns Shakespeare psychedelic, and the results are a delight both in theater and on paper.

Premiered in the 1590s, the play is one of Shakespeare's most hilarious works, full of trickery, madness and magic.

Set overnight, Midsummer moves forward at a cheerful pace.

The plot is built around a pattern of clashes and breakups, with characters from different worlds thrown together and torn apart.

Shakespeare uses these patterns to ridicule his characters' self-obsession and to question authority with a cartoonish twist.

The action is set in ancient Greece, but like many of Shakespeare's plays, it reflects his contemporary interests.

The magical environment of the forest at night disrupts the boundaries between separate groups, with bizarre consequences.

Here the bards play with the rigid hierarchy of the time, leading three different groups to upend their societies in a world beyond the control of mortals.

The play opens with young Hermia furious at her father Aegius and King Theseus of Athens for forbidding her to marry her lover Lysander.

Hermia isn't interested in her father choosing Demetrius for herself, but her best friend Helena definitely is.

Enraged by the Elders, Hermia and Lysander elope under cover of darkness, and Demetrius pursues them.

Things are further complicated by Helena's decision to follow them all into the woods in order to win Demetrius' heart.

At this point, the forest is starting to get crowded, and the lovers are sharing the same space with a group of "rude mechanics," a gang of drunken workers rehearsing a play led by the jovial Nick Bottom.

Humans unknowingly stepped into the world of fairies.

Despite their magical splendor, Oberon and Titania, king and queen of the fairies, have their own romantic problems.

Enraged at Titania's inability to control her, Oberon orders a pack of tricksters to squeeze the magic flower juice into her eyes.

When she wakes up, she will fall in love with the first thing she sees.

During the mission, Puck gleefully sprinkles juice into the eyes of the napping Demetrius and Lysander, transforming Bottom's head into that of a donkey.

Eyes flicker open and a night of chaos begins, including heartbreaks, identity mistakes, transformations, and more.

Of all the characters, Bottom probably does it best. When an enchanted Titania sets her sights on him, she calls upon the fairies to lavish them with wine and treasure, and to sweep the disfigured ass-man from her feet.

Elves, nod to him and be polite to him. "Magic is a catalyst for action, but the play reflects the real drama of what we do for love and the nonsensical actions of those under its spell.

The Moon overlooks action "like a silver bow," signifying erratic behavior, the dark side of love, and the seductive charm of a world where normal rules don't apply.

While the characters eventually come to their senses, A Midsummer Night's Dream raises the question of how much agency we have over our daily lives.

But it's not the more realistically portrayed lovers, rulers, and workers who have the final say, but the cheeky Puck questioning whether we can really trust what we're seeing. If our shadows are offended, think, but this and all is being mended: that you are only here sleeping while these visions appear.

In doing so, he evokes the effect of entering the magical world of the Great Theater, where he plays with the boundaries between fantasy and reality, dramatizing the possibility that life is but a dream.

Remember that little glow-in-the-dark star on your ceiling when you were a boy or girl?

It's light.

It's pure light.

At 5, I think I stared at them for too long.

it's very beautiful. No utility costs or maintenance required.

it's there.

So two years ago, we went back to the lab and enlisted the help of experts to make it more durable and luminous.

And at the same time, we received a request from this man, Van Gogh, the famous Van Gogh Foundation, to celebrate his 125th birthday in Holland.

And they came to me and asked, 'Would you like to create a place in Holland where he can feel alive again?

I liked the question so much that in a way I started to connect these two different worlds.

By the way, this is how my brain works.

(Laughter) I'd like to keep this going for an hour, okay -- (Laughter) And here's the result we made. The bike path is charged by the sun during the day and glows for up to 8 hours at night.

(Applause.) Thank you.

... alluding to an energy-friendly future, connecting the local land where Van Gogh literally walked and lived on it in 1883.

And you don't need a ticket, you can go there every night for free.

People experience the beauty of cycling through the starry nights while thinking about green energy and safety.

I want to create a place where people feel connected again.

And somehow it's been great to be able to work with industry and infrastructure companies to bring these projects to life.

So when Qatar's emirs started shouting "How much for 10 kilos?"

(Laughter) Yeah, really, that's a weird phone call you'd get.

But it's interesting that this isn't just a one-off, nice-to-have specialty.

This kind of creative thinking, this kind of connection, I think that's the new economy.

The World Economic Forum, a think tank in Geneva, interviewed many smart people around the world and asked them, "What are the top 10 skills you or I need to be successful?"

And what's interesting is what we find here. It's not about money or being really good at C++. However, I have to admit that these are great skills to have.

But look at the third creativity. The second is critical thinking. The first is complex problem solving. It's everything that robots and computers are really bad at.

This makes me very optimistic and very hopeful about the new world. As we live in this hyper-technological world, we will live in a world where human skills—the desire for empathy, the desire for curiosity, the desire for beauty—are valued again and creativity is our true capital.

And I don't know how that kind of creative process works for you, but in my head it always starts with the question, "Why?"

Why do jellyfish glow?

Or fireflies?

Or why accept pollution?

This is from my room in Beijing three years ago.

The image on the left is a sunny day, Saturday.

You can see cars, people and birds. Living in densely populated urban areas is no problem.

And what is the image on the right?

Contamination -- full layer.

I couldn't even see the other side of the city.

And this image made me really sad.

This is not the bright future we envision here at TED. This is fear.

Our life expectancy is shortened by 5-6 years. Children get lung cancer at the age of 6.

And in a strange and beautiful way, at that moment I was inspired by the Beijing smog.

Governments around the world are working to fight smog, but I wanted to build something now.

So we decided to build the world's largest smog vacuum cleaner.

It sucks in dirty air, purifies it and releases it.

And we built the first one.

That means it sucks up 30,000 cubic meters per hour, purifies it at the nano level, including PM2.5 and PM10 particles using very little electricity, and emits clean air, resulting in parks and playgrounds that are 55-75 percent cleaner than anywhere else in the city.

(Applause.) Yes!

(Applause.) And every month or so, it opens up like a spaceship — like Marilyn Monroe has a ship — well, you see.

anyway.

(Laughter) So this is...

This is what we are capturing.

This is the Beijing smog.

This is in our lungs now.

If you live next to a highway, that's the same as 17 cigarettes a day.

are we crazy?

When did we say yes to that?

We had a bucket of this disgusting material in the studio, and we were having a discussion on Monday morning and we were like, 'Damn, what am I going to do with this?

It's like, "Help me!"

And we realized, "No, no, no, no, no, waste should not exist."

Waste for one should be food for the other.

So here, let me show you that.

Don't put this in your coffee.

(Laughter) And then I realized that it's 42% carbon. Of course, carbon under high pressure...

diamond.

So I took inspiration from that and compressed it (crackling) for 30 minutes to make a smog free ring.

(Laughter.) And by sharing, yes, really!

By sharing the ring, you donate 1,000 cubic meters of clean air to the city where the tower is located.

(Applause) Here's one -- (Applause) It's a little floating cube.

I'll give you one.

I'm not going to propose, don't worry.

(laughs) Are you okay?

You can show them around.

And we did this online - Kickstarter campaign, crowdfunding.

And people started pre-ordering it, but more importantly, they started pre-paying for it.

Therefore, the funds obtained from jewelry helped to realize the construction of the first tower.

And it's powerful.

So the waste of an activator, that was the enabler.

Also feedback from the community. This is a wedding couple from India. So he proposed to her a smog-free ring as a sign of true beauty, a sign of hope.

And she said yes.

(Laughter) I love this image for many reasons.

(Laughter) And now this project is actually traveling all over China with the support of the Chinese central government.

So the first goal is to create a local clean air park, which is already working very well, 55, 75 percent cleaner.

And at the same time, we're working with NGOs, governors, students, and tech people to ask, "What do we need to do to make entire cities smog-free?"

It's about the dream of clean air.

We are holding a workshop. New ideas come to mind.

These are smog free bikes. i am dutch ――I have “bicycle DNA” somewhere in me.

And in the fight against cars, breathe in, purify and release polluted air to celebrate the bike.

So now we are working on a 'package deal', 'no smog tower, no smog ring'.

We visit mayors and governors around the world and say, 'We can guarantee a 20 to 40 percent reduction in pollution in the short term.

Please sign here now. ”

(Applause.) Thank you.

(Applause.) So the key is to combine new technology with creative thinking.

And when you start thinking about it, there are so many things you can imagine and so many things you can do.

We worked on developing a dance floor that generates electricity when you dance on it.

We designed for it -- 2008.

That means it moves 8-9mm and produces 25 watts.

The generated electricity is used for lighting and DJ booths.

So part of sustainability is not running less, but doing more.

But on a larger scale, my native Netherlands lives below sea level.

So thanks to these beauties, the 32-kilometer-long hand-built dykes built in 1932, we live with water, we fight with it, we try to find harmony, but sometimes we forget.

That's why we created "Waterlicht", a combination of LEDs and lenses. This shows how high the water level would be if we stopped, a global change.

If we all went home today and said, "Oh, whatever, someone else will do it," or we'd wait for the government or someone else.

You know, we're not going to do that.

It doesn't work.

Thousands of people gathered.

(Applause.) Thank you.

You're too kind, you're too kind That's not good for designers.

Thousands of people gathered for it, some of whom were actually terrified.

and they left. They experienced a flood in 1953.

And others were fascinated too.

Can we build a floating city?

Is it possible to generate electricity by changing the tide?

So I think it's very important to create experiences, collective experiences that make people feel connected to the vision and the future and bring out their potential.

At the same time, things like this are not easy.

It was a struggle.

And what I have experienced in my life is that many people want innovation and want the next new future.

But the moment you present a new idea, there is a strange tendency to start with two words for every new idea.

Which one?

(Audience guesses) No, not "How much?" It's more annoying.

(Laughter) What do you mean, folks?

Or are they really lucky people? That's great.

"Yes, but." Very good.

"Yes, but too expensive, too cheap, too fast, too slow, too beautiful, too ugly, it's impossible, it already exists."

We heard all about the same project in the same week.

And I was really, really annoyed.

I grew a little more gray hair and started wearing black like a real architect.

(Laughter) And then one morning I woke up and said, 'Darn, stop.

I have to do something about this.

You have to use it as a material, as a building block. ”

So we decided to make the famous 'Yes, but' chair a reality.

(Laughter) And this is an existing chair by Dutch design Friso Kramer.

But we've added a little 'update' to it, a little 'hack' so to speak.

I put a little speech recognition element here.

So the moment you sit in that chair and say those two horrible, creatively destructive, annoying little words -- (Laughter) cut short -- (Laughter), there's a pretty strong little jolt running through the back of your butt.

(Laughter) (Applause) And -- (Applause) It worked. Yes it works.

Some clients left us, they were really angry.

Fortunately, the good ones remain.

And, of course, we apply it to ourselves.

But ladies and gentlemen, fear not.

Let's be interested, right?

And, you know, walking around TED these days, listening to other speakers and feeling the energy of the crowd, I was reminded of the once famous words of Canadian author Marshall McLuhan. "There are no passengers on spaceship Earth.

We are all crew members. ”

And I think this is so beautiful.

This is so beautiful!

We are more than just consumers. we are the manufacturer. We make decisions, we invent new things, we create new dreams.

And I think there's still a whole new world to explore if we start practicing that kind of thinking more today.

got it. thank you.

(Applause.) Thank you.

(applause)

So in 2011, I changed my name so I could attend a far-right youth camp in Hungary.

I had a PhD studying the political socialization of young people, why young people develop political ideologies in a post-communist environment. And I saw that a lot of the young people I was talking to were joining the Far Right, and this came as a surprise to me.

So I wanted to attend this youth camp to better understand why people attend.

So a colleague signed me up, and my last name sounds a little Jewish.

So Erin changed to Irena and Saltman to Sós, which means "salty" in Hungarian.

And in Hungarian, the surname comes first, so my James Bond name ended up being "Solti Irena," which wasn't something I naturally chose for myself.

However, when I went to this camp, I was even more shocked that it was really fun.

They rarely talked about politics.

It consisted mainly of learning how to ride a horse, shoot a bow and arrow, live music at night, free food and alcohol, and practice shooting air guns using the faces of mainstream politicians as targets.

And while this actually seemed like a very friendly and inclusive group until you started talking and mentioning things to do with Roma residents, Jews and immigrants, then that discussion quickly turns very hate-based.

So that's what led me to my current job, begging the question, "Why do people join violent extremist movements, and how can we effectively counter these processes?"

In the aftermath of horrific atrocities and attacks, not only in places like Belgium and France, but around the world, it is sometimes easy to think:

There must be something wrong with their upbringing. ”

And what's really tragic is that in many cases profiles don't exist.

Many people come from different educational and socioeconomic backgrounds, men and women of all ages, some with families, some single.

why? What is this attraction?

This is what I would like to tell you, and how we can tackle this problem in our time.

We know through research that there are so many different factors that influence someone's process of radicalization, and we classify them as push factors and pull factors.

And these are pretty much the same, from far-right, neo-Nazi groups to Islamic extremists and terrorist groups.

And the push factor is basically what makes it easier to participate in the process of radicalization, a violent extremist group.

These can be many things, but broadly speaking they are feelings of alienation, isolation, questioning one's own identity, as well as feeling that one's inner group is under attack, that one's inner group is based on nationality, ethnicity or religion, or that the larger forces around them are not helping.

Now, the push factor alone does not make one a violent extremist. Because if that were the case, the same factors would go towards groups like the Roma population, and they are not violently mobilized groups.

Therefore, we should focus on the pull factor.

Do these violent extremist organizations offer something that others do not?

And in fact, this is usually a very positive thing, a very seemingly empowering thing: brotherhood and sisterhood, belonging. It not only gives someone a spiritual purpose, a divine purpose to build a utopian society if they can achieve their goals, but it also gives them a sense of empowerment and adventure.

When you look at foreign terrorist fighters, you see young men in the desert with their hair blowing in the wind, and women joining them to get married in the sunset.

It's very romantic and you can be a hero too.

For men and women alike, it is the propaganda they are given.

So what extremist groups are very good at is taking a very complex, confusing, nuanced world and simplifying it to black and white, good or bad.

And you become good and challenge evil.

So I would like to say a few words about ISIS, Daesh. Because, through many materials and their tactics, they have revolutionized the way we look at these processes.

They are very modern movements.

One of those aspects is the use of the internet and social media. We've all seen this in headline tweets and beheading videos.

But the internet isn't the only thing that radicalizes.

Internet is a tool.

Don't accidentally become a jihadist by buying shoes online.

But what the Internet really does is that it is a catalyst.

We offer tools, scale and agility like no other.

And with the advent of ISIS, the notion of the cloaked dark figure of the jihad has suddenly changed.

Suddenly we were in their kitchen.

We saw what they were having for dinner.

they were tweeting.

Foreign terrorist fighters were tweeting in their own languages.

The women who went there were talking about their wedding day and the birth of their children.

Suddenly, gaming culture was born and references were made to Grand Theft Auto.

So suddenly they felt at home.

they became human.

And the problem is, in an attempt to counter that, many governments and social media companies have tried to censor.

How do I get rid of terrorist content?

Then it became a cat-and-mouse game where accounts were deleted and then resurrected, and the arrogance that someone had a 25th account and it was spread everywhere.

But there are also dangerous trends. Violent extremists also know the rules and regulations of social media.

So a mundane conversation with a recruiter starts on a mainstream platform, and at the point when that conversation is about to become illegal, you end up jumping to a smaller, less regulated, more encrypted platform.

So suddenly I couldn't keep track of where that conversation went.

So this is a censorship issue, and that's why we need to develop alternatives to censorship.

It's also a game-changer because ISIS is doing state-building.

We don't just recruit combatants. I am trying to build a nation.

What this means is that suddenly the hiring model is much more extensive.

We're not just trying to get combatants. We need architects, engineers, accountants, hackers, and women now.

In fact, there has been a significant increase in female participation in the last 24 months, especially in the last 12 months.

In some countries, 1 in 4 of those seeking to join is a woman.

So this makes a big difference in who you are trying to counter this process with.

Well, not everything is hopeless and bleak.

In the rest, I would like to talk about some positive points and new innovations to prevent and counter violent extremism.

Prevention is very different from coping and can actually be thought of in medical terms.

In other words, preventive medicine is about how we can naturally withstand this process of radicalization, but not when someone is already showing symptoms and signs that belong to a violent extremist ideology.

So in prevention, we're talking more about reaching out to a very broad group of people and ideas for increasing their resilience.

On the other hand, it is very different when someone online is questioning certain things and starting to agree. It also makes a big difference when someone already has a swastika tattoo and is deeply embedded in the group.

how do i reach them?

So I'd like to take three examples from each of these levels to illustrate what the new ways of engaging with people are becoming.

One is "Extreme Dialogue", an educational program that we helped develop.

It originates from Canada and aims to use storytelling to create dialogue within the classroom, as violent extremism is very difficult to explain, especially to young people.

That is why we have a network of former extremists and survivors of extremism who can tell their stories through video and pose questions to the classroom to start conversations on this subject.

These two examples—Christianne, who lost her son to radicalization to ISIS and the death of her son in action—and Daniel, a former neo-Nazi who was an extremely violent neo-Nazi, pose questions about their lives, their circumstances, and their regrets, and force the classroom to engage in dialogue around them.

Now, when we look at that middle class, we really need a lot of civil society voices.

How do you interact with people who are searching for information online, playing with ideologies, or asking questions of identity?

How should we provide that alternative?

And that's when we bring together a large group of civil society voices with creatives, technologists, app developers, artists and comedians to create truly targeted content and actually get it out there online to a very strategic audience.

So one example might be creating a satirical video that makes fun of Islamophobia and targets online 15-20 year olds specifically in Manchester who are interested in white power music.

Using these marketing tools very specifically will let you know when someone is watching, watching and engaging with that content. It's not just the average person, it's not me or you, it's a very specific audience that we're trying to engage with.

Further downstream, we developed a pilot program called 'One to One'. There, he took former extremists to reach out directly to groups labeled as neo-fascists and Islamist extremists, sending direct messages to their inboxes via Facebook Messenger saying, "Hey, I know where you're going. I've been there."

If you want to talk, I'm here. ”

Well, we kind of expected death threats to come out of this kind of interaction.

It's a little alarming to hear a former neo-Nazi say, "Hey, how are you?"

But in reality, we found that about 60 percent of people reached out and responded, and about 60 percent of those remained engaged. This means they are conversing with the most hard-to-reach people about what they are going through, sowing seeds of doubt and providing alternative means to talk about these subjects. This is very important.

So what we're trying to do is really bring the unlikely sectors to the table.

There are great activists around the world, but often their messages aren't strategic or they don't really reach the audience they want to reach.

That's why we work with ex-extremist networks.

We work with youth networks around the world.

And we will work with them to bring the expertise of artists, creatives and marketing to the tech space so that we can actually work together to achieve stronger and more challenging extremism.

So what I'm trying to say is, if you're in the audience and you happen to be a graphic designer, a poet, a marketing professional, someone who works in PR, or a comedian, you may not think this is your field, but the reality is that the skills you have right now may be exactly what you need to effectively counter extremism.

thank you.

(applause)

My mother is a pediatrician and when I was little she told me the craziest stories that combined science with her wild imagination.

One of the stories she told was that when you eat too much salt, all the blood rushes up your body from your feet and out the top of your head, killing you instantly.

(laughter) She called it "hypertension."

(Laughter) This was my first sci-fi experience, and I loved it.

So when I started writing my own science fiction and fantasy, I was surprised that it was considered un-African.

So naturally I asked, "What is Africa?"

Here's what I know so far: Africa matters.

Africa is the future.

But it is.

And Africa is a serious place where only serious things happen.

So whenever I present my work somewhere, someone asks, "What's so important about it?"

How do we address the real problems of Africa such as war, poverty, devastation and AIDS?”

And it's not.

My work is about a Nairobi pop band who wants to go to space and a 7ft tall robot who falls in love.

It's not incredibly important.

It's just fun, intense and flirtatious, as flirtatious as bubblegum - "AfroBubbleGum".

So, I'm not saying agenda art isn't important. I am the president of a charity that has films and plays written about HIV, radicalization and female genital mutilation.

It is an essential and important art, but it is not the only art to emerge from the continent.

We must tell more vibrant stories.

The danger of a single story is still recognized.

And maybe it's because of the funding.

Much of the arts still depend on development assistance.

Art therefore becomes a tool on the agenda.

Or maybe it's because we've only seen one image of ourselves for so long and we just know how to create it.

Whatever the reason, we need a new way, and AfroBubbleGum is one approach.

It's an advocacy of art for art's sake.

It is neither policy-driven, nor agenda-driven, nor education-based, but an advocacy of art for the sole purpose of the imagination. That is Afro Bubblegum Art.

And we can't all be AfroBubbleGumists.

We have to decide if our work can be a poverty porn pitfall.

A test similar to the Bechdel test should be performed and questions such as: "Are two or more Africans in this fiction healthy?"

Are those same Africans financially stable and in no need of saving?

Are they having fun and enjoying life?

And if you can answer "yes" to more than one of these questions, then we are definitely AfroBubbleGumists.

(Laughter) (Applause) And fun is political. Because imagine there is an image of Africans who lived vibrant, loving, prosperous, beautiful and vibrant lives.

How do we feel about ourselves then?

Do you think we might possibly deserve more happiness?

Why don't we think about our common humanity through our shared joy?

Think about that when you create.

I think of and work to represent the people and places that have given me immeasurable joy.

That's why I'm writing stories about girls of the future who risk everything to save plants, race camels, or just dance to celebrate the fun. Because my world is mostly happy.

And I know that happiness is a privilege in today's divided world where hard work is required to keep hope alive.

But maybe if you join me in creating, curating and commissioning more Afrobubblegum art, it might give us hope for another worldview, a happy African perspective where children are strangely traumatized by their mother's dark sense of humor (laughs). But they also advocate a fun, violent, frivolous art in all the sleazy African names.

Because we are AfroBubbleGumists and there are more of us than you can imagine.

Thank you very much.

(applause)

One day, we may have robots, artificial intelligence, and AI that are as smart as humans.

How could that happen?

One way is to keep accumulating better software, as we've been doing for 70 years.

At past rates of progress, that may take centuries.

Some say it will happen much sooner as we discover new and powerful theories about intelligence.

i am skeptical.

But it's the third scenario that I'm going to talk about today.

The idea is to transplant software from the human brain.

Achieving this requires three technologies that perform well enough, none of which are available yet.

First, you need a large number of cheap and fast parallel computers.

Each individual human brain would then need to be scanned in detail, spatially and chemically, to see exactly which cells are where, what they are connected to, and what types of cells they are.

And third, we need a computer model of how the different types of brain cells work, receiving input signals, changing interval states, sending output signals, and so on.

If you have enough models of all kinds of brain cells and enough models of the brain, you can combine them to create enough models of the whole brain, and that model will have the same input-output behavior as the original model.

So if you speak to them, they may respond.

If you ask them to do something, they might do it.

And if we can do that, everything will change.

People have been talking about this idea under the name of "upload" for decades.

I will call them "ems".

When we talk about this, they say, "Is that possible?"

If you did, would you be conscious of it? Or is it just an empty machine?

If you made me, was it me or someone else? ”

These are all interesting questions so I'll ignore them...

(Laughter) Because there's an neglected question of what actually happens.

I am obsessed with this question.

I spent four years analyzing it using standard academic tools and trying to guess what might happen. And I want to tell you what I discovered here.

But be careful. I'm not providing inspiration, I'm providing analysis.

I think my job is to tell you what is most likely to happen if you make a minimal effort to avoid it.

If what I say here doesn't bother you in the slightest, you're simply not paying attention.

(Laughter) The first thing to say is that EMs spend most of their lives in virtual reality.

If you're using virtual reality:

And here's what you might see: With advanced hardware, you might hear the sun shining on the surface of the water, hear seagulls flying above, feel the wind on your cheeks, or smell the seawater.

If you spend a lot of time here, you might want a dashboard that lets you make calls, navigate to new virtual worlds, check bank accounts, and more.

Now, this is what you look like in virtual reality, but this is what em looks like in virtual reality.

It's computer hardware sitting in a server rack somewhere.

But you can still see and experience the same things.

However, there are some differences in ems.

First, you've always noticed that virtual reality isn't quite real, but virtual reality can make virtual reality feel like reality the way this room feels to you right now or has ever felt.

And ems also has a few more action possibilities.

For example, your mind always runs at the same speed, but em can add some computer hardware to make it run faster or slower. So if the world around you seems to be going too fast, simply increasing the speed of your mind will make the world around you seem to slow down.

Additionally, an em can create a copy of itself at that moment.

This copy remembers everything the same, and if you start at the same speed and watch at the same speed, you might even need to be told, "You are a copy."

And em can make copies of archives, and with enough archives, ems are in principle immortal, but they really aren't.

And an em can move his brain, the computer that represents his brain, from one physical location to another.

Ems can actually travel around the world at the speed of light, and moving to a new location will allow them to interact more quickly with ems near that new location.

So far, we have talked about what can be done with ems.

What does ems choose to do?

To understand it, we need to understand three important facts.

First, an em by definition does what the human it emulates would do in the same situation.

Their lives and actions are therefore very human.

They differ mainly because they live in different worlds.

Second, EMS needs real resources to survive.

You need food and shelter or you will die.

Also ems needs computer hardware, energy and cooling otherwise it cannot exist.

For each subjective moment an em experiences, someone (usually an em) has to work to pay for it.

Third, ems is poor.

(Laughter) The em population can grow faster than the em economy, which means wages will fall to em subsistence levels.

This means ems should be up most of the time.

So what EMS usually sees is a desk, beautiful and luxurious. they work most of the time.

Now, you might think the subsistence wage scenario is exotic and strange, but in reality this is a common case in human history, and we know what humans do in this situation, because all wild animals have done most of what they've ever lived.

Humans basically do what they need to do to survive. This is why I have so much to say about this world.

When creatures are as rich as you are, you have to know a lot about what they want in order to understand what they are doing.

It turns out that when creatures are poor, they mostly do what they need to do to survive.

Now, we've been talking about the em world from an em perspective, but let's step back and look at their world as a whole.

First, the EM world is growing much faster than ours, roughly 100 times faster.

In other words, the amount of change that we experience in a century or two, they will experience in a year or two.

And I wouldn't predict this era far beyond that. Because by then something will probably happen, I don't know.

Second, common emulation runs even faster, roughly 1,000 times faster than humans.

So for them, in the next year or two, they will be experiencing thousands of years. And to them, the world around them is actually changing more slowly than the world seems to be changing to you.

Third, EMS is concentrated in a few very dense cities.

This is not only how they see themselves in virtual reality, but also how they are actually physically packed.

So at EM speed, physical movement feels so slow that most EM cities are self-sufficient, most wars are cyber wars, and most of the rest of the earth away from EM cities is left to humans. Because em isn't really that interesting.

Speaking of humans, that's what you wanted to hear.

Humans must immediately and permanently retire.

They just can't compete.

Now, humans start owning all the capital in this world.

The economy grows very quickly and so does their wealth.

Humans are collectively enriched.

As you may know, most humans today don't really own much other than the ability to work, so between now and then they will need to acquire sufficient assets, insurance, or sharing arrangements or they may starve.

We strongly recommend avoiding this result.

(Laughter) Now, you may wonder why M's allows humans to exist.

Why not kill them and take their stuff?

But today we are surrounded by unproductive retirees, and we are not killing them and taking their fortunes.

(Laughter.) For one thing, it disrupts the institutions we share with them.

Other groups will wonder who will be next. Therefore, it is quite possible that humanity can retire peacefully in the age of em.

Their age only lasts a year or two and they should be more concerned about not knowing what will happen next.

Em looks a lot like a human, but not a typical human.

A typical em is a copy of hundreds of the most productive humans.

So, in fact, they are as elite as the typical billionaire, Nobel Prize winner, Olympic gold medalist, or head of state compared to the typical human being.

Em may look at humans with nostalgia and gratitude, but not so much respect. Come to think of it, that's how you feel about your ancestors.

We know a lot about how humans differ when it comes to productivity.

These can be used to predict ems features. For example, ems tend to be smart, honest, hardworking, married, religious, and middle-aged.

These are the features of EMS.

The world of Em also contains enormous diversity.

Not only does it continue most of the kinds of diversity that humans do, including various industries and occupations, but it also has many new kinds of diversity. One of the most important is thought speed.

Ems can go from human speed, up to a million times human speed, down to a billion times human speed.

Faster ems tend to have higher stat markers.

They embody more wealth. they win the argument.

They sit in the best places.

Slow EMS are mostly retirees and kind of ghosts in our literature.

Ghosts are all around us. If you pay the price, you can interact with ghosts.

But they don't know much, they can't wield much influence, and they're stuck in the past, so what's the point?

(Laughter) Em's life structure is also more diverse.

this is your life It's really simple where you start and where you end.

This is the life of em , splitting several short-term copies each day to do short-term tasks and then quit.

We'll talk more about these short-term versions later, but they're much more efficient because you don't have to rest for the next day.

This em is more opportunistic.

As demand increases, they make more copies of themselves.

They don't know what direction the future will take.

This is the em designer, who devises a large system and recursively divides it into elaborating copies, allowing the em to implement larger, more coherent designs.

This is a copycat plumber who remembers spending his spare time working only two hours a day for the past 20 years.

But what really happened was that each day they had 1,000 copies, each doing two hours of plumbing, and only one of them was left the next day.

Objectively, they work more than 99% of the time.

Subjectively, they remember their leisure life.

(Laughter) This is you too. you start and you end

If you took drugs at the start of a party and don't remember the party after that day, this could be you.

It is said that some people do this.

Towards the end of the party, do you say to yourself, "I'm about to die, this sucks."

That person tomorrow won't be me because they won't remember my actions. ”

Or you could say, "I'll continue tomorrow. I just don't remember what I did."

This is an em that splits and terminates short-term copies to perform short-term tasks.

They have the same two attitude possibilities.

They can say, "I'm a new short-lived creature with a short lifespan. I hate this."

Or, "I am part of a larger creature and I will not remember this part."

I expect them to take the latter attitude. Not because it's philosophically correct, but because it helps them get along.

Today, if the president said we had to invade Iraq, you might say, "Why?"

And they say "state secret". I don't know if you can trust it, but with EMS, a copy of the president and a copy of yours will go in the safe, and when you explain all the secret reasons, a little bit will come out of your copy to see if you're convinced.

Now you know you have a good reason.

We know that you are eager to appreciate this world.

You are keen to decide whether you like it or not.

But think about it. Thousands of years ago your ancestors would have loved or hated your world based on the few pieces of information they first heard. Because your world is really strange.

So before you make judgments about a strange future world, you should learn really well about it, maybe read a whole book about it, and work to change it if you don't like it.

thank you.

(applause)

Like it or not, radical transparency and algorithmic decision-making are fast approaching and will change your life.

That's because it's now easier to take an algorithm and put it into a computer, collect everywhere any data you leave yourself, know who you are, and tell the computer to interact with you in a better way than most people.

Well, it can be scary.

I've been doing this for a long time and found it to be great.

My goal was to create meaningful work and meaningful relationships with the people I work with, but I've learned that without radical transparency and algorithmic decision-making, that's not possible.

I would like to explain why it is and how it works.

And I warn you that some of what I'm about to tell you is probably a little shocking.

Ever since I was a child, I have been bad at memorizing.

And I didn't like following directions, and I was bad at following directions.

But I loved figuring out how things worked for me.

At 12, I hated school but fell in love with trading in the market.

I was a caddy at the time and was making about $5 per bag.

And I took the caddy's money and invested it in the stock market.

It was simply because the stock market was hot at the time.

And the first company I bought was called Northeast Airlines.

Northeast Airlines was the only company I heard of selling for less than $5 a share.

(Laughter) And I figured if I bought more stock, I would make more money if the stock price went up.

I mean, it was a stupid strategy, right?

But I got lucky and tripled my money.

That company was on the verge of bankruptcy, but another company bought it and my money tripled.

And I was hooked.

And I thought, "This game is easy."

As time went on, I realized that this game is by no means easy.

To be an effective investor, you must bet against consensus and bet right.

And betting right against consensus is not easy.

Consensus is built into the price, so you have to bet correctly against consensus.

And to be an entrepreneur, to be successful as an entrepreneur, you have to bet against consensus and be right.

I had to be an entrepreneur and an investor, and I made a lot of painful mistakes along the way.

So I made a lot of painful mistakes, but over time my attitude towards those mistakes started to change.

I have come to think of them like puzzles.

If you can solve the puzzle, it will give you a gem.

And the mystery was: What would I do differently in the future to avoid making such a painful mistake?

And these valuable principles were the ones I would write down to remember for future use.

And I wrote them down so clearly that I was then finally able to discover them and embed them into the algorithm.

And those algorithms would go into the computer, and the computer would make the decisions with me. And in parallel, you'll be making these decisions.

And then I was able to see how those decisions compare to my own decisions and found those decisions to be much better.

That's because computers can make decisions faster, process more information, and make more decisions without getting emotional.

It radically improved my decision making.

Eight years after starting Bridgewater, I made my biggest mistake, my biggest mistake.

In the late 1970s, at the age of 34, I was lending far more money to emerging economies than American banks could afford to repay them, and I was calculating that we would be in the greatest debt crisis since the Great Depression.

An economic crisis ensued, and the stock market plunged into a massive bear market.

It was a controversial view at the time.

People thought it was kind of a crazy point of view.

But in August 1982 Mexico defaulted and many other countries followed suit.

And we were hit by the biggest debt crisis since the Great Depression.

And because he expected it, he was asked to testify before Congress and to appear on the then-current program Wall Street Week.

I've prepared a clip here to show you a little bit of what it's like. You can see me there.

(Video) Mr. Chairman, Mr. Mitchell, I am very pleased and honored to be here before you to examine what is going on in our economy.

The economy is currently flat and on the brink of bankruptcy.

Martin Zweig: You were recently quoted in an article.

You said, "I know how the market works, so I can say this with absolute certainty."

Ray Dalio: Looking at the liquidity base of companies and the world as a whole, I can say with absolute certainty that levels of liquidity have fallen to such an extent that we cannot return to the days of stagflation. ”

When I look at it now, I think, "What an arrogant bastard!"

(Laughter) I was so arrogant and so wrong.

So while the debt crisis hit, the stock market and economy went up instead of down. And I lost a lot of money for myself and my clients, had to close most of my business, and had to lay off almost everyone.

And they were like a big family and it broke my heart.

And I lost so much money that I had to borrow $4,000 from my father to pay for my family's living expenses.

It was one of the most painful experiences of my life...

But it turned out to be one of the greatest experiences of my life. Because it changed my attitude towards decision making.

Instead of thinking, "I'm right," I started asking myself, "How do I know I'm right?"

I have acquired the humility I need to balance my boldness.

I wanted to find the smartest people who disagreed with me and try to understand their point of view or stress test my point of view.

I wanted to create an idea meritocracy.

In other words, not a dictatorship where I lead and others follow, nor a democracy where everyone's opinion is respected equally, but an idea meritocracy where the best ideas win out.

And I realized that this requires radical truthfulness and radical transparency.

What I mean by radical truth and radical transparency is that people need to say what they really believe and see everything.

And we literally record almost every conversation and show everyone the whole thing. Because if you don't, you can't really realize the meritocracy of ideas.

To stay true to the idea meritocracy, we let people say what they want.

As an example, this was an email from Jim Haskell, who works at my company, and was viewable by everyone in the company.

"Ray, your performance at today's conference deserves a 'D-'...

I was totally unprepared, so it shouldn't have been so confusing. ”

Isn't that great?

(Laughs) That's amazing.

First of all, I needed that kind of feedback, so that's great.

I need that kind of feedback.

This is great because our relationship would not have been the same without Jim and people like Jim voicing their opinions.

And there would be no meritocracy of the idea if we hadn't put it out there for everyone to see.

That's how we've operated for the past 25 years.

We operate with this radical transparency, gleaning these principles primarily from our mistakes and embedding those principles into our algorithms.

And that's what those algorithms provide. We follow algorithms in parallel with our thoughts.

That's how we run our investment business, and that's how we've approached talent management.

To give you a glimpse of what this looks like, I'd like to invite you to a conference to show you our tool called "Dot Collector" to help with this.

A week after the US election, our research team held a meeting to discuss what Trump's inauguration means for the US economy.

Naturally, there were different opinions about how we approached this issue and discussion.

A "dot collector" collects these views.

It contains a list of dozens of attributes, so whenever someone thinks something about someone else's thoughts, they can easily convey their assessment. They simply look at attributes and provide a rating from 1 to 10.

For example, when the conference started, a researcher named Jenn rated me a 3 for lacking a balance between openness and positivity. In other words, it's bad (laughs).

As the conference progressed, Jen's ratings for people tallied up as follows:

Others at the venue have a different opinion.

It's normal.

Different people always have different opinions.

And no one knows who is right.

Let's see what people thought about my actions.

Some thought my grades were good, others thought I was bad.

Each of these views can be used to explore the thinking behind the numbers.

Here's what Jen and Larry said.

Remember that everyone can express their thoughts, including critical thinking, regardless of their position within the company.

Jen, who's 24 and fresh out of college, can tell me, being the CEO, that I'm very up on things.

This tool helps people express their opinions and at the same time separate themselves from their own and see things from a higher level.

The perspective shifts when Jen and the others shift their attention from entering their opinion to looking down at the entire screen.

They see their opinion as just one of many, and naturally begin to ask themselves, "How do I know my opinion is correct?"

This change in perspective is similar to going from seeing in one dimension to seeing in multiple dimensions.

The conversation then moves from arguing over opinions to finding objective criteria for judging which ones are best.

A computer is watching behind the "dot collector".

Watch what all these people are thinking and correlate it with their way of thinking.

And based on that, it will give advice back to each member.

It then extracts the data from all the meetings to create a stippled picture of who people are and how they think.

And it's done algorithmically.

Knowing what people are like can help you better fit them to work.

For example, a creative thinker who is untrustworthy may be matched with someone who is trustworthy but not creative.

Knowing what people are like can also help you decide what responsibilities to give them, and even compare decisions based on people's merits.

We call it their reliability.

Here's an example of a poll we did if the majority of people felt one way...

But when people weighed their opinions based on their strengths, the answers were quite different.

This process allows us to make decisions based on algorithms that consider people's trustworthiness, rather than based on democracy or dictatorship.

Yes we really do this.

(Laughter.) We are doing this to remove what I believe is one of the greatest tragedies of mankind: people arrogantly and naively holding wrong opinions in their hearts and acting on them, and not letting them out for a stress test.

And it's a tragedy.

And we do so because it elevates us beyond our own opinions, makes us see things through everyone's eyes, makes us see things collectively.

Collective decision-making, when done well, is far superior to individual decision-making.

That was the secret of our success.

That's why we give our clients more returns than any existing hedge fund and have been profitable in 23 of the last 26 years.

So what's wrong with being fundamentally true and fundamentally transparent with each other?

It is often said that it is mentally difficult.

Critics say it's a recipe for harsh working conditions.

Neuroscientists say it has to do with how the brain is prewired.

There is a part of our brain that wants to know our mistakes and look at our weaknesses so that we can do better.

It is said to be the prefrontal cortex.

And there's a part of our brain that sees all of this as an attack.

It is said to be the amygdala.

In other words, there are two you inside you. There is an emotional you and an intellectual you. And they are often at odds and often work against you.

It is our experience that can win this battle.

We win as a group.

It usually takes about 18 months to realize that most people prefer operating in this way of radical transparency to operating in a more opaque environment.

There is no politics there, no brutality, everything hidden behind the scenes, idea meritocracy where people can speak up.

It was great.

It has allowed us to work more efficiently and has resulted in more effective relationships.

But that doesn't apply to everyone.

It turns out that 25 or 30 percent of the population is not for it.

By the way, when I say radical transparency, I don't mean being transparent about everything.

In other words, you don't have to tell anyone that you're growing bald or that your baby is ugly.

I mean, I'm just talking about the important -- (laughter) talking about the important.

So -- (laughter) So, when you leave this room, watch yourself conversing with other people.

Imagine if you knew what they were really thinking, and what they really were like...

And imagine if they know what you're really thinking and what it's really like.

It would certainly keep things much more organized and make collaboration more effective.

I think it will improve your relationship.

Now imagine that you could use an algorithm to collect all the information and help you make decisions in an idea-meritocratic way.

This kind of radical transparency is upon you and it will affect your life.

And in my opinion it will be great.

So I hope it's as great for you as it's been great for me.

thank you very much.

(applause)

You probably know the story of two salesmen who went to Africa in the 1900s.

They sent a telegram to Manchester to see if there was an opportunity to sell the shoes.

And one of them wrote, "It's a hopeless situation. Don't. They don't wear shoes."

And another wrote, "Great opportunity. They don't have shoes yet."

(Laughter) Now, there is a similar situation in the world of classical music, where some people think that classical music is dying.

And some of us think you haven't seen anything yet.

Rather than looking at statistics and trends and talking about orchestras closing down and record companies going bankrupt, I thought we should do an experiment tonight.

Actually, we know the result, so it's not an experiment.

(laughs) But it's kind of an experiment.

Now, before we begin -- (laughter) before we begin, we need to do two things.

One, I want you to remember what a 7-year-old sounds like when he plays the piano.

Maybe you have this child in your house too.

he makes a sound like this

(music) (music ends) Some people seem to recognize this kid.

Now, if he practices for a year and takes lessons, he'll be eight and sound like this.

(music) (music ends) He'll be practicing and taking lessons for another year - he's 9 years old.

(music) (music ends) Then he practiced and took lessons for another year - now he's ten.

(music) (music ends) At that point they usually give up.

(Laughter) (Applause) Well, if I had waited another year, I would have heard this.

(music) (music ends) Well, what happened was probably not what you thought. I mean, he was suddenly passionate, enthusiastic, involved, got a new teacher, hit puberty, whatever.

What actually happened was that the impulse was reduced.

For the first time he was playing with impulse on every note.

(music) And second, add an impulse to each note.

(music) You can see it in my head.

(Laughter) The nine-year-old added an impulse every four notes.

(music) 10 years for every 8 notes.

(music) And eleven years old, one impulse for the whole phrase.

(Music) I don't know how I got into this position.

(Laughter) I didn't say, "I'm going to move my shoulders, I'm going to move my body."

No, I call it a one-sided performance because the music pushed me away.

(music) Maybe another butt.

(music) You know, when I was working with a young pianist, a gentleman was watching a presentation I was giving.

He was the president of a company in Ohio.

I was working with this young pianist and said,

You should be a one-sided player. ”

And suddenly the music started playing. took off.

The audience gasped at the difference.

Then I received a letter from the gentleman.

“I was very impressed,” he said.

I went back and turned the whole company into a one-ass company. ”

(Laughter) Now, another thing I wanted to do is talk about you.

I think there are 1,600 people.

My estimate is that there are probably 45 people who have a real passion for classical music.

you love classical music FM is always on the classic dial.

I load up my car with CDs and go to the symphony orchestra, and the kids are playing instruments.

That's the first group, and it's pretty small.

Then there is another large group.

People who don't like classical music.

(laughter) I come home after a long day, have a glass of wine and put my feet up.

It doesn't hurt to have a little Vivaldi running in the background.

That's the second group.

Then there's the third group, people who don't listen to classical music at all.

You might hear what sounds like secondhand smoke at the airport...

(Laughter) -- And as you walk into the hall, you can probably hear a little "Aida" marching.

That's probably the largest group.

And we have a very small group.

It's amazing how many people think they're tone deaf.

In fact, I often hear that my husband is tone deaf.

(Laughter) In fact, you can't be tone deaf.

No one is tone deaf.

If you're tone deaf, you can't change gears on a stick shift car.

I couldn't tell the difference between someone from Texas and someone from Rome.

If your mother calls you distressingly, just call her and say hello, and you'll know not only who she is, but how she's feeling.

you have great ears Everyone has great ears.

That's why there are no tone deaf people.

But I tell you

It doesn't work for me to continue this when there is such a huge divide between people who understand, love and are passionate about classical music and people who have nothing to do with it.

Tone deaf people are no longer here.

So until everyone in this room, downstairs, in Aspen, and everyone else watching loves and understands classical music, I'm not going to keep talking.

That's what we're trying to do.

Now, if you look at my face, you'll see there's not the slightest doubt in my mind that this will work, right?

One of the hallmarks of a leader is that he never doubts for a moment the ability of the people he leads to achieve their dreams.

Reverend Martin Luther King said, "I have a dream.

Of course I don't know if they will work on it. ”

(Laughter) Okay. So I'll bring Chopin's piece.

A beautiful prelude by Chopin.

(music) You probably know what happened here?

When I started, you thought, "What a beautiful sound."

(music) "I don't think we have to go to the same place next summer vacation."

(laughs) That's interesting.

It's interesting to have such thoughts floating around in your head.

And of course -- (Applause) Of course, if the piece is long and has a long day, you might actually drift away.

Then your bros will dig your ribs and say, "Wake up! This is culture!" And it makes me feel even worse.

(Laughter) But have you ever wondered if classical music makes you sleepy and it's our fault, not yours?

Has anyone ever thought, "Why does he use so many impulses?" while I was playing?

If I had thought this through in my head, you definitely would have.

(music) (music ends) And for the rest of your life, every time you listen to classical music, you'll always know if that urge is being heard.

Let's see what's really going on here.

The next sound is C.

And it does, right?

(laughs) Composers know that.

If you want sad music, just play those two notes.

(Music) But basically it's B with 4 SADs.

(Laughs) Well, I'll be Mr. A.

And to Mr. F.

If you have B, A, G, F, what do you expect next?

(music) It could have been a fluke.

(music) Oh, the TED choir.

(Laughter.) And you realize no one is tone deaf, right?

no one is.

Every village in Bangladesh, every settlement in China, everybody knows da da da da da.

We all know who expects E.

Chopin did not want to reach the E note there.

Like Hamlet, it will end. do you remember?

In Act I, Scene III, he learns that his uncle killed his father.

He approaches his uncle and nearly continues to kill him.

And he backed away, approached him again, and almost killed him.

The critics sitting in the back row have to form their own opinions, so they say, "Hamlet is a procrastinator."

Alternatively, it is said that "Hamlet has an Oedipus complex."

No, otherwise the play will be over, you fool.

(Laughter) That's why Shakespeare put everything in Hamlet: the mad Ophelia, the play within the play, Yorick's skull, and the gravedigger.

It's to delay--you can kill him by act five.

He's just about to reach E and says, "Oops, I'd better go back and try again."

Now he is excited.

(music) It's excitement, don't worry.

Well, he gets to a sharp F and eventually drops to an E, but that's the wrong chord. Because the code he's looking for is this code. Instead, he does...

I tell my students, "If you have deceptive rhythms, raise your eyebrows and everyone will notice."

(Laughter) (Applause) Yes.

He reaches E, but it's the wrong code.

That chord doesn't work.

Now he tries E again, but it doesn't work.

And finally...

There was a gentleman in the front row who said "hmm".

(Laughter.) It's the same gesture he makes when he comes home after a long day, hangs up the car keys and says, "Oh, I'm home."

In other words, this is a work that goes from away to home.

I'm going to play it to the end, and you're going to follow along.

B, C, B, C, B, C, B -- to A, to G, to F.

Go almost to E, otherwise play ends.

He went back to B and was very excited.

Go to F sharp. go to E.

And finally go to E, that's home.

And what you will see is one butt playing.

(Laughter) Because for me, in the middle of connecting B to E, you have to stop thinking about all the notes and start thinking about the long, long line from B to E.

As you know, we were just in South Africa, and you can't go there without thinking about Mandela, who was imprisoned for 27 years.

what was he thinking? lunch?

No, he was thinking about South Africa and his vision of humanity.

This is about vision. This is about long lines.

Like a bird that flies over a field and doesn't care about the fence below, okay?

So let's follow the line from B to E.

Before we finish playing this song, I have one last request.

Do you remember someone you worshiped who is no longer there?

Beloved grandma, sweetheart, someone in your life that you love dearly, but that person is no longer with you.

As soon as you have that person in your mind, follow the line from B to E and hear everything Chopin had to say.

(music) (music ends) (applause) Now you might be wondering -- (applause) (applause ends) You might be wondering why I'm clapping.

I did this with about 70 7th graders and 12 year olds at a school in Boston.

I did the same as you and explained everything.

I was clapping. they were clapping.

And one of them said, "Because we have heard."

(Laughter) Think about it. 1,600 busy people get involved in various things, hear, understand and are moved by Chopin's music.

Well, it's something.

I'm sure everyone followed, understood, and was moved by it.

But let me tell you what happened to me ten years ago, during the Irish Revolution, when I was working with Catholic and Protestant children on conflict resolution.

And I did this with them. It was a dangerous act because they were street children.

And one of them came to me the next morning and said, "I've never listened to classical music in my life, but when you played that shopping song..."

(Laughter) He said, "Last year my brother was shot and I didn't cry for him.

But last night when you played that song, he was the one I was thinking about.

And I felt tears running down my face.

And I was very happy to be able to cry for my brother. ”

So I decided in that moment that classical music is for everyone.

Well, how would you walk -- my profession, a music expert, doesn't think so.

It is said that 3% of the population likes classical music.

If only we could raise it to 4%, our problem would be solved.

(laughs) How do you walk? how do you speak? What do you think?

If you thought, "3% of the population likes classical music, I wish we could make it 4%",

how do you walk and talk? What do you think?

If you thought, "Everybody loves classical music, they just haven't realized it yet."

See, these are completely different worlds.

Well I had a great experience.

I am 45 years old, and I have been conducting for 20 years, and suddenly I realize.

The orchestra conductor does not make a sound.

There's a picture of me on the front of the CD -- (Laughter) but the conductor doesn't make any noise.

He relies on his power to make other people powerful.

And that changed everything for me.

People in my orchestra said, "Ben, what happened?" That's what happened.

And of course I wanted to know if I was.

look in their eyes

You can light up a village with this man's eyes.

(laughs) Yes. So if your eyes shine, you know you're doing it.

If your eyes don't shine, you can ask questions.

And here's the question: Who am I without my players' eyes shining?

We can do that with our children too.

Who am I when my children's eyes don't shine?

It's a whole different world.

Well, we are all about to return to the outside world after a week in this magical mountain.

And as we return to the world, he says it's appropriate to ask the question, who are we?

And you know, I have a definition of success.

For me it's very simple.

It's not about wealth, fame or power.

Now, one last thought: What we say—the words that come out of our mouth—really make a difference.

I learned this from a woman who was one of the few survivors of Auschwitz.

and ...

And she told me, "We were on the train to Auschwitz, and I looked down and saw my brother's shoes were missing.

I said, 'Why are you so stupid that you can't keep your belongings organized for good? ’ It’s the way a sister says to her brother.

Unfortunately, she never saw him again, so those were the last words she said to him.

And when she came out of Auschwitz, she took an oath.

she said to me

She said, "I came out of Auschwitz and entered life and made a vow.

And that vow was, "Even if I say it last, I will never say what I can't bear."

Well, can it be done? no.

And we get ourselves wrong and we get others wrong.

(Applause) Bright eyes.

(Applause.) Thank you, thank you.

I used to think that the purpose of life was to pursue happiness.

Everyone says the road to happiness is success, so I searched for the ideal job, the perfect boyfriend, and the beautiful apartment.

But instead of feeling fulfilled, I was feeling anxious and adrift.

And I wasn't alone. My friends were also struggling with this issue.

In the end, I decided to go to graduate school in positive psychology to learn what it means to be truly happy.

But what I found there changed my life.

Data showed that the pursuit of happiness can make people unhappy.

And what really struck me was that suicide rates are on the rise around the world, and recently in the United States the suicide rate reached a 30-year high.

More and more people are feeling hopeless, depressed and lonely, even though their lives are objectively improving by almost any standard imaginable.

There is a feeling of emptiness that eats people, but you don't have to be clinically depressed to feel it.

I think that sooner or later everyone will wonder, "Is this all?"

And according to research, it's not the lack of happiness that predicts this despair.

It is lacking something else, lacking meaning in life.

But it raised some questions for me.

Is there more to life than happiness?

And what is the difference between being happy and having meaning in life?

Many psychologists define happiness as a state of comfort and peace, that is, feeling good in the moment.

But the meaning is much deeper.

Famous psychologist Martin Seligman said that meaning comes from belonging and serving something beyond yourself and developing the best in you.

Our culture is obsessed with happiness, but we've come to find that the quest for meaning is a more fulfilling path.

And studies show that people with meaning in their lives are more resilient, perform better in school and work, and even live longer.

So I thought: How can each of us live a more meaningful life?

To find out, I spent five years interviewing hundreds of people and reading thousands of pages of psychology, neuroscience, and philosophy.

Putting all this together, I found what I call the four pillars of a meaningful life.

And each of us can create a meaningful life by building some or all of these pillars into our lives.

The first pillar belongs.

A sense of belonging comes from being in relationships where you are valued for who you really are and others are valued as well.

But some groups and relationships offer cheap forms of belonging. You are judged by what you believe and who you hate, not by who you are.

True belonging comes from love.

It lives in the moment between individuals, and it's a choice - you can choose to develop a sense of belonging with others.

Here is an example.

My friend Jonathan buys a newspaper from the same street vendor in New York every morning.

However, they do more than just make deals.

They speak slowly and take a moment to treat each other like humans.

But one time Jonathan didn't have the proper change, and Bender said, "Don't worry."

However, Jonathan insisted on paying, so he went to the store and bought something that didn't require making change.

But when he gave Bender the money, Bender backed off.

he was injured

He was trying to do something kind, but Jonathan refused him.

I think we all reject people in such small ways without realizing it.

that's right.

I pass by people I know, but barely recognize them.

I check my cell phone when someone is talking to me.

Such behavior undermines the dignity of others.

They make us feel invisible and worthless.

But when you lead with love, you create a bond that lifts each other up.

For many people, belonging is the most important source of meaning, the bond with family and friends.

For others, the key to meaning is the second pillar, purpose.

Now, finding your purpose is not the same as finding a job that makes you happy.

Purpose is what you give rather than what you want.

A hospital caretaker told me that her aim was to cure the sick.

Many parents say, "My purpose is to raise my children."

The key to achieving your purpose is to use your strengths to serve others.

Of course, for many of us it happens through work.

That's how we contribute and feel needed.

However, it also means problems such as loss of motivation to work, unemployment and low labor force participation rate. These are not just economic issues, they are also existential issues.

People struggle when they don't have something worth doing.

Of course, you don't have to find purpose in your work, but purpose gives you something to live for and some "why" to keep you going.

The third pillar of meaning is also transcending oneself, but in a very different way.

Transcendental states are those rare moments when you feel detached from the hustle and bustle of everyday life, less self-conscious, and connected to a higher reality.

For one I spoke to, transcendence came from looking at art.

For others it was the church.

For me, I am a writer and that happens through writing.

Sometimes I get so zoned I lose all sense of time and place.

These transcendental experiences can transform you.

In one study, students were asked to look up at a 60-meter-tall eucalyptus tree for one minute.

After that, however, they became less self-centered and more generous when given the opportunity to help someone.

Belonging, Purpose, Beyond.

Now, it turns out that the fourth pillar of meaning tends to surprise people.

The fourth pillar is storytelling, the story you tell about yourself.

Creating a story out of the events in your life brings clarity.

It helps you understand how you got to be who you are.

But we don't always realize that we are the authors of the story and that we can change the way the story is told.

Your life is more than just a list of events.

You can edit, interpret, and retell your own stories, even when constrained by facts.

I met a young man named Emeka who had paralysis while playing football.

After his injury, Emeka said to himself: "My life was great playing football, but now look at me."

People who tell stories like, "My life was good, now it's bad." -- Tend to be anxious or depressed.

And it was Emeka for a while.

However, over time, he began to weave another story.

His new story reads, "Before my injury, my life had no purpose.

I partied a lot and was a pretty selfish guy.

But my injury made me realize that I could be a better person. ”

That compilation of his story changed Emeka's life.

After telling himself a new story, Emeka began tutoring the children and discovering what his purpose was. It is to serve others.

Psychologist Dan McAdams calls it the "Salvation Story," in which evil is redeemed by good.

He found that people who lead meaningful lives tend to tell stories about their lives defined by salvation, growth, and love.

But what changes people's stories?

Some people get help from a therapist, but they can also do it on their own, simply by reflecting thoughtfully on their life and how their defining experiences shaped them, what they lost and what they gained.

That's what Emeka did.

You can't change your story overnight. It can take years and be painful.

After all, we all suffer and struggle.

But embracing those painful memories can lead to new insights, wisdom, and finding the good that supports you.

Belonging, purpose, transcendence, and storytelling are the four pillars of meaning.

In my youth, I was lucky enough to be surrounded by all the pillars.

My parents ran a Sufi meeting house in their home in Montreal.

Sufism is a spiritual practice associated with the Whirling Order and the poet Rumi.

Twice a week the Sufis would come to our home to meditate, drink Persian tea and share stories.

Their practice also included serving all of creation through small acts of love, which meant being kind even when people were wronging you.

But it gave them the purpose of keeping their egos in check.

In the end, I left home to go to university, but the lack of a foundation for Sufism in my daily life left me feeling unsettled.

And I started looking for what makes life worth living.

That's what led me on this journey.

Looking back now, I realize that there was a real and meaningful culture in Sufi homes.

Pillars are a part of architecture, and they allow us to live more deeply.

Of course, the same principles apply to other strong communities, good and bad.

Gangs, cults: These are cultures that use pillars and are meant to give people something to live for and something to die for.

But that's why we, as a society, must offer a better alternative.

We need to build these pillars in our families and organizations so that people can be their best selves.

But living a meaningful life takes effort.

It's an ongoing process.

We are constantly creating our own lives and adding our own stories as each day passes.

And sometimes it goes off the rails.

Whenever something like that happens to me, I am reminded of an intense experience with my father.

A few months after I graduated from college, my father suffered a severe heart attack that should have ended his life.

He survived, but when I asked him what he was thinking about in the face of death, he said that all he could think about was that he had to live for his brother and me, and that gave him the will to fight for his life.

When we were anesthetized for emergency surgery, instead of counting backwards from ten, he repeated our names like a spell.

He wanted our names to be the last words he spoke on earth when he died.

My father is a carpenter and a Sufi.

It's a modest life, but it's a good life.

Lying there facing death, he had a reason to live. That's love.

His sense of belonging to his family, his purpose as a father, his transcendental meditations, and the repetition of our names are the reasons he survived, he says.

That's the story he told himself.

That is the power of meaning.

Happiness comes and goes.

But even when life is really good and things are really bad, having meaning helps you hold on to something.

thank you.

(applause)

[Yoruba: Free-born son of Ijeb Ode] [of the true Ogbogbo clan] [whose wealth and resources surpass anything Europe had ever had] [whose altar is filled with gold] This chant is called Oriki.

My grandmother used to sing to me when I was a child in Nigeria.

Oriki is a song in praise of the Yoruba people, which speaks specifically of a treasure that the West does not possess.

Mama, or as I call my grandmother, told me many stories about Yoruba mythology.

The Yoruba are an ethnic group from southwestern Nigeria and I have always been fascinated by these stories.

I was always intrigued.

And Yoruba culture has inspired my art since childhood.

As you know, African art isn't just available at New York's Harlem Market.

Every artist has a name, every artist has a story.

This is my story.

You see, Mama had tattoos on her arms and legs.

As a child, I thought she was born with beautiful black lines and fine symbols.

And she said they are actually Yoruba mythological symbols.

I had no idea how this would affect today's artists.

As you know, when I was little, I saw art everywhere.

I remember the house on Stadium Road in Ilorin where we lived.

We had marble floors, and I thought that if you looked closely at the marble floors, there were all kinds of patterns and designs on them, and everyone could see them.

So I call my brother and say, "Ikeoru, come see this marble design, look at this pattern, look at this mask."

And he said to me, "Raoul, I can't see anything."

So I used ink to trace what I saw on the floor.

And when my mother found out, she was very angry.

(laughs) But that didn't stop me.

I switched from ink to chalk because I often got into trouble with teachers and parents.

I remember my mother saying, "Raoul, we are Christians."

Why not paint like everyone else?

Would you like to paint a landscape, or a chair or furniture, or even Jesus? ”

If I had the chance, I could have painted an entire house, but I knew that being an artist as an adult was not an option, so I went to law school to be the person my parents wanted me to be.

Of course my father is there. He was very proud that day.

This is what my notebook looked like in law school.

(laughs) Of course, there were times when I missed classes, and I made up excuses for not going to class.

But when I started working for the Human Rights Commission as a human rights lawyer, my mind was elsewhere.

I faced a very harsh reality.

I have worked with children who are forced to choose between an education and actual marriage.

I was so annoyed to see the injustice around me, but my only outlet was art, so I started painting.

This work is called "Dream Landscape".

As we zoom in on this piece, we see girls and accidental births, and the fact that our future depends on where we are born.

Now, next we see a man and a man holding hands, and a woman and a woman holding hands.

As you know, homosexuality is criminalized in Nigeria.

In fact, it can last as long as 14 years.

I like to tell stories through art.

I like starting conversations through art.

In this picture, we see a map of Africa, we see a question, we see you crying, we see Africa with a syringe plugged in, and we see it depleted of natural resources.

So I asked myself, where is it going?

Who benefits from all this?

In my art, patterns, masks, stories, and the use of serifs all come from the Yoruba culture.

So in 2013, I made a big bet.

I quit my job and moved to New York City to practice art full time.

Of course, my parents were like, "Oh, (it's just a stage.) He'll be back."

But life as an artist in New York was not easy. I was penniless, had no money, and had no gallery agent or representative, so no gallery would show my work.

So I thought I had to survive.

So I started painting on clothes for a living.

I started painting on shoes.

I started customizing things for people.

And soon I realized its power. Because people were so proud to wear their stories.

So I started painting on everything.

I painted guitars, started painting murals, painted whatever I could get my hands on, and it all became my canvas.

One day, I was scrolling through my Instagram feed and saw this photo.

it was rain. She stood in front of my art and took a picture, and the moment I saw the picture, in that moment something happened.

I could literally see my artwork going in and out of her and that's how I started painting on the human body.

When I was a kid, I used to see art on marble floors and walls, but now I see art on people's faces and bodies.

I remember my grandmother, but I realized that most of my creative instincts were actually based on my childhood memories and the art left on my grandmother's skin.

Now, looking at the people I've painted, I wonder what would happen if we all walked around like the gods and goddesses of Yoruba mythology.

And boom, that's how Ori's sacred art was born.

Ori in Yoruba mythology means soul, essence and instinct.

And I realized that only with Ori can you actually move mountains.

So there is something very direct about painting on the human body.

It's like art in motion.

It's like a 3D experience.

So one day I was in Brooklyn doing a regular job when I got the following email: "Hello, I'm a big fan of your work.

Would you like to draw a picture for my music video?

Signed, Beyoncé. ”

I think Beyoncé sent me an email.

I thought, "What?"

(laughter) I, what, how does she know me? I thought.

I thought this was impossible. Of course I thought it was a scam.

The Nigerian in me was like, oh.

(Laughter) (Applause) But incredibly, it's real, it's true, and things happened really fast.

Beyoncé wanted to pay homage to New Orleans, but my art reminded her of her Creole origins.

So when "lemonade" became a boom, everything went from zero to 100 really quickly.

People introduced me in magazines and interviews.

People stopped me on the street.

People knew my name, like--and sometimes I had to step back and just relax and take it all in.

As you know, as artists, we work hard all our lives to get our art recognized, and I feel blessed in that.

But the lawyer in me still exists, so I use my art to fight for what I believe in.

My Yoruba culture will always be there.

Tonight I would like to share with you some of my art movements.

Please, welcome to the stage with me.

(music) (applause) Alright, this is Geri, this is Rain.

They were the first two people I ever drew in my life, and I spent a whole day drawing them.

Tonight they represent my hopes and fears.

Now I forgot my fear.

I put my hopes forward.

what is my hope?

I want people to know that Africa is not a huge continent without all the same names.

I also want you to know that there are over 350 ethnic groups and languages ​​in Nigeria and I am just one artist.

(Applause.) I also hope that we can change the way people talk about African art, both on the continent and here. We also want you to know that African art is not just something you buy at Harlem Market in New York, every piece of art you see has a story and every artist has a name.

thank you very much.

(applause)

I am Chetan Bhatt. When I say my name, people often ask me, "Where are you from?"

And I usually say London.

(Laughter) But of course I know what they really want, so I say, "Well, my grandparents and mother were born in India, my father and I were born in Kenya and raised in London.

And they put me on the map.

“Oh, you are Kenyan Asian. I have worked with one of them.”

(laughter) And from my name, they probably think I'm a Hindu.

And this fixes me for them.

But what about the Christians, Muslims and atheists I grew up with?

Or socialists, liberals, and sometimes even conservatives?

(Laughter.) Sure, there are all sorts of women and men living in my working-class neighborhoods, vegetable vendors, factory workers, cooks, auto mechanics, but in a way that's very important, they're also part of me, they're here with me.

Perhaps that is why I find it difficult to answer questions about identity and origin.

And it's not just teens refusing to be labeled.

It's about our own identities, the identities of the people we raise our hands to, the people we support, the people we fight, the people we love, the people we hate.

And it's about how we understand ourselves and others.

And it's about the identities we just assume we have without thinking about it.

But our response to questions of identity and origin is of great social and political importance.

We see wars and identity rage going on around us.

We see violent religious conflicts, state conflicts, and ethnic conflicts.

And often that conflict is based on old narratives of identity, belonging, and origin.

And these identities are typically based on myths about their ancient, primitive origins.

And they can be about Adam and Eve, or about caste or gender superiority, or about supposed racial vitality, or about past glories of empires or civilizations, or about imaginary God-given lands.

Today, origin stories and identity myths are said to give us comfort.

What's wrong with that?

They give us a sense of belonging.

Identity is your cultural garment, it makes you feel warm and fluffy inside.

But is it really so?

Do we really need an identity myth to make us feel safe?

Because I see religious, national and ethnic conflicts as increasing human misery.

Do you dare to reject all the origin myths that claim you?

What if we negated all primordial origin myths and cultivated a deeper sense of humanity that held the responsibility to humanity as a whole rather than to specific tribes, a radically different view of humanity that mystified and exposed how the origin myths conceal world power, greedy exploitation, poverty, global oppression of women and girls, and of course massive and accelerating inequality?

Now, origin myths are closely related to tradition, and the word tradition refers to something old, enduring, almost natural. And people assume that tradition is just history, just the past condensed into a nice story.

But let's not confuse tradition with history.

The two are often bitterly opposed.

Origin stories are usually recently crafted fictions about ancient attribution, and they are ridiculous given the complexity of humanity and our world, which is broadly interconnected, even if so unequal.

And today, we see a rapid shift in claims to traditions that claim to be ancient.

I grew up on the streets near Wembley in the 1970s with an Asian, British, Caribbean and Irish family. The Neo-Nazi National Front was massive at the time, frequent with regular marches and attacks on us, permanent threats, and often violence against us in the streets and at home by neo-Nazis and other racists.

And in the middle of the general election, I remember getting a flyer in my mailbox with a picture of a National Front candidate in our area.

And the picture was the house next door to us.

He threatened to shoot me once when I was playing in the garden when I was a kid. On weekends, shaved-headed National Front activists would come to his house and show up with placards yelling for us to go home.

But now he is one of my mother's best friends.

He was a very nice, gentle and kind man who at some point during his political journey out of fascism embraced a broader view of humanity.

There was a Hindu family that we got to know well. And we must understand that life in our city was a bit like the stage of an Asian melodrama.

Everyone knew about other people's businesses, even if they didn't want anyone to know.

But in this family there was a quiet boy who went to the same school as me, and I didn't hear much about him except that he had gone to India after I finished school.

Around 2000, I remember seeing this short book.

The book was written by a British al-Qaeda sympathizer and was unusual in that the author called for attacks on Britain.

This was 1999, so 9/11 and the invasion of Iraq were still some time away, and he helped reconnaissance bomb targets in New York.

He taught others how to make the Dirty Bomb used on the London Underground, and planned a massive bombing in a London shopping area.

He is a very dangerous security prisoner in the UK and one of the most important al Qaeda figures to be arrested in the UK.

The author of the book was the same quiet boy who went to my school.

So a Hindu boy from England became an al-Qaeda fighter, a most wanted international terrorist, a rejection of what people called his Hindu, Indian, and British identity, and he became someone else.

He refused to be himself.

he recreated himself. This kind of travel is very common for young men and women involved with Al Qaeda, Islamic State and other cross-border armed groups.

The Al-Qaeda media spokesperson was a white American of mixed Jewish-Catholic background, neither he nor the boy at my school was of Muslim background.

There is no point in asking them where they come from.

A more important question is where will they go?

And I would also like to tell you that the exact same journey takes place for young men and women who are raised in Muslim households.

Most of those who join al Qaeda and other Salafi jihadist groups from Europe, Asia, North America and often the Middle East are essentially people who have rejected their backgrounds entirely in order to become new people.

They spend an enormous amount of time attacking their parents' backgrounds as blasphemous, impure, blasphemous, the wrong type of Islam, and instead their vision is a fanciful look at the cosmic apocalypse.

It is a reborn vision.

Throw away your past, society, family and friends as they are all impure.

Instead, be someone else, who you really are, who you really are.

Now, this is not a return to the past.

It is to use the forgery of the past to imagine a terrifying future starting today in year zero.

This is why more than 80% of Al Qaeda and Islamic State victims are Muslim.

The first action when the Salafi jihadist group takes over the area is to destroy existing Islamic facilities such as mosques, shrines, preachers and practices.

Their main purpose is to control and punish people internally, regulating where women go, how they dress, their family relationships, their beliefs, and even the smallest details of how they pray.

And while the news gives the impression that they are targeting us in the West, in reality they are primarily targeting people of other Muslim backgrounds.

In their view, no other Muslim can be pure enough, so common beliefs and practices that have existed for centuries are attacked as impure by Birmingham and London teenagers who know nothing of the history they gladly erase.

Here, their claim to tradition is at odds with history, yet they are very sure of their own purity and the impureness of others.

Purity, certainty, a return to authentic traditions, these quests can lead to fatal visions of perfect societies and perfect people.

This is what India's leading Hindu fundamentalist organization looks like today at a mass rally.

Perhaps it reminds us of Italy or Germany in the 1930s. The roots of this movement are certainly in fascism.

He was a member of the same Hindu fundamentalist movement that shot Mahatma Gandhi.

Hindu fundamentalists now consider the killer a national hero and want to erect statues of him across India.

They have been involved in large-scale mob violence against minorities for decades.

They ban books, art and movies.

They attack romantic couples on Valentine's Day and Christians on Christmas.

They don't like others talking critically about, using images of, satirizing, or cartooning what they consider to be ancient cultures.

But those who make the strongest possible claims to the ancient, timeless Hindu religion, oddly enough, like the violent Salafi jihadists in black uniforms and balaclavas claiming the primordial religion, wear brown pants and white shirts and claim themselves to be a primitive Aryan race.

These people have created a pure and primal identity, full of convictions and convictions.

Fundamentalists see religion and culture as their only possessions, possessions.

But religion and culture are processes.

they are not objects. They are impermanent. It's messed up. they are impure.

Look at any religion and you'll find controversies and debates going on all the time.

Therefore, any form of criticism of religion must be part of the broader humanity to which we aspire.

I respect your right to have and express your religion, culture and opinions, but not necessarily the content.

You may like some.

For example, I may like the look of an old church, but this is not the same.

Likewise, I have the right to say what you may find offensive, but you do not have the right not to be offended.

In a real democracy, we are always offended because people always express different opinions.

They also change their views, so their views are not permanent.

You cannot modify someone's political views based on their religious, national or cultural background.

Now, these points about religious purity also apply to nationalism and racism.

I've always been proud of my national and ethnic identity, proud of being born from a warm and cozy womb, and confused about believing I'm superior by accidental birth.

These people have a very firm idea of ​​what belongs and what doesn't belong within their own imagined cozy national culture.

I'll do a little caricature here, but only a little bit.

Imagine Little Englanders or supporters of nationalist parties in England. He sits at home watching Fox News, the Australian-owned American cable channel, on South Korean television, buying with a Spanish credit card and being repaid monthly by a British luxury bank headquartered in Hong Kong.

He supports the English football team, which is owned by a Russian.

His favorite brand of fish and chips is owned by a Swedish venture capitalist firm.

The church he sometimes attends has its beliefs set at meetings in Ghana.

His Union Jack pants were made in India.

(Laughter) And -- (Applause) Thank you.

And it is washed regularly by a very nice Polish lady.

(Laughter) There is no such thing as pure ethnicity or national culture, and the ethical choices we have today are much broader than being forced to choose between a vision of racist rights, a vision of religious rights, a vision of a dismal culture.

Now, culture is not only language, food, clothing, and music, but also male-female relationships, ancient monuments, and scriptural heritage.

But culture can also be what is determined to be culture by those with political interests who push culture into prison form.

The claim to greater political identity is the elite's bid for power.

They are not the answer to social, economic and political injustice.

They often overshadow them.

And what will happen to the multitudes of people around the world who cannot point to the monuments of the past, who have no sacred documents, who cannot remember the past glories of civilizations and empires?

Are these people not part of humanity?

How are you listening to this now?

What will happen to you and your identity? Because you stitch together your experiences and thoughts to become a continuous person moving forward over time.

And this is you when you say "I", "I am", or "I".

But this includes all of your hopes and dreams, all of who you could have been, and all the other people and things in the biography of who you are.

They and others are part of you and move forward with you.

If there is a true self, it is a complex, messy, uncertain self, and that's a good thing.

Why not evaluate those impurities and uncertainties?

Perhaps clinging to a pure identity is a sign of immaturity, and ethnic, nationalistic, and religious traditions are not good for you.

Why are you not skeptical of all primordial origin claims made on your behalf?

Why shouldn't you reject the identity myths imposed on you by politicians and community leaders, so-called community leaders, who want you to belong?

Without the need for origin stories or fixed identities, we can challenge each other and our own futures to think creatively.

And here culture always takes care of itself.

I'm not worried about culture.

Culture is a creative and dynamic process, not imposed laws and boundaries.

This was Abu Al-Walid Muhammad ibn Ahmad ibn Rushud, a 12th century Córdoba Muslim high judge and thinker whose writings were considered highly blasphemous, heretical and evil.

Long after his death, the followers of his work were ruthlessly hunted down, exiled and murdered over the centuries by the most powerful religious groups of the Middle Ages.

That institution was the Roman Catholic Church.

why?

For Ibn Rushud said that what is true in religion may contradict what human reason judges to be true on earth, but the latter is still true.

There are two different worlds of truth, one based on our reason and evidence, and the divine world, where the state, political power, and social law are in the realm of reason.

Religious life is another realm.

they must be kept separate.

Social and political life should be governed by reason, not by religion.

And you can see why the church was outraged by his writings. In fact, so did some Muslims during his lifetime. Because he gives us a strong statement about the kind of secularism that is common in Europe today.

Well, history plays us many tricks.

It undermines our fixed truths and what we believe in our culture and theirs.

Ibn Rushud, who happens to be a Muslim, is considered one of the key influencers in the introduction and spread of secularism in Europe.

So could you make his story your own against all sorts of religious, nationalist and racial purists? Not because he happened to be Muslim, not because he happened to be Arab, but because he was a man with such brilliant ideas that shook his world and ours.

thank you.

(applause)

This is my favorite place on earth, Salar de Uyuni, Bolivia.

And when it's covered with a thin layer of water, it reflects clouds.

Some days I feel like I'm floating in the clouds.

But there are days when the horizon disappears. No more up or down.

You feel immersed in something bigger.

One night, when I woke up from a dream, I saw stars reflected on the surface of the water.

And it wasn't a dream.

It was like walking through the stars.

Every step I took, the stars echoed under my feet.

I felt like I was floating in space among the clouds of the galaxy.

But it's not just galactic clouds that float out there today, it's also plastic clouds.

These are the footprints we leave on the earth.

These are signs of an era when some human actions have a global impact on ecosystems.

This era is called the Anthropocene.

There is also another kind of toxic cloud that floats in the air. It's like the clouds that form from carbon dioxide emissions or the burning of fossil fuels (oil, carbon, gas) that pollute our dreams when we see them.

I don't know about you, but I've always dreamed of floating between the clouds.

Perhaps today we can imagine together about other kinds of clouds, clouds with which we can coexist.

If you're wondering about that photo, let me explain. It looks like a collage or photomontage. something strange.

No; it's a reality.

But sometimes I ask myself. What is reality?

Alexander Kluge said, "Man is not interested in reality.

It can't be. It is part of human nature.

they have desires.

These desires are the complete opposite of any form of reality.

They prefer to lie rather than move away from their desires. ”

But how can we learn to float in the clouds?

As an artist, I thought I could start building a flying museum.

You're probably asking, "Do you use plastic bags?"

In 2007, we started collecting used, not new, plastic bags with communities of people around the world.

Then I washed them, cut them, glued them together, and started painting them to make a huge canvas.

We have created a collection of paintings, personal stories and friendships.

Connect, bend, and fold to create air-filled spaces.

As the sun rises over the horizon, the museum rises into the sky.

That's why we call it "Aerosolar Museum".

And from this simple idea we learned how to stay aloft in a radically new way without using any kind of fuel.

The temperature difference between indoors and outdoors wakes us up.

By doing so, we will not use fossil fuels, helium or hydrogen. No solar panels, batteries or motors.

We have found a simple, clean, and universally accessible way to elevate yourself.

I remember being at NASA in 2009 with 120 engineers.

When you get on an airplane, you know the control panel is huge.

And what we're doing is really complicated, and when I started coming in with the plastic bags, I said, 'But we have another way...'.

People had a hard time understanding the concept.

Seeing the power of this idea, we began a new era. It is the time to leave the violence of the Anthropocene and make way for a new epoch we call the “Aeroocene,” an epoch of ecological consciousness, in which we learn to float together, live together in the air, and make ethical commitments to the atmosphere and the earth.

So today I brought this backpack.

let's see ...

OK. This is a balloon, also called sculpture.

And if it's sunny tomorrow, you can go out and take a plane -- but no, the weather in Vancouver isn't -- (laughter) not so good...

Very advantageous.

So what other features are there?

It has a sensor that draws a picture in the air when it moves.

It also has other sensors.

I always think you have to feel it first and then you can measure it. To measure ozone and carbon dioxide, you need to hear atmospheric sounds, climate sounds, and hot wind sounds.

Because there are other species in the air, we are working with different communities around the world to develop these sensors to reconnect with the climate, temperature and environment. We are not alone in our journey into the atmosphere.

The air is filled with clouds of life.

We live at the bottom of an ocean of air.

And this same sculpture, exactly this sculpture in my hand, flew from Germany to Poland for a distance of 375 miles without fuel, a distance of 12 hours.

However, it was not free to cross the border.

The journey was much more complicated than we imagined. Airspace, like land, is regulated and militarized.

Harnessing the wind, the heat of the sun, and the radiant energy of the earth to fly is complex and beautiful.

But getting permission to fly through the airspace of different countries that use the wind to fly over them is more complicated.

At the Paris climate conference COP21, we unveiled a spherical sculpture that takes us around the world.

But how do you use the wind to fly and reach your destination?

We worked with MIT to develop a program that predicts how you can navigate a windy highway.

For example, if you have to return to Berlin from Vancouver, the first thing you need to do is select your altitude.

Different altitudes have different directions and different speeds.

The red line is tomorrow and the orange line is the day after tomorrow.

That's it.

As you can see, the best time to fly back to Berlin is after 6 days. Therefore, it currently uses only the wind to move.

And it can be carried 165 miles from the center of Berlin without burning a single drop of fuel, just by the wind current.

Therefore, we thought that this trajectory drawn with the wind could be a signature declaring "independence from the day of fossil fuels."

More and more people are experiencing the air in other ways.

You all know Earth Day well.

We believe Aviation Day should also be celebrated. This is the pact we make with the planet and our ethical commitment to the atmosphere.

But keep thinking, keep dreaming.

We learned that the bigger the sculpture, the more weight it can lift.

Remember that it rises only by hot air heated by the sun.

Using this approach, you can learn how to build a garden in the air.

Will we ever be able to live in a garden the size of the Earth?

Can we live in an ecosystem floating between the clouds?

Answering these questions is more than just a technical challenge. It is a way of revisiting freedom of movement between nations and overcoming the political, social, cultural and military limitations of modern societies.

Because, at the end of the day, the air belongs to everyone and is not the answer to any government.

(Applause.) And, as I said earlier, it's the power that allows our imagination to create these places.

This is an installation I did at the Metropolitan Museum of Art in New York.

It begs the question, what would these transnational spaces look like?

And once we live in those spaces, we have to learn how to move within them, how to walk in the clouds. Every movement there affects the movement of others. Space expands with weight and proximity of people...

or contract.

We are floating 72 feet in the air.

If two or more people get too close, the furthest person will be affected and everyone will fall in the same place.

These are fragile ecosystems.

And between these spheres a web is built that binds us together.

There are moments when we have to face the void and fear can paralyze us.

One of the most beautiful things about this exhibit is the sense of solidarity that arises when confronted with these new 'aerographs'.

Finally, let me just say one last thing.

On July 16, 1945, the first atomic bomb was detonated in White Sands, New Mexico.

As a result of this explosion, a cloud of radioactive particles spread across the globe, marking the beginning of the Anthropocene.

Seventy years later, on November 8, 2015, another event occurred at the same location.

For the first time in history, it did not burn any fossil fuels and used only the sun to lift a man into the air.

As the sun rose over the horizon, we rose quietly and slowly, without a bang.

We felt as if gravity had been reversed. It was pulling us out into space, not into the center of the earth.

If Neil Armstrong said when he walked on the moon, "That's one small step for man, one giant leap for mankind," perhaps the question we should be asking ourselves is what step do we need to take today?

In the Avocene era, our steps are much smaller, but fundamentally different. They are steps that started with a bag of air and wishes, but that can lead us to independence from fossil fuels and the opportunity to celebrate Aviation Day. Until we learn to walk in this planet's atmosphere, it is a procedure that leaves no footprints on other planets.

It's a small landscape and a small step, but I hope we can overcome it together.

And I'm sure this step will take us farther than the moon and learn to float on our feet.

thank you.

(applause)

We are all activists now.

(Applause.) Thank you.

I will stop here.

(Laughter) Families fighting to keep funding for public schools, tens of thousands of people who attended Occupy Wall Street and marched with Black Lives Matter to protest police brutality against African Americans, families who attended pro-life and pro-choice rallies, those of us who fear our friends and neighbors will be deported or added to lists for being Muslim, those who advocate for gun rights and gun control, and what joined women's organizations. million people. In January of this year, demonstration marches were held across the country.

(Applause.) We're all activists now, which means we're all worried about something from surveillance.

Surveillance means that the government collects and uses personal and sensitive data about us.

And surveillance is essential for law enforcement and national security.

But the history of surveillance also includes surveillance abuses in which this sensitive information has been used against people because of their race, national origin, sexual orientation, and especially activism and political beliefs.

About 53 years ago, Dr. Martin Luther King, Jr. delivered a speech at the Mall in Washington, "I have a dream."

And today, my daughters are studying this speech in 3rd grade because the ideas behind this speech of racial equality and tolerance are so uncontroversial.

But at the time, Dr. King was highly controversial.

Legendary and infamous FBI Director J. Edgar Hoover believed, or wanted to believe, that the civil rights movement was a Soviet communist plot aimed at destabilizing the US government.

So Hoover had agents plant bugs in Dr. King's hotel room, which picked up conversations of civil rights leaders talking about civil rights strategy and tactics.

They also picked up sounds of Dr. King having sex with a woman who was not his wife, and J. Edgar Hoover saw an opportunity here to discredit and undermine the civil rights movement.

The FBI sent a package of these recordings to Dr. King, along with a handwritten note, and years later a draft of the memo was found in the FBI archives, and the letter read, "You are not a clergyman, so you know it.

King, just like other crooks, your end is near. ”

The letter even appeared to encourage Dr. King to commit suicide, saying, "King, there is only one thing left for you to do.

You know what it is.

Better take action before you expose your dirty, deviant, and deceitful self to the public. ”

But the point is that Dr. King was not an anomaly.

We all have things we want to hide from someone.

And more importantly, J. Edgar Hoover was no anomaly either.

The history of surveillance abuse is not the history of one bad, megalomaniacal man.

Throughout his decades in the FBI, J. Edgar Hoover enjoyed the support of the presidents he served, both Democrats and Republicans.

After all, it was John F. Kennedy and his brother Robert Kennedy who knew and approved of Dr. King's surveillance.

For 15 years, Hoover ran a program called COINTELPRO aimed at monitoring and undermining civic groups devoted to civil rights, women's rights, peace and anti-war movements.

And the surveillance didn't end there.

During his campaign, Lyndon Baines-Johnson bugged rival Barry Goldwater's campaign plane as part of an effort to win the election.

And then, of course, there was Watergate.

A robber broke into the Democratic National Committee headquarters at the Watergate Hotel and was caught, and the Nixon administration was involved in a robbery cover-up, ultimately forcing Nixon to resign as president.

COINTELPRO and Watergate have sounded the alarm to the American public.

Surveillance spiraled out of control and was used to suppress political challengers.

So Americans stood up to this and what we did was reform surveillance laws.

And the main tool we used to amend the Surveillance Act was to request a search warrant to give the government access to our phones and letters.

Now, the reason search warrants are important is that they put judges in the relationship between investigators and the public, and the judge's job is to make sure the surveillance has a good cause, that it targets the right people, and that the information collected is used for legitimate governmental purposes, not discriminatory purposes.

This is our system, and what this means is that President Obama did not bug Trump Tower.

A system is in place to prevent such things from happening without the involvement of judges.

But what if the phone calls and letters stopped talking?

Today, we have technology that allows governments to collect information about ordinary people cheaply and easily.

Call records can reveal whether you have an addiction, what your religion is, which charities you donate to, and which candidates you support.

Nevertheless, over the years our government has dragged in collecting telephone records of Americans.

In 2012, the Republican National Convention highlighted facial recognition, a new technology it plans to use to identify and proactively stop potential activists and troublemakers in crowds.

Today, more than 50% of American adults have their facial prints registered in government databases.

The Bureau of Alcohol, Tobacco, Firearms and Explosives planned to find out what Americans were trying to do at gun shows by using license plate detectors to scan the license plates of cars in gun show parking lots.

More than 70% of police departments now have automatic license plate detection technology, which is believed to be used to track people's vehicles as they travel through town.

And all this information, license plates, facial prints, phone records, address books, friend lists, photos uploaded to Dropbox and Google Photos, and even chats and emails are not protected by warrant requirements.

What this means is that we have all the newly available information about the public at a very low cost.

It's the golden age of surveillance.

Well, every parent will understand what this means.

When you have a little baby and the baby is very young, the child cannot crawl out of the crib.

But eventually your girl will grow up and be able to crawl out of her crib, but you tell her, "Don't crawl out of your crib, okay?"

And all parents know what happens.

Some of them are trying to crawl out of their crib.

right? That's the difference between ability and permission.

Well, the same applies to our current government.

Once upon a time, our government did not have the ability to monitor hundreds of millions of Americans on a broad scale and at scale, and to exploit that information.

But now our government has grown up and we have that technology today.

The ability of government to do so means that the law is more important than ever.

The law stipulates when the government will allow it, and is supposed to ensure there is some impact.

We are aware when these laws are violated and there are consequences and penalties.

Laws are more important than ever because we now live in a world where only rules can stop governments from misusing information.

But the law does not apply to work.

Especially since September 11th, the law has had a negative impact on work and the necessary rules have not been put in place.

And we are seeing the impact.

In other words, a fusion center is a joint task force of local, state, and federal governments aimed at eliminating domestic terrorism.

And what we saw was a Fusion Center report that if you voted for a third-party candidate, carried a "Don't Step on Me" flag, or watched an anti-tax movie, it could be dangerous.

These same fusion centers have spied on reading lists of Muslim community groups and Quakers resisting military recruitment in high schools.

The Internal Revenue Service has unfairly audited groups with "Tea Party" or "Patriot" in their names.

And now customs and border guards are blocking people from entering the country, demanding social networking passwords that allow them to know who our friends are, what we say, and even impersonate us online.

Now, civil libertarians like myself have been trying and fighting these things for years to get people's attention.

This was a big problem during the Obama administration, and it's even worse now.

It would be extremely dangerous for the New York City Police to spy on Muslims, or for the police to use license plate detectors to find out the whereabouts of police officers' spouses, or anything like that.

But when a president reuses federal surveillance and the power of the federal government to retaliate against political opponents, it is tyranny.

And we are all activists now, afraid of being monitored.

But just as in the days of Martin Luther King, we can change the status quo.

First, use encryption.

Encryption protects information from being cheaply and opportunistically collected.

It rewinds the golden age of surveillance.

Second, support surveillance reform.

If you have friends who work for the French or German governments, international human rights groups, or global oil companies, did you know that they are legitimate foreign intelligence targets?

What that means is that the U.S. government may be collecting that information when you are conversing with that friend.

And once that information is collected, even if it is a conversation with an American, it can be sent to the FBI, where they can search for information without a warrant, without justification, without having to document any suspicion, and find information about Americans and any crimes we may have committed.

The law that enables some of this is called FISA Amendment Act Section 702. Section 702 is set to expire at the end of 2017, so this year is a great opportunity. In other words, if we want reform, congressional inertia is on our side.

And we can put pressure on our representatives to actually implement important reforms to this law and protect their data from this redirection and abuse.

And finally, one of the reasons things have gotten so out of control is that so much of what happens in surveillance—the technology, the rules that make it possible, and the policies that may or may not exist to protect us—is either secret or classified.

We need transparency and we need to know what our government is doing in our name as Americans so that the surveillance that takes place and the use of that information is democratically responsible.

We are all activists now. That means everyone is worried about something from surveillance.

But, as in Martin Luther King's time, there is something we can do about it.

Please join us. Let's get down to business.

thank you.

(applause)

What do you think of when someone mentions Cuba?

Classic, classic car?

Perhaps a good cigar?

You might think of a famous baseball player.

What if someone mentions North Korea?

You might think of the notorious leader or his good friend Dennis Rodman.

(Laughter) One thing you probably don't see is the vision of a country with an open economy, where citizens have access to a wide range of affordable consumer products.

I am not here to discuss how these countries got to where they are today.

I simply want to use them as examples of countries and peoples who are adversely affected by trade policies that restrict imports and protect local industries.

I hear many countries talking about restricting imports and protecting their domestic industries these days.

Now, this may sound nice, but it's really protectionism.

We heard a lot about this during the 2016 presidential election.

We heard about this during the Brexit debate and most recently during the French elections.

In fact, it is a very important topic being debated around the world, with many ambitious political leaders working with platforms that position protectionism as a good thing.

Now I know why they think protectionism is a good thing. Because trade can appear unfair.

Some blame trade for some of the problems we have here in the United States.

For years we have heard about the loss of high-paying jobs in manufacturing in the United States.

Many believe that the decline in U.S. manufacturing is due to companies moving operations offshore to markets with cheaper labor, such as China, Mexico and Vietnam.

They also believe that trade agreements like NAFTA and the Trans-Pacific Partnership are sometimes unfair. This is because these trade agreements allow companies to reimport these cheaply produced goods to the United States and other countries where jobs have been lost.

So it feels like the exporter wins and the importer loses.

Now, the reality is that US manufacturing output is actually increasing, but jobs are being lost.

We are losing many of them.

In fact, between 2000 and 2010, 5.7 million manufacturing jobs were lost.

But they are not lost for the reasons you think.

Mike Johnson of Toledo, Ohio was not deprived of his factory job by Miguel Sanchez of Monterrey, Mexico.

no.

Mike lost his job because of the machine.

Eighty-seven percent of the lost manufacturing jobs have been eliminated as automation has increased the company's productivity.

That means 1 in 10 lost manufacturing jobs was due to offshoring.

Now, this is not just a US phenomenon.

In fact, automation is spreading to every production line in every country around the world.

But I get it. If you just lost your job and read in the newspaper that your previous company had a deal with China, it's easy to assume you were just replaced with a one-to-one deal.

When I hear stories like this, I think you have an image that trade is only conducted between two countries.

Manufacturers in one country produce products and export them to consumers in other countries.

Well, the reality is a little different.

I am a supply chain professional and live and work in Mexico.

And I work in the middle of a highly connected network of manufacturers from all over the world who work together to produce many of the products we use today.

The view from your front row seat in Mexico City actually resembles this.

And this is a more accurate depiction of what trade actually looks like.

From golf clubs to laptop computers to internet servers to cars to airplanes, it was great to see how the products were made.

Believe me, none of this happens in a straight line.

Let's take an example.

A few months ago, I was touring the manufacturing plant of a multinational aerospace company in Queretaro, Mexico, when the VP of Logistics pointed out a completed tail assembly.

It turned out that the tail assembly was assembled from panels manufactured in France and assembled in Mexico using parts imported from the United States.

Once the tail assembly is complete, it is exported by truck to a major Canadian assembly plant, where it is assembled with thousands of other parts, such as wings, seats, and tiny shades for small windows, all part of a new plane.

please think about it.

These new planes have more stamps in their passports than Angelina Jolie before even taking their first flight.

Today, this method of processing is practiced all over the world, producing many of the products we use every day, from skin creams to aircraft.

When you get home tonight, take a peek inside your house.

You might be surprised to find labels like this: "Made in the USA with US and foreign parts".

Economist Michael Porter best describes what is happening here.

Decades ago, he said, it would be most profitable for a country to focus on producing what it can produce most efficiently and trading the rest.

So what he's talking about here is shared production, efficiency is key.

You've probably seen examples of this at home or at work.

Let's look at an example.

Remember how your home was built or how your kitchen was renovated.

There is usually a general contractor responsible for coordinating the efforts of various contractors, such as architects drawing blueprints, civil engineering companies digging foundations, plumbers and carpenters.

So why don't general contractors just pick one company to do all the work, say an architect?

Because this is stupid.

General contractors choose professionals because it takes years to learn and master how to do each task required to build a house or renovate a kitchen, and some tasks require special training.

please think about it. Do you want an architect to install a toilet?

of course not.

Let's apply this process to the corporate world.

Today's businesses are focused on making what they produce best and most efficiently, and trading everything else for that.

This means that we rely on an interconnected and interdependent global network of manufacturers to manufacture these products.

In fact, its network is so interconnected that it is almost impossible for one country to dismantle and produce a product.

Let's look at the interconnected web we saw earlier and focus on one chain between the United States and Mexico.

The Wilson Institute says co-production accounts for 40 percent of the $5 trillion in trade between the United States and Mexico.

This is about $200 billion, or the same as Portugal's GDP.

So let's imagine that the US has decided to impose a 20 percent border tax on all imports from Mexico.

OK.

But do you think Mexico is going to just shut up and let it happen?

No, not at all.

So imagine, in retaliation, imposing a similar tax on all goods imported from the United States, and a little bit of a tit-for-tat, adding a 20% - 20% tariff on all cross-border goods, products and product components. Tariffs could increase by more than 40%, or more than $80 billion.

Now, don't be joking. These costs are passed on to you and me.

So let's consider how that might affect some of the products we buy every day, or the price of a product.

So, if the 30% tariff hike were actually applied, we would see some pretty significant price increases.

The Lincoln MKZ will be priced between $37,000 and $48,000.

Also, the price of Sharp's 60-inch HDTV will increase from $898 to $1,167.

And the price for a 16-ounce bottle of CVS Skin Moisturizer goes up from $13 to $17.

Now, remember, this is only looking at one strand of the production chain between the US and Mexico, so multiply this across all strands.

The impact can be substantial.

Now think about this. Even if this network could be dismantled and produced in just one country (which is easier said than done, by the way), it would only save 1 out of 10 lost manufacturing jobs.

That's right. Because most of these jobs (87%) were lost to our own productivity gains.

And unfortunately those jobs are gone forever.

So the real question is, does it make sense to raise prices to the point where most of us can't afford the basics we use every day, just to save jobs that may disappear in the years to come?

In reality, co-manufacturing allows us to produce higher quality products at lower costs.

It's that simple.

This allows you to make the most of your limited resources and expertise while benefiting from low prices.

It is very important to remember that efficient cross-border movement of raw materials, parts and finished goods is necessary for shared production to be effective.

So keep this in mind. The next time you hear someone trying to sell you the idea that protectionism is a good deal, it definitely isn't.

thank you.

(applause)

Where does the end begin?

For me it all started with this little guy.

This adorable creature, well, I think it's adorable, is called a Tetrahymena, and it's a single-celled creature.

Also known as pond dregs.

Yes, my career started as a dregs in the pond.

Well, no wonder I became a scientist.

Growing up far away from here, I had a ferocious curiosity about all living things from an early age.

I used to pick up poisonous stinging jellyfish and sing songs.

And early in my career, I was fascinated by the underlying mysteries of life's most basic building blocks. And I was lucky enough to live in a society where that curiosity was respected.

Well, for me, this little pond dregs creature, Tetrahymena, was a great way to study the underlying mystery that intrigued me the most: the bundles of DNA in cells called chromosomes.

Because he was interested in the ends of chromosomes known as telomeres.

Well, when I started researching, all we knew was that they help protect the ends of chromosomes.

It was important when cells divide.

That's very important, but I wanted to know what telomeres consist of, and I needed a lot of telomeres to do that.

And, as it happens, the cute little Tetrahymena has plenty of short linear chromosomes, about 20,000, and lots of telomeres.

And I discovered that telomeres consist of special segments of noncoding DNA at the very ends of chromosomes.

But here comes the problem.

Well, we all start life as single cells.

it doubles. Two becomes four. Four become eight and more form the 200 million cells that make up our adult body.

And some of those cells need to divide thousands of times.

In fact, as I stand here in front of you, the cells throughout my body are being replenished at a furious pace, allowing me to continue standing here in front of you.

That is, every time a cell divides, all of its DNA, the coding DNA in the chromosome, must be copied. Because it carries important operating instructions to keep our cells in good shape. So my heart cells can keep a steady beat, which I now swear they don't, my immune cells can fight bacteria and viruses, and our brain cells can store memories of our first kiss and keep learning for the rest of our lives.

However, the way DNA is copied is flawed.

It's just one of the facts of life.

Each time a cell divides and copies DNA, a portion of the DNA at the ends, the telomeric DNA, is worn away and shortened.

Think of it like a protective cap at the end of a shoelace.

And they prevent shoelaces or chromosomes from fraying, and when their tips become too short they fall off, and worn telomeres signal cells.

"DNA is no longer protected."

Send a signal. time to die.

So end of story.

Sorry, not so soon.

This is not the end of the story, because life has not disappeared from the earth.

So I was curious: if such wear and tear is unavoidable, how on earth could Mother Nature keep our chromosomes intact?

Now, do you remember that little pond dregs creature, Tetrahymena?

The craziest thing is that the Tetrahymena cells never aged and died.

Their telomeres did not shorten over time.

Sometimes even longer.

Believe me, something was at work that wasn't in the textbooks.

So, working in my lab with my extraordinary student Carol Grider, Carol and I shared a Nobel Prize for this work - we started experimenting and discovered that cells have something else.

This is a previously unimaginable enzyme that can replenish and lengthen telomeres, and we named it telomerase.

And when the telomerase was removed from the dregs in the pond, their telomeres flowed down and they died.

In other words, it was the abundance of telomerase that kept our pond dregs from aging.

Now, this is an incredibly hopeful message that we humans are receiving from the dregs in the pond. This is because we know that telomeres shorten as we age, and surprisingly, this shortening makes us age.

Generally speaking, the longer your telomeres, the better your life.

It is the excessive shortening of telomeres that makes us feel and see the signs of aging.

Skin cells start to die off, and fine lines and wrinkles start to show up.

Hair pigment cells die.

You start to see gray.

Immune system cells die.

Increased risk of getting sick.

In fact, cumulative research over the last 20 years has revealed that telomere shortening contributes to the risk of cardiovascular disease, Alzheimer's disease, some cancers, diabetes, and more from which many of us die.

So we have to think about this.

what's going on?

This wear and tear makes us look and feel old, yes.

Our telomeres are losing the battle of attrition faster and faster.

And those who felt youthful for longer had telomeres that lasted longer, allowing them to feel more youthful, reducing the risk of all their biggest fears as their birthdays wore on.

OK, it seems easy.

Now, if my telomeres are related to how quickly I age, if my telomeres are renewed by my telomerase, then all I have to do to reverse the signs and symptoms of aging is find out where I can buy a Costco-sized bottle of Grade A Organic Fair Trade Telomerase, right?

wonderful! Problem solved.

(Applause) Sorry for not being too quick.

Unfortunately, it doesn't.

OK. why?

That's because human genetics tells us that we live in a perilous state when it comes to telomerase.

Simply put, yes, increasing telomerase by a small amount certainly reduces the risk of some diseases, but it also increases the risk of certain rather nasty cancers.

So, even if you can buy a Costco-sized bottle of telomerase, and there are plenty of websites selling such dubious products, the problem is that it can raise your cancer risk even a little.

and we don't want that.

Well, don't worry, and now it's kind of funny, but you know, a lot of us might be thinking, "Well, I'd rather be like the dregs in the pond"...

(Laughter) The story of telomeres and their maintenance means something to us humans.

But I want to make one thing clear.

It is not about greatly extending human lifespans or becoming immortal.

It's about healthy life expectancy.

Well, healthy life expectancy is the number of years of life in which one is disease-free, healthy, productive, and enjoying life to the fullest.

The sick period is the opposite of the healthy period, the period of life during which one feels old, sick, and dies.

So the real question is, if you can't guzzle telomerase, can you still control your telomere length, and therefore your happiness and health, without the downside of cancer risk?

OK？

So it's the year 2000.

Well, I've been watching tiny little telomeres very carefully and happily for many years, when a psychologist named Elissa Epel came into my lab.

Elissa's specialty now is the effects of severe, chronic psychological stress on our mental and physical health.

And she was standing in my lab, which ironically overlooked the entrance to the mortuary, and -- (laughter) and she asked me a life-or-death question.

“What happens to telomeres in people who are chronically stressed?”

she asked me

As you know, she studied caregivers, especially mothers of children with various chronic conditions, such as bowel disease and autism. This group is clearly under a great deal of long-term psychological stress.

I have to say that her question changed me a lot.

You see, I've always thought of telomeres as those tiny molecular structures and the genes that control them.

And when Elissa asked me about studying caregivers, I suddenly saw telomeres in a whole new light.

I looked beyond genes and chromosomes to the lives of the real people we were studying.

And as a mother myself, I was struck by the sight of women, often without help, dealing with children with very difficult conditions.

And such women often simply look exhausted.

So could it be that their telomeres were worn down as well?

So our collective curiosity was unusually high.

Elissa chose a group of such caring mothers for our initial study, and we wanted to ask: What are their telomere lengths compared to the number of years they've been caring for children with chronic diseases?

Four years later, the day has come for all the results. Elissa looked down at the first scatterplot and literally gasped. Because there was a pattern in the data, and it was the very gradient we most feared might exist.

It was right there on that page.

Regardless of age, the longer mothers were in this care setting, the shorter their telomeres.

And the more stressful she perceived her situation, the lower her telomerase and the shorter her telomeres.

We discovered something unprecedented. The more you are under chronic stress, the more likely your telomeres are to shorten, leading to premature disease and possibly premature death.

Our findings implied that people's life events and how we respond to those events can change how telomeres are maintained.

Therefore, telomere length was not simply measured by age.

The question Elissa asked me when she first came to my lab was certainly a matter of life and death.

Well, fortunately, there was hope hidden in that data.

We found that some mothers were able to maintain their telomeres despite years of careful care.

A closer look at these women revealed that they were resilient to stress.

Somehow they were able to experience their situation day by day as a challenge rather than a threat. And this led to a very important insight for all of us. That means we can control how we age, down to the cells.

Well, our initial curiosity was contagious.

Thousands of scientists from various disciplines have added their expertise to telomere research, and the results are pouring in.

Over 10,000 scientific papers and counting.

As such, several studies quickly confirmed our initial finding that chronic stress is bad for telomeres.

And now it's becoming clear that we have more control over this particular aging process than anyone could have imagined.

To name a few, a study conducted by the University of California, Los Angeles examined the ability of caregivers to maintain telomeres in long-term caregivers of relatives with dementia and found that practicing just 12 minutes of meditation a day for two months improved it.

Attitude matters.

Habitually negative thinkers usually encounter stressful situations with threatening stress reactions. So when your boss wants to see you, you automatically think, "I'm about to be fired," and your blood vessels constrict, your levels of the stress hormone cortisol slowly rise, then stay elevated, and over time, that sustained high level of cortisol actually lowers telomerase.

It's not good for telomeres either.

On the other hand, if you see something stressful as a challenge to tackle, blood rushes to your heart and brain and you experience a brief but energizing spike in cortisol.

And thanks to that habitual “try it” attitude, your telomeres are functioning normally.

So...

What does this tell us?

Telomeres are functioning normally.

You really do have the power to change what is happening to your own telomeres.

But our curiosity has become more and more intense, what about factors outside our own skin?

Do they also affect the maintenance of our telomeres?

As you know, we humans are very social creatures.

Is it possible that our telomeres are also social?

And the results were astonishing.

From an early age, emotional neglect, exposure to violence, bullying, and racism all affect telomeres with long-lasting effects.

Can you imagine the impact on children who have lived for years in a war zone?

People who don't trust their neighbors and don't feel safe in their neighborhood consistently have shorter telomeres.

Therefore, home addresses are also important for telomeres.

Conversely, close-knit communities, long-term marriages, and even lifelong friendships all improve telomere maintenance.

So what does this tell us?

It shows that I have the power to influence my own telomeres, and the power to influence yours.

Telomere science tells us how interconnected we all are.

But I'm still curious.

What legacy can we all leave for the next generation?

Will the next young woman or man look under a microscope at the next tiny critter or the next pond dregs and invest with interest in a question they don't even know is a question today?

It could be a great question that could affect the whole world.

And maybe you are interested in yours.

Now that you know how to protect your telomeres, are you curious what to do with your health over the decades?

And now that you know it can affect someone else's telomeres, are you curious how it might make a difference?

And now that we know the power of curiosity to change the world, how can we ensure that the world invests in curiosity for the generations after us?

thank you.

(applause)

This is a picture of a Mars sunset taken by NASA's Curiosity rover in 2013.

Mars is a very cold planet, bathed in high levels of ultraviolet radiation and extremely dry.

In fact, as we know Mars is considered too dry for life.

I'm an astrobiologist.

I'm trying to understand the origin of life on Earth and the chances of finding life elsewhere in the universe.

People sometimes ask me how can I become an astrobiologist if I don't have my own spacecraft?

What I do is study life in environments on Earth that most closely resemble other interesting places in the universe.

All life on earth needs water. So in my case, I focus on the close relationship between water and life to understand if life can be found on a planet as dry as Mars.

But I don't have $2.5 billion to send my robot to Mars, so I'm researching the most Martian place on earth, the Atacama Desert.

Located in northern Chile, this desert is the oldest and driest desert on earth.

To give you an idea of ​​how dry it is, consider that we get over 1,000 millimeters of rain each year here in Vancouver.

In Atacama, there are places reported to have had no rain for the past 400 years.

How do we know this?

Well, I was born and raised in Atacama -- (Laughter) and when I started to study this desert, I had a unique advantage.

So here are some of the great examples he discovered of how life has adapted with little water.

The first thing I discovered was the cave entrance facing the Pacific Ocean.

At this site, we reported a new species of microalgae that grows only on spider webs that cover cave entrances.

Have you ever seen spider webs early in the morning?

Covered in dew, we learned that this microalgae can utilize spider webs to perform photosynthesis on the shores of the driest desert on Earth.

So here you can get water from the fog that covers these areas regularly in the morning.

In another cave, we found another type of microalgae.

The plant can use sea fog as a source of water and, surprisingly, lives in the deepest caves, adapting to live in less than 0.1% of the light required by normal plants.

Findings like this suggest that we might even find photosynthetic life in caves on Mars.

That's me, by the way.

(Laughter) Well, this area of ​​Yungay, discovered by NASA, was thought to be the driest part of the desert for almost 15 years, but I knew it wasn't.

how? you already know the answer.

Because I was born and raised in this desert.

So I remember seeing fog all the time in Yungay, and after putting sensors in a few places where I've never seen fog or clouds, they reported four other places that were much drier than Yungay. This place, Maria Elena South, is truly the driest place on earth, as dry as Mars and, amazingly, just a 15 minute drive from the small mining town where I was born.

Now, in this quest, we were really trying to find the aridity limit for life on Earth, a place so dry that nothing could survive.

But even here, well-hidden underground, a large number of different microbes were found, suggesting that they may also inhabit similarly dry places like Mars.

There is even preliminary evidence that these microbes, like the mummies that walk around us, may still be active in a dry state and may use ultraviolet light as an energy source.

If confirmed, this would have a huge impact on how we define life and how we search for life elsewhere in the universe.

With clear skies, 60 percent of the largest telescopes on Earth will be in Atacama by 2020, and everyone else will be searching among the stars to answer the question, "Are we alone?"

I look down on the ground looking for this same answer in my backyard.

thank you.

(applause)

Anyway, this is a story about the evils of science, so I think it's perfect.

♫ Oh, passing by, who's the apple in my eye? ♫ ♫ Because it's my only crony. ♫ ♫ Oh, who knew I could look so good if I took a walk in the hood ♫ ♫ I'm talking to Cronie on the phone. ♫ ♫ We're friends, which is great, because we're not alone ♫ ♫ A shallow gene pool is nothing to my lone crony. ♫ ♫ Me and you will persevere through hard times and hard times, ♫ ♫ just day by day, our DNA, so the Olson twins are not guilty of anything to us. ♫ ♫ We will live side by side. Mother Nature, don't call her a phony, she's my crony. ♫ ♫ Wealthy, but not in good health, and had no one to live with. ♫ ♫ So look who I was born to, crony. ♫ ♫ Far from poor boring rich people, we don't need natural egg yolks -- ♫ ♫ Our babies are born perfect, Cronie. ♫ ♫ We can hug you, hire a publicist ♫ ♫ And show them you'll be the loveliest thing since Eminem and shit. ♫ ♫ Oh my friends, hang on, we're franchises like Walt Disney and Hannibal Lecter. ♫ ♫ It turns out that our cancer cells are more benign than Phil Spector of old. ♫ ♫ We should have signed up with Verve instead of Sony to survive side by side. ♫ ♫ You are my crony. ♫ "Oh, crony, I love you so much."

"Oh, I'm the only one I've ever loved."

♫ Wow, that's amazing. I think you're my fatal charm, I mean. you are my crony ♫ Thank you.

(applause)

In my early years as a graduate student, I went on a snorkeling trip off the coast of the Bahamas.

Actually, I had never swam in the sea before, so I was a little scared.

The best thing I remember was when I was desperately trying to breathe through my snorkel with my head in the water when a huge school of yellow and black striped fish came straight towards me...

And I just froze.

Then, as if suddenly changing his mind, he came towards me, then swerved to the right and circled me.

It was really mesmerizing.

Many of you may have experienced something like this.

Of course, it has its color and beauty, but it was totally cohesive, as if a single being with a single collective mind was making the decisions, rather than hundreds of fish.

Looking back, I think that experience dictated what I've been working on for most of my career.

I'm a computer scientist and my area of ​​expertise is artificial intelligence.

And a key theme in AI is to be able to understand intelligence by creating our own computational systems that display intelligence as we see it in nature.

Now, the most common take on AI comes from science fiction and movies, of course, and I'm personally a huge Star Wars fan.

But it tends to be a very anthropocentric view of intelligence.

When you think of a school of fish, or a school of starlings, it feels like an entirely different kind of intelligence.

First, because a single fish is so small compared to the size of its population, a single individual seems to have a very limited and short-sighted view of what is going on. And intelligence isn't really about individuals, it's somehow the property of the herd itself.

Second, what I still find most remarkable is that we know that there is no leader overseeing this school of fish.

Rather, this incredible collective mind behavior emerges purely from the interaction of one fish with another.

Somehow, there are interactions and rules of engagement between neighboring fish that make everything work.

So the question for AI is, what are the rules of engagement that lead to this kind of intelligence, and of course, can we create our own rules?

That's the main thing I'm working on with my lab team.

We approach it through theory, examining abstract rule systems and thinking about the mathematics behind them.

We do it through biology, working closely with experimentalists.

But most of the time we do it through robotics, trying to create our own collective systems that can, or at least try to do things like we see in nature.

One of our first robotic explorations along this line was creating our own colony of a thousand robots.

It's a very simple robot, but it can be programmed to exercise collective intelligence, and that's what we were able to do.

One robot looks like this:

It's very small, about a quarter the size, and can be programmed to move, but it can also wirelessly communicate with other robots and measure distances to them.

And now we can begin to program the very rules of interaction, engagement between neighbors.

And once you have this system, you can start programming the various types of engagement rules found in nature.

For example, spontaneous synchronicity, the audience clapping and suddenly starting to clap in unison, or fireflies flashing together.

We can determine the rules of patterning, or what role the cells in our tissues play, and program the way our bodies set patterns.

We can program the rules for migration and in this way we are actually learning from the rules of nature.

But you can also go one step further.

We can actually take these rules we've learned from nature and combine them to create entirely new collective behaviors of our own.

For example, imagine there are two different kinds of rules.

So the first rule is a motion rule that allows mobile robots to move around other stationary robots.

The second rule is a pattern rule where a robot picks a color based on the two closest robots.

So, starting with a clump of robots in a small pattern seed, we find that these two rules are sufficient to allow the group to self-assemble simple line patterns.

There are more complex pattern rules, and designing error correction rules can actually create very complex self-assembly. Here's how it goes.

Here we see 1,000 robots working together to self-assemble the letter K.

K is on the side.

And the important thing is that no one is to blame.

In other words, a single robot only talks to a few nearby robots and uses its locomotion rules to move around the structure being assembled, looking for places to fit based on its pattern rules.

And while no robot does anything perfectly, rules are what enable groups to work together to achieve their goals.

And the illusion becomes so near perfect that you never realize they are individual robots, instead becoming a single entity like a school of fish.

These are robots and rules in 2D, but you can also think of robots and rules in 3D.

So what if we could create robots that could be assembled together?

And here you can take inspiration from social insects.

So when you think of mound-building termites or army ants, they build incredibly complex nest structures out of mud and their own bodies.

And, like the systems introduced earlier, these insects also have pattern rules that help determine what they actually build, but the patterns can be made out of other insects or out of mud.

And you can use the same idea to create robot rules.

Here we will look at some simulated robots.

So the simulated robot has behavior rules, which is how it moves through the structure looking for a fit, and it also has pattern rules, which examines groups of blocks to decide whether to place a block.

And with the right movement rules and the right pattern rules, we can actually let the robot build anything we want.

And of course everyone wants their own tower.

(Laughter) Once you have these rules, you can start building the robot body according to those rules.

Here we see robots that can climb over blocks, but we can also pick up these blocks and move them around, and even start editing the very structure on top of them.

But considering these rules, this is really just one type of robot body you can imagine.

You can imagine different types of robot bodies.

So think of robots that can move sandbags or help build embankments, or robots made of soft materials that work together to reinforce collapsed buildings. That is, the same kind of rules exist for different kinds of bodies.

Or, if you're totally obsessed with army ants, like my group, maybe one day you can build a robot that can climb over literally anything, including other members of your tribe, and self-assemble things from its own body.

Once you understand the rules, various robot visions are possible.

Coming back to our snorkeling trips, we actually know quite a bit about the rules that schools of fish use.

So, if we can invent a body that corresponds to it, there may be a future when me and my group can snorkel with a school of fish we made ourselves.

Each of these systems I have shown comes close to having the mathematical and conceptual tools to create our own version of collective power. This enables all kinds of future applications, whether you think about robots building flood barriers, robotic colonies of bees that can pollinate crops or underwater swarms of robots that monitor coral reefs, or even reaching for the stars and thinking about programming satellite constellations.

For each of these systems, understanding how to design the rules of engagement and being able to generate appropriate collective behavior is key to realizing these visions.

So far, I've talked about the rules for insects, fish, and robots, but what about the rules that apply to our human collective?

And the last thought I'd like to leave you with is, of course, science itself is an amazing expression of collective intelligence, but unlike the beautiful school of fish I'm studying, I feel we still have a much longer evolutionary path to take.

So, in addition to working on improving the science of the robot community, I am also working on creating robots and coming up with rules for improving our own science community.

I have a favorite word. "Who does science determines what it accomplishes."

Imagine a society with rules of participation where all children grew up believing they could stand here and be the engineers of the future, or a society where all adults believed that they not only understood how technology impacted their everyday lives, but also had the ability to change them.

What would that society look like?

We believe we can.

We believe we can choose our rules. In addition to robots, you can also design your own human population. If you do, and when you do, it will be beautiful.

thank you.

(applause)

Actually, I'm here today to ask you a question.

what is life

This has really puzzled me for over 25 years, and probably will continue to puzzle me for the next 25 years.

This is a thesis I wrote when I was still an undergraduate.

I started teaching computers to learn while my colleagues still treated them as big calculators.

I created a digital ladybug and tried to learn from a real ladybug, but it only did one thing: forage for food.

And after a very simple neural network (such as a genetic algorithm), let's look at patterns.

They are almost identical to real life.

For a 20-year-old young man, it was a very impressive learning experience.

Life is a learning program.

Looking at this wonderful world, every species has its own learning program.

The learning program is the genome and the code for that program is the DNA.

Different genomes of each species represent different survival strategies.

They represent billions of years of evolution.

The interaction of the ancestors of all species with the environment.

I was really fascinated by the world, the DNA, the language of life and the learning program.

So I decided to co-found a research institute to read them.

I have read many of them.

We have probably read over half of the world's previous animal genomes.

That is, it is up to date.

we learned a lot.

I also arrayed one seed over and over again...

We have sequenced the first Asian.

I created sequences myself over and over again just to take advantage of that platform.

Look at all the repeated base pairs: ATCG.

I don't understand anything there.

But look at that one base pair.

These 5 characters are YEAR.

These five SNPs represent a highly specific haplotype in the Tibetan population around a gene called EPAS1.

Its genes have proven to be highly selective and are the most important sign of Tibetans' positive selection for high-altitude adaptation.

you know what?

These five SNPs are the result of Denisovan or Denisovan-like individuals being integrated into humans.

This is why we need to read these genomes.

To understand history, to understand how genomes have learned through millions of years.

A lot of information can be obtained by reading the genome. You can see bugs in the genome, that is, birth defects and monogenic diseases.

A drop of blood can tell you why you have a fever, or what medicines and dosages you need to take when you're sick, especially cancer.

You could research a lot, but look at it. Thirty years ago, China was still poor.

Only 0.67 percent of China's adult population had diabetes.

Now look: 11 percent.

Genetics hasn't changed in over 30 years, just one generation.

it should be something different.

diet?

environment?

Lifestyle?

Even identical twins can develop quite differently.

One may become extremely obese, while the other may not.

One person develops cancer, the other does not.

Not to mention living in a highly stressful environment.

I moved to Shenzhen 10 years ago.

For some reason people may know.

When a gene is stressed, it behaves completely differently.

life is a journey.

Genes are just the starting point, not the end.

You have a statistical risk of contracting certain diseases at birth.

But you make different choices every day, and those choices increase or decrease your risk of certain diseases.

But do you know where you are on the curve?

What does the curve look like in the past?

What kind of decisions do you face every day?

And what decisions are right for you to make your life's journey take a right turn for yourself?

what's that?

The only thing that cannot be changed or undone is time.

Probably not yet. Maybe in the future.

(laughs) Well, once you decide, you can't change it, but is there anything you can do?

Can you actually run multiple choices against me, correctly predict the outcome, and make the right choice?

Ultimately, we are our own choices.

Then this ladybug came to me.

25 years ago I made a digital ladybug to mimic a real ladybug.

Can you make a digital me...

to simulate me?

I understand that neural networks can get more sophisticated and complex there.

Can I create it and run multiple options on that digital me to calculate it?

Then I will be able to live in different universes in parallel at the same time.

Then I choose whatever is good for me.

I have probably the most comprehensive digital me on the planet.

I have spent a lot of money on myself, on myself.

And Digital Me told me I was at a genetic risk for gout due to all of this.

A different technology is needed to make it happen.

You need proteins and genes, you need metabolized antibodies, you need to test your whole body for bacteria and viruses that are covering you or in your body.

To track all activities there, all smart devices should be there: smart cars, smart houses, smart tables, smart watches, smart phones.

The environment matters - everything matters - and don't forget smart toilets.

(laughs) Isn't that a waste?

Every day, so much valuable information is washed into the water.

And you need them.

All of them must be measured.

You need to be able to measure and calculate everything around you.

And Digital Me told me I have a genetic defect.

I am at a very high risk of gout.

I don't feel anything now and I'm fine.

But look at my uric acid levels.

twice the normal range.

And when I digitally searched all the medical books, it said, "OK, you can drink burdock tea." I can't even pronounce it correctly lol This comes from old Chinese wisdom.

And I continued to drink that tea for three months.

Uric acid levels also returned to normal.

I mean, it worked for me.

All that thousands of years of wisdom served me well.

I was lucky.

But I'm probably not lucky with you.

Not all knowledge in the world can be efficient enough or customized enough for you.

The only way to make the digital me work...

Learn from yourself.

You have to ask yourself a lot of questions. "What if?" -- I'm jetlagged right now.

You probably can't see it, but I can.

What if I eat less?

Could Metformin Help You Live Longer?

What happens when you climb Everest?

It's not that easy.

Or run a marathon?

What would you do if you got very drunk after drinking Maotai, a Chinese liquor?

Last time, when I was doing a video rehearsal with everyone here, when I was drunk, I gave a completely different speech.

(Laughter) What if I work less?

It's less stressful.

So maybe that didn't happen to me and I was really stressed out every day, but I hope I can make it a little less stressful.

These early studies showed us that the same banana can have very different responses to blood sugar levels in different people.

what about me

what is the right breakfast for me

A 2-week controlled experiment should be conducted. I have to try all sorts of different food ingredients on me and check how my body reacts.

And for myself, I don't know the exact nutrition.

So I wanted to explore all the old Chinese wisdom on how to live longer and healthier.

i did it.

Some of them are truly unattainable.

I did the same once last October without eating anything for 7 days.

I did a 7 day fast with 6 partners.

Look at those people

One smile.

do you know why he smiled?

he cheated

(Laughter) He had a cup of coffee at night and we captured that from the data.

(Laughter) We measured everything from the data.

We were able to track them down and see them in action. For example, just a little tip, my immune system.

My immune system changed dramatically in the 24 hours there.

And my antibodies regulate the protein for that dramatic change.

And everyone was doing it.

Even if they were fundamentally different at first.

And it will probably be an interesting treatment for things like cancer in the future.

It becomes very, very interesting.

But doing things that make you feel healthier, like drinking the faecal water of a healthy person, is something you probably don't want to try.

This comes from ancient Chinese wisdom.

Look, right?

As it was 1700 years ago, it already exists, in books.

However, I still hate the smell.

(laughs) I want to know the real way. Find a cocktail of bacteria and drink it, and you'll probably get better.

So that's what I'm trying to do.

Even though I'm trying so hard, it's hard to try every condition.

It is quite impossible to conduct any kind of experiments...

But there are 7 billion learning programs on this planet.

7 billion.

And every program is run under different conditions and doing different experiments.

Why don't we measure together?

Seven years ago, I wrote an essay in Science to mark the 10th anniversary of the human genome.

I said, "Set an order for one and for all."

But now I'd like to say, "Let's digitize ourselves for everyone and everyone."

When we make this digital me the digital us, when we try to form the internet of life, when people can learn from each other, when people can learn from their own experiences and data, when people can actually form the digital me for themselves, when we learn from it, the digital us becomes very different from the digital me.

But that only comes from me digitally.

And this is what I am proposing here.

Join me - become us and everyone should build their own digital me, because only by doing so can they learn more about you, about me and about us...

It's about the question I posed at the beginning, "What is life?"

thank you.

(Applause) Chris Anderson: I have one quick question.

I mean, your job is great.

I think one question people have is that while they are excited about the amazing technological potential of personalized medicine, will it feel affordable to a few in the short term?

It costs a lot of money to do all the sequencing and so on.

Will this lead to some kind of growing inequality?

Or do you have a vision that knowledge gained from pioneers can actually be disseminated very quickly to help a wider audience?

Wang Jun: Well, that's a good question.

Seven years ago, when I co-founded BGI and was CEO there, the only goal I had there was to reduce the cost of sequencing.

It started at $100 million per human genome.

The human genome currently costs hundreds of dollars.

The only reason to do so is to get more people to benefit from it.

So for me as a digital person, it's the same thing.

Well, it probably takes a million dollars to digitize people.

$100 would be nice.

It should be provided free of charge to the many people who urgently need it.

This is our goal.

And with all this convergence of technology, I believe it will become a reality in the very near future, say within three to five years.

This is the whole idea of ​​why I founded my second company, iCarbonX.

We're trying to bring costs down to a level where everyone benefits.

CA: Okay. So the dream is not to be an elite medical service for a few people, but actually try to make healthcare as a whole more cost-effective -- JW: But we started with some early adopters, people who believed in the idea, etc., but ultimately it's going to benefit everyone.

CA: Well, Jun, I think it's true that you are one of the greatest scientific minds on the planet, and it's an honor to have you.

JW: Thank you.

(applause)

Back home, my friends call me "giant clam girl," "clam queen," "clam mother," etc.

(Laughs) That's because every day, every time we meet, we talk about giant clams all day long.

Tridacna is a giant, colorful-shelled marine animal, the largest of its kind.

Look at this seashell.

The largest recorded individual was 4.5 feet long and weighed about 550 pounds.

That's about the same weight as three baby elephants.

South Pacific legends once described giant clams as cannibals who would lie in ambush on the ocean floor and trap unsuspecting divers.

Legend has it that a diver lost his leg while trying to extract a pearl from a giant clam.

"Really?" I thought.

So, out of curiosity, I tried experimenting with myself.

(Laughter) I carefully put my hand in the mouth of the clam and waited.

Hmm...

I still have hands

These gentle giants would rather retreat and protect their flesh than eat me.

So much for the killer clam myth.

Unfortunately, the reality is that we are the biggest threat to giant clams.

Considered a delicacy throughout the Western Pacific and Indian Oceans, giant clams have traditionally been caught as seafood.

Fishermen are particularly interested in shell muscles. A scallop is the organ that holds two shells together like a hinge.

Giant clams were hunted to near extinction from the 1960s to the 1980s solely for their muscle.

Clamshells are also popular in the adornment trade for jewelry and displays.

In the South China Sea, fishermen have gone to great lengths to dig large areas of coral reefs to collect fossil shells.

These were later carved and sold in China as so-called "ivory artefacts".

Giant clams, dead or alive, are not safe for us.

It's "Clarity"!

(Laughter) (Applause) When the spotlight shines on the more charismatic marine life, such as whales and coral reefs, it's easy to forget that other marine life also needs our help.

I was fascinated by giant clams and started conservation research to fill the gaps in my knowledge of their ecology and behavior.

One of the discoveries we made was that giant clams can walk across the ocean floor.

That's right, you heard me right, they can walk.

To find out, we placed a large number of baby clams on a grid.

Let's see what happens in 24 hours.

We believe that walking is important for escaping predators and finding mates for breeding.

It's hard to imagine the movements of this giant animal, but even giant clams weighing up to 400 pounds can walk, but they're just slow.

During my PhD, I discovered even more secrets about giant clams.

However, something was missing in my work.

I used to ask myself, "Why should people care about giant clam conservation?" ――Of course, besides me.

(Laughter) It turns out that giant clams have a big impact on coral reefs.

These multitasking clams are reef builders, food factories, shrimp and crab dens, and water filters all rolled into one.

In a nutshell, giant clams make a significant contribution as inhabitants of coral reef habitats, and their mere presence keeps the reef healthy.

Giant clams can live up to 100 years, making them an important indicator of reef health.

So when giant clams start disappearing from coral reefs, their presence could serve as a wake-up call to scientists, much like canaries in coal mines.

But giant clams are endangered.

The world's largest bivalve is endangered, with more than 50 percent of its wild population plummeting.

And the ecological benefits of having giant clams on coral reefs are likely to continue only if the population is healthy and its protection is paramount.

So I stand here today to give voice to giant clams. Because I love these wonderful animals so much and they deserve to be cherished.

It's time for the giant clams to come out of their shells and show the world that they too can be heroes of the sea.

thank you very much.

(applause)

Cities are like brothers in a large polygamous family.

Each one has a unique personality and goes in a different direction.

But they all have some common origin.

Sometimes I think postcolonial cities are like kids with two of their least favorite wives who are constantly being asked, "Oh, why can't we be more like sisters?"

(Laughter) The “why” of cities is pretty much the same everywhere. A favorable location for trade and administration. Potential for scalable opportunities for skilled and non-skilled alike. The willingness of the public to keep changing, and of course resilience.

However, the “how” of the city is a completely different story.

how do they operate?

how do they grow?

How do you determine who belongs and who does not?

Lagos is my hometown.

You can always find a Nigerian by following the noise and dancing, right?

(Laughter) Like any major city, there are many things in this place, many of which are very contradictory.

Our public transport system is so poorly run that privately owned bright yellow buses regularly cause accidents.

Luxury car showrooms line ill-maintained and often flooded roads.

Street evangelism is only slightly less prevalent than street harassment.

A sex worker may have two degrees: a job in a bank and an important role in the church.

(Laughter.) Any day there could be a party in the middle of the road or a charred corpse.

There are many things you can and cannot do in Lagos. In many cases, the difference between possible and impossible is simply who you are and, if you're lucky, who you're connected to.

Belonging to Lagos is a fluid concept determined by ethnic origin, sexual orientation and gender, but the most visibly and often most violently determined is class.

Before Nigeria became a country, inland stream fishermen began descending the lagoons of Lagos and established villages along the coast.

Some 60 years later, my grandfather, Ordotun Adekunle Kukoy, also arrived in Lagos.

Like me, he was a graduate of the University of Ibadan and a young member of the educated elite of the Independence era.

Over time, he developed a illustrious career as a land surveyor, mapping the now bustling neighborhoods that were waist-high wildflowers.

He died when I was nine years old.

And by that time, my family, much like a fisherman's family, recognized Lagos as home.

Among the Yoruba people, there is a saying, "Èkó gb'olè, ó gb'ọ̀lẹ." This can be translated to mean that everyone is welcome in Lagos.

But that statement is becoming less and less true.

Many Lagosians, including the descendants of fishermen who arrived many generations before my grandfather, are being forced out to make room for a booming city dubbed "the new Dubai."

As you know, Lagos has given even its leaders big dreams and successive governments have proclaimed their aspirations for a poverty-free metropolis.

Unfortunately, the strategy chosen is not focused on eradicating poverty as you would expect, but on eliminating the poor.

Last October, the governor announced plans to demolish all of Lagos' waterfront settlements.

There are more than 40 of these indigenous communities throughout the city, home to more than 300,000 people.

Otodo Gubame, a hundred-year-old fishing village with about three-quarters of the population of Monaco and equally potential seaside luxury (laughs), was one of the first targets.

It was only after the demolition began that I first heard about Otodo Gubame.

During my visit in November 2016, I met Ms. Magdala Ayefoju.

She is now a homeless woman whose surname means "the world is blind".

Magdala's son Basil was one of more than 20 people estimated to have been shot, drowned or killed in the land grab.

Standing outside her shelter, I could see the two white-sand soccer fields where Basil once played.

All around us were the ruins of schools, churches, major health centers, shops and thousands of homes.

Young children enthusiastically helped set up shelters, and some 5,000 residents simply stayed there, with nowhere else to go.

And in April, state security officials returned.

This time they completely wiped out the community with beatings, bullets and shootings.

As I speak, there are construction workers preparing the beaches of Otodo Gbame for those who enjoy the multi-million dollar view.

The new development will be called "Periwinkle Estate."

Forced evictions are incredibly violent and, of course, unconstitutional.

Nevertheless, it happens very often in many of our cities that they are human because they are the first to be taught to forget about the poor.

We believe that a person has an absolute right to own a home. Unless the person is poor and the house is built in a particular way in a particular area.

But the word "home" does not have a single definition.

After all, what are slums other than an organic response to acute housing shortages and income inequality?

And what is a shanty unless he builds his own house against all odds?

Slums are imperfect housing solutions, but they are also the foundation of any functioning city and a prime example of the innovation, adaptability and resilience that lie at the heart of it.

Already in Lagos, it doesn't have to be the new Dubai.

(Applause) We have our own identity, our own rhythm. As anyone who knows Lagos knows, the poor Lagos people are very often the source of the city's character.

Without this impoverished city, Lagos wouldn't be known for its music, its boundless energy, or even the fact that you can buy cold drinks and puppies right out your car window.

(Laughter) The conditions that define certain areas as slums can be effectively improved, but not without recognizing the humanity and agency of the people who live there.

In Lagos, where public goods are rarely publicly available, slum dwellers are often at the forefront of innovative solutions.

After being cut off from the grid for months because the power companies couldn't figure out how to collect their tariffs, one village designed a system that could collect remittances and negotiate lower tariffs for everyone.

Another settlement created a reform program to hire local juvenile delinquents as guards.

Because they know all the tricks and hideouts, troublemakers are now more likely to be caught and reported to the police, and fewer young people are turning to criminal activity.

Yet another community recently completed a flood-safe and eco-friendly communal toilet system.

Such models have been adopted throughout Lagos.

It is incorrect to point out informal settlements as a problem.

In fact, the real problems are the factors that create them: entrenched poverty, social exclusion, and state failure.

When our governments frame slums as a threat to justify violent land grabs and forced evictions, they expect those of us who live in public housing to implicitly and unknowingly agree.

Rather, we must remind them that the government exists to serve not only the people who build and live in the luxury homes, but also the people who clean and guard them.

Our -- (applause) our realities may be different, but our rights are.

The Lagos state government, like too many governments on the continent, is a lip service to the idea of ​​inclusion, while acting as if progress can only be achieved through the elimination, exploitation and even exclusion of groups it deems expendable.

People with disabilities who hawker or beg on the streets of Lagos are rounded up, extorted and detained.

Women in low-income areas are caught and prosecuted for prostitution regardless of what they actually do for a living.

The gay public is scapegoated to distract from real political issues.

But like cities, people are resilient and no amount of law, no amount of intimidation, no amount of violence can get rid of us completely.

Despite centuries of active repression, prostitutes, women, and women working as prostitutes are still not extinct.

Even though homosexuality is now criminalized in most parts of the African continent, homosexual Africans continue to exist.

And I'm pretty sure it's not common for poor people to just disappear because they've been stripped of everything they have.

we are all already here. That is the answer to the question of whether we belong.

As the fishermen began to descend the lagoon in search of new homes, little did they know that the rising city around them would one day claim they did not belong.

I would like to believe that my grandfather, in breaking new ground in Lagos, was trying to open up the frontier to make room for others to be welcomed into the city as he was.

On my way here my grandmother called me to remind me how proud she was, how proud [my grandfather] and my mother were.

I can make their dreams come true.

But there is no reason why their dreams, and mine for that matter, should be allowed to come true while other people's dreams turn into nightmares.

And don't forget that the bare minimum for dreaming is a safe place to rest your head.

It's too late for Basil, but not for Magdala, and it's too late for the hundreds of thousands and millions who are still under threat in Lagos or one of our cities.

The world need not continue to ignore the suffering caused by dehumanizing people, or even the amazing growth potential that exists in recognizing and valuing all their contributions.

We must hold our governments and ourselves accountable to keep our shared cities safe for everyone there. Because the only city worth building, indeed, the only future worth dreaming about, is one that includes all of us, no matter who we are or how we build our homes.

thank you.

(applause)

So while I teach college students about inequality and race in education, I want to keep my office open to students who just want to meet and chat with me.

And a few semesters ago, one of my most hilarious students, Mahari, actually came to see me and said he felt a little left out for being black.

He had just transferred from a community college to New York University on a Merritt Scholarship, and it turned out that only about 5 percent of the students at New York University were black.

So I started reminding myself that I know that feeling of being an outsider in my community.

That's part of what drew me to my job.

At my university, I was one of the few faculty members of color, and I grew up experiencing family social mobility, moving from apartments to nice houses, but the neighborhood was predominantly white.

I was 12 and my kids said they were surprised I didn't smell like curry.

(laughs) Because school is in the morning, so I ate egg waffles for breakfast.

(laughs) Dinner is curry.

(Laughter.) So when Mahari left, I asked him how he was coping with his isolation.

And even though he felt lonely, he said he just threw himself into his work and based his strategy on his guts and desire to succeed.

In fact, my mentor is UPenn psychologist Dr. Angela Duckworth. He defined this gut tenacity as "perseverance and passion for long-term goals."

Angela's book became a bestseller, and schools across the country, especially charter schools, took an interest in listing "grit" as a core value.

But sometimes grit isn't enough, especially in education.

So when Mahari left my office, I worried that something more concrete would be needed to address the challenges he told me about.

As a sociologist, I also study performance, but from a slightly different perspective.

I study students who have overcome huge obstacles related to their background.

Some students are low-income, often single-parent, homeless, incarcerated or living illegally, or struggling with substance abuse or experiencing violent or sexual trauma.

So let me tell you about two of the most gritty people I've ever met.

Tirik was raised by a single mother, but after graduating from high school, he ended up in the wrong gang.

He was arrested for armed robbery.

But in prison he began to work hard.

He took college credit courses, which enabled him to complete a master's degree upon graduation, and is currently a manager for a non-profit organization.

As a child, Vanessa had to move many times from the Lower East Side to Staten Island to the Bronx.

She was raised primarily by relatives, as her own mother was a heroin addict.

But Vanessa had to drop out of school at age 15 and she had a son of her own.

Ultimately, though, she was able to attend a community college, earn an associate's degree, and then attend an elite university to earn a bachelor's degree.

Therefore, some people may hear these stories and think, "Oh, those two certainly have guts."

They basically got back on their feet. ”

But that's an incomplete picture. Because, more importantly, they had factors in their lives that influenced their agency, or they had the tangible ability to actually overcome the obstacles they faced and navigate the system accordingly.

Now let me elaborate.

A 22-year-old on Rikers Island, Tirik spent his first aimless time in prison.

This was until an older detainee took him aside and asked him to help with a youth program.

And in mentoring youth, he began to realize his teenage mistakes and potentials.

This is what sparked his interest in college credit courses.

When he got out of prison, he got a job with the Fortune Society. Many of its executives were former prisoners.

So he was able to get a master's degree in social services and now lectures on prison reform at Columbia University.

And Vanessa...

After her son was born, she happened upon a program called Vocational Foundation. The program gave me $20 every other week, gave me a MetroCard, and gave me first experience with computers.

These simple resources enabled her to get her GED, but then she had very severe kidney failure. This was especially problematic as she was born with only one kidney.

She remained on dialysis for 10 years while waiting for a successful transplant.

Later, community college leaders kept in touch with her so she could attend and was placed in an honors program.

And that's the path that enabled her to enter one of the most elite women's colleges in the country, where she earned a bachelor's degree at age 36 and set an excellent example for her young son.

What these stories largely show is that education is social and benefits from a social foothold.

There were factors pushing them in one direction, but through customized guidance and opportunities, they were able to reflect on their situation and resist the negative effects.

They also learned simple skills like networking and asking for help. A need that many of us in this room sometimes forget or take for granted.

And when we think of people like this, we should not just think of them as the exception, but as the exception.

Considering them an exception absolves us of our collective responsibility to help students in similar situations.

Maybe that's how we treat education when Presidents Bush, Obama, and now even Trump have called it a "modern civil rights issue."

If schools can think about the subjectivity of their students and show it when pushing them, what they learn will be more relevant to their lives and they will be able to tap into their inner grit and personality.

Here it is -- my student Mahari got into law school on a scholarship. I don't want to brag, but I wrote one of his letters of recommendation.

(Laughter) And while I know this feat has been accomplished through hard work, I've seen him find his voice along the way. As someone who grew up a little shy and clumsy, I know it takes time and support.

So he'll be relying a lot on his guts to get him through the rough first year of law school, but I'll be there to mentor him, keeping in touch from time to time, taking him out for curry...

(Laughter) That way he can continue to grow the agency and be even more successful.

thank you.

(applause)

Caitlin Quattromani: The 2016 election felt different.

Political conversations with family and friends have revealed a level of polarization many of us have never experienced before.

People we always thought were rational and intelligent seemed like strangers.

we said: "How can you think that?

I thought you were smart. ”

Laurent Erridge: Caitlin and I met in the summer of 2011. As working mothers, we were trying to keep our very energetic boys busy.

And we quickly realized that we had almost everything in common.

From our love of Colorado to our love of sushi, there was very little we could disagree on.

I also learned that we share a deep love for this country and feel a responsibility to be politically active.

But nobody's perfect -- (Laughter) And I quickly learned two disappointing things about Caitlin.

First, she hates camping.

CQ: I think camping sucks.

LA: So that means there will be no joint camping trips in our future.

Second, she is politically active as a conservative.

CQ: I may hate camping, but I love politics.

I listen to conservative talk radio almost every day and have volunteered for several different conservative political campaigns.

LA: So I think I'm a little more left-leaning, a lot more left-leaning.

(Laughter) I was always interested in politics.

I majored in Political Science and was a community organizer and campaigner for Congress.

CQ: When Laurent and I started getting to know each other, it was right in the middle of the 2012 presidential campaign, and most of our early political conversations were actually based on jokes and pranks.

So, as an example, I change Laurent's computer screensaver to a picture of Mitt Romney, or she puts an Obama campaign magnet on the back of my car.

(laughs) LA: It's a car, not a minivan.

CQ: But over time those conversations got more serious and really became the core of our friendship.

And at some point, I decided that I didn't want to leave any topic out of the discussion, even if it was too far out of my friendship comfort zone.

LA: So for most of us, political conversations are a zero-sum game.

There are winners and there are losers.

We launch attacks and find weak spots in someone's arguments.

Now comes the important part. We tend to take every comment or opinion expressed as a personal insult to our own values ​​and beliefs.

But what if the way we think about these conversations changes?

What if, in a heated moment like this, we chose dialogue over discussion?

When we do dialogue, we flip the script.

We replace ego and the desire to win with curiosity, empathy, and the desire to learn.

We do not come from a judging field, we are genuinely interested in the other person's experiences, values ​​and concerns.

CQ: Sounds very simple, Laurent.

But it's hard to reach a place for real dialogue, especially when talking about politics.

It's easy to get emotional about the issues we're passionate about, and our egos can get in the way and prevent us from truly hearing the other person's point of view.

And, unfortunately, in this insane political climate we are in, we are witnessing the extreme consequences of heated political conversations that make people turn away from relationships.

In fact, Rasmussen released a poll earlier this year that found that 40% of people reported that the 2016 elections had a negative impact on their personal relationships, and that people tend to grope for their beliefs rather than reason, and whenever reason and emotion collide, emotion always wins, according to the Journal of Cognitive Neuroscience.

So it's no wonder these issues are hard to talk about.

LA: So, look, we're just two normal friends who happen to have very different ideas about politics and the role government should play in our lives.

And we all know we've been taught that it's not polite to talk about politics, but we need to be able to talk about politics because it's important to us, it's part of who we are.

CQ: We have chosen to avoid political debate and instead engage in dialogue in order to maintain what we lovingly call a bipartisan friendship.

(Laughter) LA: And this election and all the madness that followed gave us several opportunities to practice this skill.

(laughs) Let's start with January and the Women's March.

At this point, you can probably guess which of us participated.

(laughs) CQ: Ah, the Women's March.

Really two things that day left me feeling frustrated and frustrated all day.

No. 1, its name is "Women's March".

As a conservative woman, this march's issue platform did not represent me, and that's fine, but when I heard people talking about this march being a demonstration of sisterhood and solidarity for all women, it just didn't feel right to me.

Another is the timing of the event, the day after the presidential inauguration.

It felt like we didn't even give the new government the power to actually do anything, for better or worse, before people felt the need to demonstrate against it.

LA: And under normal circumstances, I agree with Caitlin.

I think the administration deserves suspicion.

But in this case, I was marching to express my concern that someone with such a poor track record in relation to women and other groups was elected president.

I had to be part of a collective voice that wanted to send a clear message to the new president that we will neither accept nor condone his actions or statements during the election.

CQ: So I'm already kind of annoyed, and then I saw this Facebook of Laurent popping up in my social media feed.

(Laughter) Seeing Laurent's sons marching and holding placards, it wasn't a good thing for me, it was taken to a new level. Because I know them and I love them. And because I felt they weren't old enough to understand what the march meant.

I didn't understand why Laurent decided to enlist them that way, and I assumed it wasn't a choice the boys made for themselves.

But I also know Laurent.

You are a wonderful mother and never exploit your sons, so I had to stop and check myself.

I needed a decision.

You can take the easy way out by not telling her anything and instead just let your frustration boil down, or you can ask her more about her motives.

LA: So, as I shared with Kaitlyn, we actually started talking about the weeks in March before joining.

And my sons were curious as to why this event was organized, which led to some very interesting family conversations.

We discussed our right and privilege in this country to demonstrate against things we disagree with, and my husband shared why he thinks it's so important for men to participate in the Women's March.

But the most important reason we marched as a family was because it was a way to honor our parents' legacy.

They spent their careers defending the rights of some of our most vulnerable citizens and passed these values ​​on to me and my brothers. We want our sons to do the same.

CQ: After speaking with Laurent, I understand not only why she felt it was so important to march, but why she had her sons with her.

And frankly, my assumption was wrong.

It was the boys who wanted to march after discussing the issue with their families.

But the most important thing in this example is to consider alternatives.

If Laurent and I hadn't talked about it, I would have been irritated with her, and it might have resulted in an undercurrent of contempt in our friendship.

But by questioning Laurent, I was able to use the dialogue to arrive at a true understanding.

Now, let me be clear, our conversation didn't really change my thoughts on how I felt about the march, but it did completely change my thoughts on why she brought her sons.

And for both of us, that dialogue allowed us to understand each other's perspectives on the Women's March, even if we disagreed.

LA: The second topic that cast doubt on our ability to engage in dialogue was the need to understand how Caitlin could vote for Trump.

(Laughter) Kaitlyn is a very caring, caring, successful and professional woman. The Caitlins I know will never allow men to talk about women like President Trump did during his election campaign.

It was difficult for me to reconcile these two things in my mind.

How could you miss what was said?

CQ: I may not be the only one here who thought that last year's presidential election didn't have the best options.

(Laughter) The Republican candidate I was rooting for missed the primary, so when it came time to vote, I had to make a decision.

You're right, some terrible things came out during President Trump's campaign that almost made me decide to abstain rather than vote for him, but I've never thought about it before.

But in the end, I voted for Donald Trump. For me, especially as I recognized how important a presidential election is to influencing the judiciary, it was really a vote for a party rather than an individual.

But I shared with Laurent that it was a decision I seriously considered, not one I made lightly.

LA: So after the conversation, a few things struck me.

First, I was a victim of my own confirmation bias.

I had such strong feelings for Trump that I would give everyone who voted for Trump the same attributes and forgive no one.

(Laughter) But knowing about Caitlin, I started asking questions.

What were Trump voters really worried about?

Amid all the conflicting words, what was really going on?

What can we learn about ourselves and our country from this unlikely event?

We also learned of our shared deep disappointment with this election and the growing concern about the two-party system.

But the most important thing about this conversation is that it actually happened.

Without an open and honest dialogue between the two of us, this election would have been the elephant in the room for the next four years, just as a joke.

(Laughter) CQ: So look -- (applause) So look -- we know it takes effort to get past the difficult, frustrating, and sometimes emotional parts of discussing issues like women's marches and why your friends voted for candidates you don't support.

But we need to have these conversations.

Our ability to move beyond political debates into real dialogue is a critical skill that we all should focus on right now, especially with the people we care about most.

LA: And adults aren't the only ones who need to contain this behavior.

It is important that we do so for our children as well.

My sons rushed into this election.

We were listening to the morning news and they were having a conversation with their friends at school.

I was worried that they were picking up too much polarizing misinformation and were really building fears about Trump's inauguration.

And then one day after the election, I was taking my boys to school and my youngest son suddenly said, "Mom, you don't know anyone who voted for Trump, right?"

(laughter) And then I stopped and took a deep breath.

"Yes, it is."

(Laughs) "It's Quattromanis."

And his reaction was so great.

With a slightly confused look on his face, he said...

"But we love them."

(Laughter.) And I said, "Yes, I do."

(Laughter.) And he said, 'Why would they vote for him?

And I remember stopping and thinking, how I answer this question is very important.

Somehow we had to honor our family values ​​and show respect to our friends.

So I finally said, "They think that's the right direction for this country."

And before I could get the whole sentence out of his head, he moved on to the soccer game he was going to play during recess.

CQ: Life with boys.

(Laughter) What Laurent and I discovered through our bipartisan friendship is the potential that exists in dialogue.

We were genuinely curious about each other's thoughts and points of view, and chose to be willing to listen even when we disagreed.

And by setting aside our egos and preconceived notions, we were able to open ourselves up to endless learning.

And perhaps most important to our relationship, we promised each other that friendship was far more important than either of us being right or winning a conversation about politics.

So today, I would like to ask you all to have a conversation.

Talk to people outside your party who might challenge your ideas.

Try to engage with people who would normally avoid political conversations.

But remember, the goal is not to win, the goal is to listen, understand, and be open to learning something new.

LA: So let's go back to election night.

When the polls came to a close and it became clear that Trump would be the new president, I was devastated.

I was sad, confused and, to be honest, angry.

And just before midnight, I got this text message from Kaitlyn.

[I think it's going to be a tough night for all of you.

we are thinking of you I love you. ] And where awkwardness and unspoken animosity might have dragged on for weeks and months, there was an offering of empathy rooted in friendship.

And in that moment, I knew we would get through this situation.

CQ: So we have to find ways to engage in meaningful dialogue to move forward as a nation. We can no longer wait for elected officials to improve the national discourse.

LA: The challenges ahead will require all of us to participate in deeper and more meaningful ways...

It starts with each of us building connections through dialogue, as relationships, communities and nations.

thank you.

(applause)

Today, more than half of the world's population lives in cities.

The process of urbanization began in the late 1700s and has increased since then.

Projections predict that 66 percent of the population will live in cities by 2050, and the United Nations, World Health Organization and World Economic Forum warn that current problems in cities such as inequality, congestion and crime will only worsen if population density is not planned.

As a result, city planners and developers are putting a lot of effort and creativity into designing the denser, larger cities of the future.

However, I have a different opinion.

I think urbanization has really reached the end of its cycle and now people are starting to move back to the countryside.

“But what about trends?” you might ask.

Well, socio-economic trends don't last forever.

As you know, 12,000 years ago everyone was perfectly happy roaming the land, hunting and gathering.

And so on until the trend changes and living on farms and raising cattle becomes new and changes again.

when the industrial revolution began.

In fact, that was the beginning of the urbanization process.

And do you know what caused it?

Steam power, machinery, new chemical processes—technical innovation.

And I believe technology can put an end to this cycle too.

I have spent most of my career working in innovation.

I love it. i love my job

This will allow you to work with drones, 3D printers and smart glasses to create prototypes as well as store-bought ones.

It's a lot of fun sometimes.

Today, some of these technologies are opening up new possibilities that will fundamentally change the way we do things, and in a few years we may be able to enjoy the benefits of urban living from anywhere.

please think about it.

If you could live somewhere with a lower crime rate, more space, a lower cost of living and less traffic, of course many people would want it, but they feel they have no choice.

You have to live in the city.

In the past, people moved to cities not because they loved the city itself, but because of the city's benefits, more job opportunities, easier access to services and goods, and a richer social life.

Now let's dig deeper.

More jobs and career opportunities.

Does that still apply today? Because office workers are beginning to realize that working in an office may no longer be the same as being in an office.

More than 80% of U.S. employees want to work from home, according to Global Workplace Analytics research.

And do you know how much it costs a company to have an office?

$11,000 per employee per year.

If only half of these workers telework 50 percent of the time, states could save more than $500 billion and reduce greenhouse gases by 54 million tons.

This equates to 10 million cars on the road each year.

But even if most people want to telework, current technology isolates the experience.

Not comfortable.

I don't feel like I'm there

But the convergence of two technologies, augmented reality and telepresence robots, will change the situation.

Augmented reality is already making the office environment ubiquitous today.

All you need is a wearable computer and smart glasses to take your emails and spreadsheets with you wherever you go.

Video conferencing and video calling have become very popular these days, but there is still room for improvement.

That is, sometimes you see a tiny face on a flat screen and you can't even tell who's talking.

Today, there is already something much better than a static video call: your average telepresence robot.

I call it a tablet on a stick.

(Laughter) You can control, you can move around, you can control what you see.

Much better, but far from perfect.

Did you know that most human communication is said to be non-verbal?

Well, robots don't give it anything.

It's like being an alien.

But advances in augmented reality will make it easy to wrap your robot in a nice hologram that actually looks like a human and moves like a human.

That should do it.

Otherwise forget about robots.

We're going full VR, and we're all coming together in cyberspace.

After a few years, it will feel so real that you won't be able to tell the difference.

So what are the next reasons people move to cities?

Access to services and products.

But today you can do them all online.

According to comScore research, US online shoppers made more than half of their retail purchases online last year, and the global e-commerce market is estimated at $2 trillion.

It is expected to reach 2.38 by the end of 2017, according to eMarketer.

Now, from a logistical point of view, the density is good for delivery.

Supplying products to shopping malls is also easy.

Sending a large package to a store allows people to go there, pick up the item themselves, and take it home.

E-commerce means that the kigurumi must be shipped and delivered to your home.

it's more expensive.

It's like the difference between throwing a birthday party for 20 people and bringing a piece of cake to each of 20 friends' houses.

But at least in the city they live close to each other.

Density helps.

Well, rural e-commerce deliveries take forever.

A truck may have to travel many miles from one address to the next.

These are the most expensive of all deliveries.

But we already have a solution for that. it's a drone.

A vehicle equipped with a drone squadron.

The driver makes some deliveries while the drone flies back and forth as the truck moves.

This would reduce the average cost of delivery and provide affordable e-commerce services in rural areas.

As you can see, the telecommuter's new home probably has a drone pod in their yard.

So if last-mile delivery isn't an issue, there's no need to go shopping in town anymore.

So two.

So what is the third reason people move to cities?

rich social life.

These days you'll need to be in town for that.

Because these days people make friends, chat, gossip and flirt from the comfort of their couches.

(laughs) And wearing my favorite pajamas.

(Laughter) There are over 2 billion active social media users in the world.

In a way it makes us feel connected wherever we are.

But it's not perfect.

In some cases, an actual relationship may be required.

Ironically, densely populated cities aren't always the best for that.

In fact, as social groups get smaller, they get stronger.

A recent survey in the UK by the Office for National Statistics shows that people living in rural areas are more satisfied with their lives.

Therefore, when people settle in the countryside, they buy local food, perishables, groceries and maintenance services.

Therefore, handymen, small workshops and service companies will thrive.

Perhaps some urban industrial workers displaced by automation will find better alternatives and migrate.

And what will it be like as people migrate to the countryside?

Think autonomous off-grid homes with solar panels, wind turbines, and waste recycling facilities. Our new home generates its own energy, which is also used to power the family's car.

So, while cities have always been thought of as energy efficient, can you please tell me that repopulating the countryside can be green as well?

By now, you've probably thought of all the benefits of country living.

(Laughs) I did it myself.

Six years ago my wife and I packed up, sold a small apartment in Spain, and for the same money bought a house with a garden and birdsong in the morning.

(Laughter) It's a very nice place.

And we still live in a small village that is not rural.

That's my next destination. It's a renovated farmhouse, not too far from the city, not too close.

Next, secure a suitable location for the drone to land.

(Laughter) But hey, that's me.

It doesn't have to be you. Because it looks like I'm trying to convince someone to join this country.

it's not.

(laughs) No more people need to come.

(Laughter.) I think they will, if they understand that they can benefit from the same benefits that the city has.

But if you don't like this country, I have good news for you.

Cities do not disappear.

But as people move, the lower density helps restore better flow and balance.

Anyway, I think you have some work to do now.

Do you think you still need to live in the city?

And more importantly, do you want to?

thank you very much.

(applause)

It was late October in the mountains of Austria.

I was there on a field trip with architecture students from Zurich.

and when they reached the high valley, they were surprised with the news that there were no huts or hotels reserved for that night.

It wasn't a mistake.

It was completely intentional.

The challenge was to build our own shelter with what we had.

And we all survived.

It was cold and really hard...

And it was a great learning experience to discover that there are so many free resources that nature has given us, and that all we need is a sensibility to discern them...

and our creativity to harness them.

I was in a similar situation.

About 13 years ago, when I was an architecture student, I traveled to the remote village of Rudrapur in Bangladesh with the goal of designing and building a school for my graduation studies.

I used to live in that village when I was 19 and worked as a volunteer for Dipsika, a rural development NGO in Bangladesh.

And what I learned from them was that the most sustainable strategy for sustainable development is to value and utilize one's own resources and potential without relying on external factors.

And this is what I tried to do on my architecture as well.

I didn't have to search for suitable building materials for my school.

they were at my feet. Mud, dirt, dirt, clay, whatever you call it...

And the bamboo that was growing around it.

Electricity is rare in remote areas of Bangladesh, but we didn't need it.

We had human energy and people were happy with the work.

Equipment was also an issue, but we had buffaloes.

We also tried some cows and interestingly they were too smart.

They were constantly treading holes from previous rounds.

They didn't mix the walls with mud, straw, (laughs) sand.

And with the exception of my realization partner Ike Roswag and a small team of consultants like my basket weaver cousin Emmanuel, they were all made by village artisans.

And this is the Ministry of Economy, Trade and Industry school, which has completed half a year of construction.

(Applause.) Thank you.

(Applause) The load-bearing mud walls that hold the school firmly in place, and the large bamboo structures that make it light.

It is a classroom on the first floor.

There is a cave attached to it.

For reading, snuggling, working alone, meditating, playing...

and upper classrooms.

All the children signed their name in Bengali on the door and not only signed it, but also helped build the school.

I'm sure you've put your hand in mud or clay at least once.

It looks great when you touch it. I love it.

Kids loved it.

And can you imagine how it feels to know that a little boy or girl, or an illiterate day laborer, stood in front of that schoolhouse and built it with only his hands, ordinary bamboo and dirt under his feet?

It greatly increases trust and confidence in yourself and your community.

and in the material.

Especially mud has a very bad image.

When you think of mud, you think of dirt, but it's ugly and not durable. This is the image that I would like to change.

In fact, the school is now in its 11th rainy season, with very severe horizontal monsoon rains, and the walls are standing firm.

(Applause.) So how does it work?

The first rule is a proper foundation that keeps the walls dry off the ground, the second rule is a proper roof that protects the top, and the third rule is erosion control.

Earth walls need a speed breaker to prevent rainwater from running down the wall too quickly. In the same way that hills need trees and rocks to prevent erosion, these speedbreakers can be bamboo or stones mixed in with mud, or rows of straw.

It works exactly the same.

And people always ask if you have to add cement to the mud, the answer is no.

There are no stabilizers or coatings on these walls, only on the foundation.

This is the wall up after 10 consecutive rainy seasons. As I got a little older, so did the walls.

The edges aren't as sharp as they used to be, but they still look pretty good and are very easy to repair if needed.

Just take out the broken part, wet it, put it back on the wall and it will look the same as before.

I hope it works for me too.

(Laughter) Yes, and the great thing is that when you no longer need the mud wall, you can put it back in the ground, garden it, or recycle it completely without any loss of quality.

No other material can do this, which is why mud has excellent environmental performance.

What about financial sustainability?

When the school was built, I actually lived on the construction site and used to go to the market with the workers in the evenings to see how they spent their money.

I bought vegetables from my neighbors, got a new haircut from a tailor, and got a new blouse.

And since a large part of the building budget was spent on craftsmanship, I was very happy that the school was not just a building, but a real catalyst for community development.

If I had designed schools with cement and steel, this money would have been exported and lost for those families.

(Applause) The building budget at the time was 35,000 euros. It's probably doubled now. This is a lot of money for the area, especially since this money works and rotates rapidly within the community rather than the stock market.

When it comes to the financial sustainability of my project, my main question is who will benefit?

How many people here have ever lived in a mud house?

Chris Anderson, where are your hands?

(laughter) Who are you? OK.

yes.

It seems quite out of our focus, but about 3 billion people on earth live in earthen houses, and earthen houses are a traditional building material in Europe as well as in Africa.

Oddly enough, mud is not considered worthy of university study...

So I brought that dirt to Harvard University, and (laughs) there was exactly 60 tons of dirt right in front of the main entrance to the Graduate School of Design.

Students and faculty rolled up their sleeves, got their hands dirty, and turned the front into a warm gathering place.

Kids were climbing structures, skaters were riding ramps, and students were having their lunch break. And it was especially interesting to see how many people were touching the walls. We don't usually walk around the city caressing facades, do we?

(Laughter) (Laughter) Of course, it was a small project, but in terms of awareness and education, it was kind of a trigger point for acupuncture.

And indeed, in an increasing number of countries, load-bearing earthen structures are no longer permitted to be built, even though they are traditional and have been around for hundreds of years. The reason is not because the materials are weak, but because there are no architects or engineers who know how to work with them.

Therefore, there is a really strong need for education at all levels: craftsmen, engineers, architects.

Equally important are technical developments such as prefab, developed by my colleague Martin Rauch, an Austrian artist and earth structure expert.

And he created prefabricated technology for rammed earth elements, including rammed earth elements, insulation, wall heating and cooling, and all kinds of electrical appliances that can be stacked in skyscrapers. This is important for scaling up and speeding up the process, like the Ricola Herb Center in Switzerland.

And finally, we need a good building project that proves that ancient materials can be built in a very modern way.

It doesn't matter how old the material is. It's a matter of our creative ability to use it today.

For example, these are the 3 hostels I have in China in Baoxi village about 6 hours by bus from Shanghai.

The outer shape is woven bamboo and the inner core is stone and rammed earth.

And it is a traditional building material.

Even most of China's Great Wall was built of rammed earth, which is being replaced by concrete.

And this trend is happening very quickly.

Within just a few years, China consumed more cement than the United States over the entire 20th century.

And this trend of replacing natural building materials with energy-hungry, energy-intensive, and CO2-emitting materials is, in fact, clearly contributing to climate change.

And there are perfectly effective alternatives for all kinds of purposes: mud, stone, wood, bamboo, dirt.

For example, here is an office building we did for Omicron Electronics in Austria.

Mud is healthy not only for the planet but also for the human body, the material is low tech but the performance is high tech.

Mud walls naturally regulate moisture to keep sophisticated tools safe inside the building.

And this wall in my house is a humidifier.

We love the 6 tons of soil we have at home not just because it's healthy and sustainable.

The old-fashioned warmth resonates deep in the heart.

My personal dream is to build a mud skyscraper in Manhattan.

(Laughter) Right.

(Applause.) And considering the mud city of Shibam in Yemen, built in the 16th century and now 500 years old, the dream isn't so far-fetched.

What was possible in the past is still possible today, and we can apply all our technical know-how to these ancient materials to meet our needs and dreams.

Around us and under our feet...

It is a wonderful natural building material.

Let's use it.

And I deeply believe that our homes, workplaces and cities will become healthier, more sustainable, more human and more beautiful.

thank you.

(applause)

So my mom was trying to explain to me about her grandma and what they were like when they were older, but I was just five years old and was horrified that I couldn't pay attention to her.

I had just seen The Green Lady.

Well, about a week ago, I was watching the movie "Godzilla," about that giant lizard-like beast attacking a big city, and I couldn't get the idea of ​​the green monster out of my head.

Yet I was with my mother on the edge of Lower Manhattan, just staring at her. Her horns, her muscles, all of that scared me.

And I didn't know if she was a monster or a hero.

So I decided to consult Google for the day. "Ma! Ma!"

(Laughter) My mother explained that the Green Lady was actually the Statue of Liberty beckoning the immigrants.

Now, what really confused my young head in her description was the fact that, according to Marr, long before us, the Green Lady was actually brown, the same brown as me, and just like America, it changed color over the years.

Now, what's really interesting about this is that when she changed colors, she made me think about myself.

As a first-generation American, I was surrounded by immigrants, so it all made sense.

In fact, in my immediate circle of people who support me and enrich my life, at least two are foreign-born.

In many ways, my life as an American citizen has been shaped by newcomers, and perhaps yours as well.

There are over 40 million immigrants in the United States.

Census data show that a quarter of the nation's children have at least one foreign-born parent.

I know all these statistics because I study global migration patterns.

I am a journalist who has spent the last several years documenting the lives of Americans who lost their lives in deportations.

And the number is huge.

Between 2008 and 2016, more than 3 million people were "ordered to be deported" -- a technical term for deportation.

These deportations come with economic, political, psychological and emotional costs, and there comes a moment when these cycles break down.

I once asked an American soldier, "Why did you volunteer for this war?"

And she said to me, "Because I am proud to defend my country."

But I wanted to ask: "Really, what does 'my country' mean when you're on a base and you hear bombs exploding in the distance and you see the badly wounded soldiers returning, and you know you might be next?"

she looked at me

"My country is my wife, my family, my friends and my soldiers."

She told me that 'my country' is a collection of these strong relationships. These social circles.

When society weakens, so does the nation itself.

An important aspect is missing from the immigration policy debate.

Instead of focusing on the individual, we should focus on the people around him. Because those left behind are voters, taxpayers and those suffering losses.

And it's not just the children of deportees who are affected.

You have brothers and sisters across the border.

Classmates, teachers, law enforcement officers, engineers, scientists, and doctors are all desperate to make sense of the new reality when their social circles collapse.

These are the real lives behind all these statistics that dominate the debate about immigration policy.

But we don't think much about them.

and i'm trying to change that.

Here is just one of the true stories I have collected.

And it still haunts me.

I met Ramon and his son in 2016, the year they were both deported.

Mr. Ramon was deported to Latin America and his son, a U.S. Army sergeant, was deployed.

Exiled...

Expanded.

Ramon's case alone does not make it clear how deeply involved he is with this country.

But think of his son. An American citizen defending the country that exiled his father.

The key here is the social circle.

Here's another example that illustrates these important ties.

A group of citizens in Philadelphia were concerned about their jobs because the legal owner of the restaurant they worked at was an illegal immigrant and immigration officers were arresting him.

They gathered behind him.

Immigration lawyers argued that he was too important to the local community to be deported.

A review of the restaurant was also submitted at the hearing.

Ultimately, a judge exercised so-called "judicial discretion" and allowed him to stay, but only because of social considerations.

There are 23 million noncitizens in the United States, according to verifiable federal data.

And since that population figure is a complicated estimate at best, this does not include undocumented people.

Let's work with what we have.

This equates to 23 million social circles and approximately 100 million individuals whose livelihoods may be affected by deportation.

And that stress is spreading throughout the nation.

A 2017 poll of LA County residents conducted by UCLA found that 30 percent of LA County residents feel stressed about deportation, not because they themselves may be deported, but rather because members of their social circle are at risk.

I am not saying that no one should be deported. Don't get confused with that.

But what I want to say is that we need to look at the bigger picture.

If you're within earshot of me, I want you to close your eyes for a moment and examine your own social circle.

Who is your foreign-born?

What would it feel like if the wheel broke?

Please share your story.

This isn't just an American problem, so I'm building a global archive of first-person accounts and linking them with mapping technology so we can see exactly where these circles break.

There are 250 million immigrants worldwide. People who live, love and study in a country where they were not born.

In my career, in my life, I have been one of them in China, Africa and Europe.

And every time I'm one of these foreigners, one of those strange-looking guys in a new land, I can't help but be reminded of when I was in Lower Manhattan with my mother decades ago. I was scared that day and had just found that green lady.

And the question that keeps me thinking, looking at her, and all the young replicas of her that are clearly brown, and even the painting that introduces her not quite green at the beginning, is that the question my research is trying to answer becomes, to me, the same question that puzzled me years ago: is she a monster or a hero?

thank you.

(applause)

Most people don't know when I went to high school in this country. I entered college at a time when I knew I was going to be an artist and a sculptor.

And I came from a very privileged background. I was very lucky.

My family was wealthy and my father believed in only one thing. It meant that we could all get as much education as we wanted.

And I announced in Paris that I wanted to be a sculptor.

And he was a smart man. He was like, "Well, that's fine, but you did really well on the math SAT."

In fact I had 800 points. And he thought I had done very well in the field of art – and so did I – this was my passion.

And he said, "If you go to MIT." "If you were to go to MIT, I would have been granted early entry."

And I thought it was the best deal in town, so I accepted it right away.

I decided that if I was good at art and good at math, I would combine the two and study architecture.

I told the principal of the cram school about it.

And I told him what I was doing, I was going to study architecture, because it is a combination of art and mathematics.

He said something to me that completely blew my mind.

He said, "I like gray suits, I like pinstripe suits, but I don't like gray pinstripe suits."

So I thought, "What a turkey this guy is," and went to MIT.

I studied architecture and then got a second degree in architecture, but I quickly realized that it wasn't really architecture.

Exactly, it was the computer that fused art and science, and that was exactly where it brought both, and I enjoyed that career.

And perhaps if I were to fill the Jim Citrine scale, I would put 100 percent on spending time enabling others to be creative.

And after doing this for a long time and the baton being passed from the Media Lab, I thought:

As important as it is, it also takes full advantage of the person's privileges. ”

In the case of the Media Lab, I knew a lot of people, I knew business owners and wealthy people, and in my case, I didn't have a career to worry about anymore.

My career, I mean, I finished my career.

I never had to worry about making money.

I never had to worry about what people thought of me.

And I said, 'Hey, let's really do something that leverages all these capabilities,' and thought, if we can leverage kids and tackle education by bringing access to computers to the world, that's what we really should do.

This photo has never been shown before and will probably be sued.

It was taken at 3am without permission from the company.

About 2 weeks old. There it is, folks.

(Applause) If you look at the picture, you can see it's stacked.

They are conveyor belts that go around.

This is one of the conveyor belts that things pass through, but you can see the conveyor belt above.

What happens is you burn the software into flash memory and test it for a few hours.

But because it's constant, things have to move on the assembly line.

So they are circulating inside this loop and that's why you see them there.

This was great for us because it was just a turning point. But it reverts.

This photo was taken in 1982, just before the IBM PC was announced.

Seymour Papert and I were introducing computers to schools and developing countries at a time when computers were far ahead of us.

But one thing we've learned is that these kids can absolutely jump in there, just like the kids here.

And when people said to me, "Who teaches the teachers the children?"

I say to myself, "Which planet are you from?"

Okay, there's no one in this room -- it doesn't matter how techy you are -- there's no one in this room who won't give a kid a laptop or cell phone to help debug. OK?

We all need help, even the most experienced.

This photo of Seymour is from 25 years ago. Seymour made a very simple observation in 1968, and later published it in 1970 (April 11, to be exact), basically titled "Teaching Children to Think."

What he observed was that children who create computer programs understand things differently and come closest to learning about learning when they debug their programs.

It was very important, but in a way we lost it.

Children don't do enough programming. If there's one thing I want to bring back from this, it's programming for children.

It really matters. Using the application is fine, but programming is absolutely basic.

It was released with three languages ​​included. Squeak, Logo, and a third language I've never even seen before.

The point is that this will be very intensive work on the programming side.

This photo is very important because it was taken a long time ago.

This was in the early 2000's. My son, Dimitri -- here, many of you know Dimitri -- went to Cambodia and founded this school that we built, just as schools were connected to the Internet.

And these kids had laptops. But it's in addition to the influence of Joe and others that really brought this to life. We started with one laptop per child.

This is the same village in Cambodia just a few months ago.

These guys are real professionals. There were only 7,000 machines that were being tested by children. Being non-profit is absolutely basic.

Everyone advised me not to become a nonprofit, but they were all wrong.

And there are really two reasons why it's important to be non-profit.

There are many reasons, but two are worth your time. One is that the purpose is clear. The moral purpose is clear.

I'm not selling laptops, so I can always meet any head of state or executive I want. OK? No shareholders.

Selling or selling doesn't change anything.

Clarity of purpose is very important. And the second is very counterintuitive. You can get the best talent in the world.

Our professional services, including search firms, legal services, including banking, including telecommunications, are all free of charge. And it's not for saving money.

we have money in the bank Because it attracts the best talent.

Those who believe in the mission and commit to it are the best people.

We couldn't afford to hire a CFO. When I put out my CFO job description with zero salary, there was a line.

You can team up with people. The United Nations will not be our partner if we are profiting from it. Therefore, it is very important to announce this with Kofi Annan, and the UN basically allowed us to contact all countries. This was the machine I was showing to Yves Béart before I met him.

This machine is kind of silly, but in retrospect, it actually served a very important purpose.

Everyone remembered that pencil-yellow crank.

Everyone remembered the yellow crank like a pencil. wrong.

It got its power in another way. It's kind of childish.

This wasn't the direction we chose because it had a crank, but by the way, it's really stupid to have it on board.

We didn't take it off because we didn't want to do it, even though some of the press didn't, or didn't understand it. Having it in a laptop per se isn't really what you want.

An AC adapter is required separately.

I didn't bring it, but it works really well offboard.

I could talk a lot about this laptop, but I've only decided on four things.

Remember. Because there are others, including Bill Gates, who said, "Hey, you have a real computer."

That computer is unlike anything you've ever had and does things you won't go near. There are four of those computers. And low power consumption is very important and I hope it gets more mention in the industry.

The reason you want to stay below 2 watts is that your upper body can only produce about 2 watts.

Dual Mode Display -- The sunlight display is great.

I used it in the sun at lunch today and the more sun the better.

And it really mattered. Mesh network, it will become commonplace.

And of course it goes without saying that it is "rugged".

And the reason I think design is important is not because I wanted to go to art school.

By the way, when I graduated from MIT, I thought the worst and stupidest thing to do was go to Paris for six years. (Laughter) So I didn't do that. But design is important for many reasons.

Most importantly, it's the best way to make a cheap product.

Most people make cheap products by using cheap designs, cheap labor, and cheap components to make cheap laptops.

And in English the word "cheap" has a double meaning, which is very apt. Because it's not only cheap, it's also cheap in the pejorative sense.

But if you take a different approach and think about very large scale integration, very advanced materials, very advanced manufacturing, it's like pouring chemicals out one end and the iPod blowing up out the other end. And really cool design, that's what we wanted to do.

And since Yves and I obviously didn't compare notes, you can do these in a hurry and save a lot of time.

These are his slides so I don't need to talk about it.

But for us it was very important as a strategy.

It wasn't just to be pretty. Because, as someone knows, good design is very important.

Eve showed one of the generators.

Thanks to a mesh network, which I won't go into detail about, they are connected when it comes to delivering laptops to children in the most remote and poorest parts of the world. Not just laptops.

Therefore, it is necessary to throw in a parabolic antenna. We are installing a generator.

There are many things behind these. They can communicate with each other.

If you're in the desert, you can have a conversation about two kilometers away.

About 500 meters in the jungle. So when a child bikes home or walks a few miles, he or she goes off the grid, so to speak.

I'm not going to put it near another laptop, so I'll have to nail it to a tree and get it.

I won't call Verizon or Sprint. Build your own network.

And it's very important, the user interface.

18 Boot with keyboard. English is an overwhelming minority.

Latin is also relatively rare. Just check some languages.

I am sure some of you may have never heard of it before.

Is there anyone in the room unless you are using OLPC? Can anyone tell me the language of the keyboard displayed on the screen? I only have one hand, so I know.

yes you are right he is right Amharic, Ethiopian. Keyboards have never existed in Ethiopia.

There is no standard for keyboards because there is no market.

And this is the big difference.

Again, for nonprofits, we don't see children as a market, but as a mission.

So we went to Ethiopia to help make keyboards.

And this will be the standard Ethiopian keyboard.

So the last thing I want to do is what are we doing to deploy it.

And completely changed the strategy. I decided to go to 6 countries first. The initial decision was a very good one, but that's not what we're doing now.

Large countries, one of which is not very big, but rich.

Here are six of them. We went to six places and each time the head of state said he would do one million.

In the case of Gaddafi, he would throw $1.2 million and they would launch it.

We thought that this was just the right strategy and that it would allow small countries to piggyback on these big ones.

So I went to those countries at least six times and met with the head of state maybe two or three times.

In each case, the ministers were assembled and many things were considered.

It was a time in my life when I was traveling 330 days a year.

It's not something I envy or want to do.

In the case of Libya, it was great fun meeting Colonel Gaddafi in his tent.

The camel smell was incredible.

The temperature was 45 degrees. I mean, this wasn't a so-called cool experience. And the previous countries — I say “before” because none of them actually made it through this summer — made a big difference between giving a head of state a photo opportunity and making a press release.

So we went for the small one. Uruguay, bless their hearts.

It's a small country, so it's not very wealthy. The president said he would do it, but what will happen?

he did it The tender didn't include anything related to us, didn't mention anything specifically about sunlight readable, mesh networking or low power, just a plain laptop proposal.

And what do you think? We definitely won.

The first 100,000 people flocked to the OLPC when it was announced that it would cover all Uruguayan children.

The next day, less than 24 hours later, the President of Peru said, "Do it 250 times." And Dawn, a bit of a domino effect.

The President of Rwanda stepped in and said he was going to do it.

The Ethiopian president said he intends to do so.

And boom, boom, boom. President of Mongolia.

And what happens is these things start happening in these countries, but it's not enough.

When we added all these countries together, it still didn't quite come together, so we said, "Let's start the program in the United States." So I decided to do this in late August or early September. We announced it in the middle to near the end, just as the Clinton Initiative was taking place.

We thought it would be a good time to announce it.

It was released on November 12th.

It was said to be a short period until the 26th, but it was extended to the 31st.

And the "Give One, Get One" program is very important. Because a lot of people were absolutely interested.

The first day was just wild. And we said, "Well, let's get people to donate a lot. Instead of just getting one for one, we might give 100 or maybe 1,000." That's where you come in.

And I think that's very important. I don't want you to buy a $400 worth laptop. have understood? I try, but it doesn't help. have understood?

If everyone in this room went out tonight and ordered one of these items for $400, whatever it was, 300 people in the room would do it -- yeah, great.

I want you to do something else.

But don't go buy 100's or 1,000's, please do. 10,000 would be even better.

Tell people about it! It should go viral, okay?

Use mailing lists. People in this room have an extraordinary mailing list.

Ask your friends to give it to you and take it.

And if each of you sent it to 300 or 400 people, that would be great.

I am not particular about the price.

When you do "give one get one," a lot of the press reports things like, "It didn't work. $188. Not $100."

Two years from now, it will be 100. below 100.

We promised to lower the price instead of adding more features.

But it was the countries that wanted to raise it, and we allowed them to raise it for a variety of reasons. So what can you do - I just said. Don't just give one, get one.

I would like to end with just one last thing. This has been less than 24 hours, or it may have been less than 24 hours.

First kids got laptops. They got them by ship and now say they're leaving about 7,000 or 8,000 at a time this week.

They went to Uruguay, Peru and Mexico.

It's been slow going, we're only making about 5,000 per week, but hopefully sometime next year, maybe by the middle of this year, we'll hit 1 million per month. When you think about this number, 1 million isn't that many numbers. It's not a big number.

This year, 1 billion mobile phones will be sold worldwide.

But a million a month is a big number in the laptop world.

And today, all together, the world's laptop production is 5 million per month. So I'm standing here telling you that sometime next year, we're going to produce 20 percent of the world's production.

Then many lucky children will be born.

And two years from now, or whenever I get EG again, I hope I'm free of bad breath and invited again, hopefully by then maybe 100 million to provide for our children.

thank you.

(applause)

We humans are becoming an urban species, and cities are our natural habitat.

That's where we live.

In 2014, over 54 percent of the world's population lived in cities, and so many of these people have probably thought about how they would do things differently. For example, what would I do if I only had the tools to change the state of my city?

What would my dream city look like?

And these tools, this is exactly what we gave them.

Two years ago my team and I released a game called Cities: Skylines.

It's a city building game.

So I was always interested in the city as a system.

That's very interesting to me.

But what I didn't understand is that I'm not alone in this.

People love cities.

they are interested they have ideas.

The game was an instant hit.

More than 3.5 million people have played so far.

And it's not just about playing.

It also has a really nice sharing system.

So people play, build cities, share their creations, and showcase what they have created.

And what I'm showing you is part of a player-created city.

So the game is not just about overcoming the challenges posed by simulation, but about self-expression and creativity.

It's about showing what your city is like.

So here are some videos.

These are from YouTube.

These are some of the most interesting urban designs I have ever seen.

So they are all different, but I hope you like them all.

This place is called Holland.

Silverette's work.

When you start the game, you get a blank piece of land.

This land can be based in the real world, handcrafted in a map editor, or of course you can download cities created by others and play in them.

But what Silverette did here is that what he wanted to create was not a real city.

Although it looks real, this is a fantasy city.

So what he wanted to do was a fantasy city that could be in Holland.

So he researched the characteristics of Dutch cities and combined some of them to create this.

I mean, it's a city, but it's not a real city, but it could be a real city.

It's just like Holland.

So the place is really densely populated.

So what you need is highways, trains, anything that connects these small town centers.

There are many people and there is a lot of movement, so transportation is important.

Now let's move on to the fantasy side.

Let's go to the future.

This is one of my personal favorites.

These urban designs are my favorite.

So this is a hierarchical city by Conflictnerd, the basic idea is that it has concentric roots.

In other words, a city is a big circle with smaller circles inside it.

And importantly, when you put all services in the center, people actually live in the outer ring. People want to live there because there is less traffic, less noise and less pollution.

But service is still around the corner.

they are in the center.

And this is the essence of this game.

Players must understand what the wishes and needs of the little people living in the city are.

Therefore, you need to know where to put things.

Having a hospital is not enough.

must be accessible.

People need to go to hospital.

And this is one way to do it.

So this is what we might see someday.

And further into the future.

Yutto's Astergia.

So Yut is making YouTube videos and playing games.

What he did here was actually a series of 12 points to create this city.

So he's playing the game, recording it, explaining what he's doing and why he's doing it.

And as part of this series, he actually interviewed a real-life urban planner named Jeff Speck.

Speck is an expert on the concept of walkability.

The basic idea is that if you want people to walk, it's kind of beneficial, but you really need to walk as a reasonable mode of transportation.

It should be a good way to get to places.

So what Jutto did is explain this concept and have Speck explain it, and then apply it to the city he's building.

So what we're seeing is Yutto's vision of the future. It is connected to many public transport, sidewalks, squares and skyscrapers.

Maybe this is what the future looks like.

And the game system works very well for this.

This game has some real world uses.

I know some city planners use this as a sketching tool. So while the simulation isn't entirely realistic, it's realistic enough that anything that works in-game is likely to work in the real world, so you can actually try things out and see if this intersection fits this kind of situation.

Would building a new road help?

And this is what you can do in this game.

There was a very interesting competition held by the city of Hameenlinna in Finland.

So what they did was they had a new area in the city they wanted to develop.

They created a map that included existing cities, blanked out areas they wanted to develop, and shared this map.

So anyone could download maps, play games, build areas, and submit their creations to the city council.

So they haven't built anything yet, but maybe they're just actually building a real city using one of the plans made in the game.

These videos I've shown are people coming up with new kinds of solutions.

We know cities are growing.

Cities are getting bigger and the proportion of the population living in cities is projected to rise.

So we need solutions and they are playing games and trying different kinds of solutions.

They may have something really important.

So what we're seeing here is a dream city that might one day become a reality.

So maybe this isn't just a game.

It may be the way we decide our own destiny.

thank you.

(applause)

I have something I want to confess to you all today, but before that, I would like to ask you a few questions.

How many people here have children?

And how many of us are confident that we know how to raise our children the right way?

(Laughter) Well, I don't think there are too many hands on the second option. This is also my confession.

I have 3 boys. They are 3, 9 and 12 years old.

And like you, and like most parents, I honestly have little idea what I'm doing.

I want them to live happy and healthy lives but I don't know what to do to make sure they are happy and healthy.

There are so many books out there that offer all sorts of conflicting advice that it can be really overwhelming.

So I've spent most of their lives just building things up as I go along.

But something changed me a few years ago when I learned a little secret about England.

This has made me feel more confident about how I am raising my children and has revealed a lot about how we as a society can support all children.

I would like to share that secret with you today.

Over the past 70 years, British scientists have followed the lives of thousands of children as part of an astonishing scientific study.

There is nothing like this anywhere in the world.

Gathering information on thousands of children is truly a powerful undertaking. Because we can compare children who do well in school and grow up to be healthy, happy and wealthy with children who have a lot more trouble. And we can sift through all the information we collect and try to figure out why their lives turned out differently.

This British study is actually kind of crazy.

So it all goes back to 1946, just a few months after the end of the war. At the time, scientists wanted to know what it was like to have a baby for women back then.

They conducted this extensive survey of mothers and ended up recording the births of nearly every baby born in a single week in England, Scotland and Wales.

That was about 14,000 babies.

The questions they asked them were very different from the questions we might ask today.

Sounds really outdated now.

They asked questions such as, "Did you get enough of a pint of milk a day during your pregnancy?"

"How much did you spend on smocks, corsets, nightdresses, knickers and bras?"

And this is my favourite. "Who took care of your husband while you slept with this baby?"

(Laughter) Well, this wartime study was actually so successful that scientists did it again.

They documented the birth of thousands of babies born in 1958, and thousands more in 1970.

They did the same in the early 1990s and again at the turn of the millennium.

A total of over 70,000 children across five generations participated in these studies.

They were called the British birth cohort, and scientists have gone back and documented all these people every few years since then.

The amount of information currently collected about these people is absolutely staggering.

It contains thousands of paper surveys and terabytes worth of computer data.

Scientists have also built a huge bank of tissue samples such as hair, clipped nails, baby teeth and DNA.

9,000 placentas have also been collected from some births and are now kept in plastic buckets in secure storage.

The whole project is unique, no other country in the world tracks generations of children in such detail.

These are some of the best-studied people on the planet, and their data have become invaluable to scientists, generating well over 6,000 scholarly articles and books.

But today I want to focus on just one discovery. Perhaps the most important finding to come from this remarkable study.

And it's also something that speaks to me personally. Because it's about how we use science to do the best for our children.

So let's get the bad news out of the way first.

Perhaps the biggest message from this remarkable study is: Don't be born into poverty or disadvantage, because if you do, you are much more likely to have a difficult path in life.

Many of the children in the study were born into poor or working-class families with problems such as cramped housing, revealing that these disadvantaged children are more likely to struggle in almost every way.

They tend to do poorly in school, end up in bad jobs, and earn less.

It may sound obvious, but some of the results are truly surprising, and children who have a difficult start in life are more likely to end up unhealthy as adults.

They are more likely to become overweight, have high blood pressure, and are more likely to have poor memory, poor health, and even premature death in decades to come.

Now, we talked about what happens later, but some of these differences show up at a really amazingly early age.

One study found that children who grew up in poverty lagged their wealthier peers by nearly a year on educational tests, by just three years old.

Differences like this are seen over and over again across generations.

It means that the circumstances of our childhood have a great influence on the later development of our lives.

And figuring out why is one of the most difficult problems facing us today.

You are done.

The first lesson in life success, folks, is this. Choose your parents carefully.

(laughter) Don't be born into a poor or struggling family.

Now, I think you can see a small problem here.

We can't choose our parents or their income, but this UK study showed that not everyone who gets off to a bad start ends up in trouble in the end, and it's got real attention for optimism.

As you know, many people have a tough start in life but still manage to get along very well in some ways in the end. And this study begins to explain how.

The second lesson is that parents really matter.

In this study, children whose parents were enthusiastic, interested, and ambitious for the future were more likely to get off to a rocky start.

It seems that parents and their behavior really, really matter, especially in the first few years of life.

Let me give you an example.

In one study, scientists looked at about 17,000 children born in 1970.

They sifted through all the mountains of data they had collected, trying to figure out how children who had a difficult start in life could still thrive in school.

In other words, which one outperforms the odds.

The data showed that it was the parents that mattered most.

Parental commitment and interest in the first few years of life were strongly associated with subsequent success in school for their children.

In fact, very small things that parents do can lead to good outcomes for their children.

We talk to them, listen to them, give them warm responses, teach them letters and numbers, take them on trips and visits.

Reading to children every day is also very important.

One study found that children whose parents read to them daily at age 5 were significantly less likely to be poor by age 30 than those whose parents showed interest in education at age 10 and whose parents did not.

Now, there are big challenges in interpreting this kind of science.

These studies show that certain parental behaviors correlate with positive outcomes for children, but we don't always know whether those behaviors caused the positive outcomes or whether other factors got in the way.

For example, we have to consider genes, but that's a whole other story.

But the scientists working on this British study are working hard to find the cause, and it's one of my favorite studies.

The study looked at the bedtime habits of about 10,000 children born at the turn of the 2000s.

Did the children go to bed at a set time, or did they go to bed at different times during the week?

This was very important because the data showed that children who went to bed at different times were more likely to have behavioral problems, and children who then switched to regular bedtimes often showed improved behavior, suggesting that bedtime routines really helped children improve their situation.

There is one more thing to consider here.

In this photo, scientists observed children reading for fun.

It was picking up magazines, picture books, and story books.

Data showed that children who read for fun at ages 5 and 10 were more likely to do better in school, on average, on subsequent school tests.

Reading comprehension is tested as well as spelling and math tests.

Because the study sought to control for any confounding factors, the study included children of similar intelligence and social class backgrounds, making it appear as if reading was what really helped these children to do better on tests in school later in life and advance to higher education.

Now, at the outset, I said that the first lesson from this study is that one should not be born into poverty or disadvantage. This is because such children tend to follow a more difficult path in life.

But then I said that parenting is important and that good parenting, if you will call it that, helps children get through the hardships and overcome some of the early disadvantages.

Wait, then. So, after all, is poverty not a problem?

Some might argue that it doesn't matter if the child was born poor. As long as the parents are good parents, the children will do well.

I don't think that is true.

This study shows that poverty and parenting matter.

And one study actually quantified it, looking at children who grew up in persistent poverty and how well they did in school.

Data shows that even if parents put them to bed on time, read to them every day, and did everything else right, that's just what made their children grow up to this point.

Good parenting only narrowed the educational gap between rich and poor children by about 50 percent.

This means that poverty leaves very lasting scars, and that tackling child poverty is crucial if we really want to ensure the success and well-being of future generations.

Now what does this mean for you and me?

Are there any lessons here that everyone can take home and utilize?

As a scientist and journalist, I want to bring scientific information to parenting...

And when it comes to yelling at your kids to go to bed on time, having the scientific literature on your side can really help.

(Laughter) And wouldn't it be great to think that all we had to do to raise happy, successful children was talk to them, be curious about their future, put them to bed on time, and read them to them.

our work will be done.

Well, as you can imagine, the answer is not so simple.

First, while the study looks at what happens to thousands of children on average, it doesn't necessarily tell you what will work for my child or your child or any individual child.

Ultimately, each of our children will go their own way, determined in part by the genes they inherited and, of course, all the experiences they have throughout life, including their interactions with us, their parents.

After learning all this, I will tell you what I did.

It's a little embarrassing.

I found myself so busy working and, ironically, learning and writing about this wonderful study of British children, that there were days when I barely spoke to my own British children.

So I introduced talk time at home. Only 15 minutes at the end of the day to talk and listen to the boys.

Now I ask my children what they did today and try to show that I value what they do at school.

Of course, I always try to have a book to read.

I tell them that I am ambitious for their future and believe they can be happy and do great things.

I don't know if any of that makes a difference, but I'm pretty sure it won't do them any harm, but rather could benefit them.

After all, if we want our children to be happy, all we can do is listen to science and, of course, to our children themselves.

thank you.

We live in a time of fear, and our response to fear can be to shrink and defend ourselves, or to stretch out and cling to each other to face it together.

what is your instinct?

What more can you see in the world?

The problem with the first approach is that it cuts you off from others in your growing isolation.

Our isolation increases. It's because we become overly imaginative about people and spaces that we no longer engage with.

We become more conscious of being other and lose empathy.

Today, I want to tell you about a group of people who started to create a space for strangers to connect in solidarity in the face of the global challenge of terrorism.

My own obsession with what I consider an irrational breakup began as a child.

As a 4th generation Kenyan Muslim of Indian descent, I was concerned that no one in my family had ever married outside of a small religious community in these 4 generations.

And I wondered what it was.

Was it terrifying?

Was it racism?

Was it cultural preservation?

Did it have anything to do with colonialism?

Admittedly, we didn't share much of the same public space with others.

These breakups haunted me deeply and swayed my career choices.

When I was 20, the American embassies in Kenya and Tanzania were bombed.

A year later, I was on my way to the Middle East to study conflict resolution.

And from that point on, working in an unsafe environment wasn't too difficult for me. Because the world was now changing rapidly as an age of terrorism.

I was in Washington, D.C. when 9/11 happened, then returned to my hometown of Kenya to work for refugees, then Pakistan and Afghanistan.

What I realized in all of these places was how important physical space is to us feeling safe, healthy, and belonging.

In 2013 I returned to Nairobi from Afghanistan.

Al-Shabaab operatives laid siege to the Westgate shopping center, killing 67 people in a day of sheer terror.

Soon after, I began to see how Nairobi was beginning to change, to feel more like the war-torn city in which I worked, tired of fear and terror.

And Nairobi continues to grow driven by fear.

We are seeing more walls, more barriers, more security.

And like the rest of the world, we are experiencing a weakening of human connections.

Religious conflicts deepen, and it is increasingly questioned how much we have in common.

We are at a critical time when we need to restore faith in humanity and come together boldly and visibly.

So in 2014, I gathered a group of people in Nairobi to figure out what to do. Intellectuals, diplomats, artists, developers, etc.

The group then articulated our challenge in three components. One is to take the city back from the terror story and take it back into the hands of the people who live there. The second is to introduce a language that transcends race, tribe and religion to help us transcend our differences. And third, provide gestures that help restore empathy, conversation, and trust.

One of the members of this group was the artist and architect Yazmani Arboleda.

He and I have worked together in other parts of the world for many years.

He has a history of destroying urban environments and bringing strangers together in incredibly beautiful and surprising ways.

he had an idea.

The idea was to unite people of different faiths by having each other's chapels, mosques, temples, synagogues and churches painted yellow in the name of love.

By focusing on the symbols of faith, we can get people to re-examine the essence of their faith: a shared belief in shared kindness, generosity and friendship.

By building corridors between chapels within a single district, you can create a stable network of islands and people that can withstand threats.

And neighbors will interact not only with their heads, but also with their hands and hearts, by picking up paintbrushes with other neighbors.

And the buildings depicted will become sculptures in the landscape that speak of people from very different backgrounds standing together.

We call this project "Color in Faith".

We liked the idea and immediately started approaching places of worship such as churches, temples, mosques and synagogues.

We went door to door and visited over 60 rabbis, imams, pastors and priests.

As you can imagine, it is not easy to bring these communities together when prejudice is reinforced by a global pandemic of terror.

It was complicated.

We were confronted with decision-making hierarchies within religious institutions.

For example, I was told that in the case of the Catholic Church, the Archbishop must make the decision.

So we wrote to the archbishop.

We wrote to the Vatican.

We look forward to hearing from you.

(Laughter.) And I was told that for the other chapels, the decision must be made by the patrons, the people who are paying for the building and the construction and the painting of the building.

And we've learned it the hard way, confronted head-on with a long-standing legacy of dependence on missionaries and donors that stifles unconditional civic activism.

Over the course of our conversations, there was one community that kept asking for thanks.

So we came back and kept telling them we thanked them and of course if we didn't thank them we wouldn't be here.

Then, late in the game, I realized that the word "gratitude" was a code for receiving the entry fee.

So we challenged them and asked the question, "So how much does that cost?"

How much can you pay?

And if we pay for your faith, is it really faith? ”

We started the project with the question, "Where is your faith?"

And here we find ourselves asking the question, "How much does your faith cost?"

But the most difficult problem was recognizing the risks of isolation.

Some synagogues flatly refused to participate for fear of being targeted by the attention they received.

Similarly, some mosques feared being targeted.

And these concerns are justified.

Still, 25 places of worship have pledged to participate.

(Applause.) These bold leaders reinforced that gesture with their own meaning.

For some, it was to show the world they weren't terrorists.

For others, it was welcoming people through the door to ask questions.

And for some, it was to bridge the gap between older and younger generations. By the way, this is what many faiths are currently working on.

Others were simply to build neighborhood unity in advance of feared electoral violence.

When asked why it was yellow, one imam said admirably, "Yellow is the color of the sun.

The sun illuminates us all equally.

it is not discrimination. ”

He and others spread the word through congregations and radio.

City officials stepped forward to help issue permits and convene civil society organizations.

A paint company donated 1,000 liters of yellow paint specially formulated for us in what is now called 'optimistic yellow'.

(Laughter.) (Applause.) And then a poetry collective worked with a university to host a series of tweet chats to challenge the public on issues of faith, not just our faith in the context of religion, but our faith in politicians and tribes and nations, our faith in older and younger generations.

And 'Color in Faith' was launched at a gallery event that invited an incredible number of people, including gallery-goers, religious leaders, artists, and business people.

Even before we picked up the paintbrush, we had achieved many of the conversations and connections we wanted.

And started painting.

Muslims supported Christians, atheists, agnostics and Hindus and painted mosques yellow.

Then they got together again and painted a church yellow, then another mosque, then another church yellow.

Poets and musicians performed while we painted.

We painted in Nairobi and then in Mombasa.

Local and international press outlets featured "The Color of Faith" in English, French, Swahili, Spanish and Somali.

CNN highlighted Color in Faith as a way to bring the community together.

And our social media platform shined, connecting with more people.

And these neighbors kept in touch.

There are people who are advancing their politics on a platform of peace, and there are communities as far away as Argentina and the United States, and as close as Mali and Rwanda, seeking our support.

We are happy to help.

With or without our support, it is our dream that this project, this idea, will spread all over the world.

Color-in-Face literally highlights those who are yellow and well-meaning.

Color in Faith unites its neighbors and hopes that when threats strike, they will collectively sort through rumors and facts, and band together to face them.

We have proven that the human family can unite and send a message far brighter and more powerful than the voices of those who seek to harm us.

We show that fear is contagious, but so is hope.

thank you.

(applause)

So before I started my Microsculpture project, I was a photographer for 18 years.

During that time, I was traveling around the world shooting global advertising campaigns and having the opportunity to photograph icons of my generation.

I had reached a point in my career that I had dreamed of reaching, but for some reason I still felt a little unfulfilled.

Despite the extraordinary things I filmed and experienced, they were starting to feel a little normal to me.

Also, I felt uneasy about the fact that photos are becoming disposable in the digital world, and I strongly wanted to create valuable photos again.

And I needed a subject that felt special.

Sometimes I wish I had the eyes of a child.

I mean, I wish I could see the world the way I did when I was little.

As we age, I think there is a danger that our curiosity will weaken or become duller due to habituation.

One of my challenges as a visual creator is to present the familiar in new and engaging ways.

But luckily I have two wonderful children who are still curious about the world.

Sebastian -- He's still curious about the world, and in the spring of 2014 he brought in ground beetles from his garden.

There was nothing special about this insect. You know, it was a common seed.

But he was still interested, so I brought it into my office and we decided to look at it under his microscope.

He had a little science kit for Christmas.

And this is what we saw.

Well, the first time I saw this, I was shocked.

This is the back of the ground beetle.

When I first saw it, it reminded me of galaxies.

And all the time, this was right outside our window.

As you know, I was looking for this extraordinary subject and it took Seb's eyes and curiosity to bring it to me.

So I decided to photograph it for him and this is what I produced.

I basically asked myself two simple questions.

First: Can I combine all my knowledge and skills in photographic lighting and apply it to a subject that is five millimeters long?

But can you also creatively control the lighting for a subject of such size?

So I practiced with other found specimens and contacted the Oxford University Museum of Natural History to see if I could access their collection to advance the project.

And I went there for a conference and showed some of the images that I had taken. And they were able to confirm the details I was able to obtain.

I don't think they've actually seen anything quite like it before. And from that point on, they gave me open access to their entire collection, and the assistance of their entomologist, Dr. James Hogan.

Well, over the next two and a half years, I photographed 37 insects from their collection.

The way I work is basically dividing the insect into sections and treating each of those sections like a small still life.

For example, when photographing an insect's eye, which is usually very smooth and dome-shaped, it uses a large, soft, diffuse light source so that its surface does not suffer from severe hotspots.

But when attention shifts to the hairy legs, the lighting setup changes completely.

So I make that little part look as nice as possible and work on the whole insect until I have 20-25 different parts.

The problem with high magnification photography is that it inherently has a very shallow depth of field.

So to get around that, I put the camera on a rail and automate it to move 10 microns between each shot.

This is about one-seventh the width of a human hair.

And it gives me a deep stack of images.

Each has a small focus right up to the end.

Then you can squash it to produce a single image that is perfectly in focus from front to back.

So essentially you get 25 sections that are perfectly focused and beautifully lit.

Each of my images now consists of 8-10,000 individual shots.

It takes about three and a half weeks to create, and the average file size is about 4 GB.

Therefore, there is a lot of information that can be leveraged when printing.

And the prints in the exhibition are about 3 meters long.

In fact, I had a show in Milan two weeks ago, and there were some 9m long prints.

However, we understand that these images must also work in the digital world.

It doesn't make sense for me to put all my blood, sweat and tears into making these pictures if I can only see 500 pixels on the screen.

So, with the help of Rob Chandler and Will Cookson, we developed a website that allows viewers to immerse themselves throughout the 4 gigabyte file and explore every minute detail.

If you have time, please visit microsculpture.net and play with it.

It's a lot of fun.

I presented this work for the first time at Oxford and since then it has moved to the Middle East.

I am now back in Europe and going to Copenhagen this month.

And the feedback has been great.

In fact, I get e-mails from all over the world. From a teacher who currently uses the website at school.

Children are using tablets.

They zoom in on the photos and use them for art classes and biology classes.

And that's not what I planned.

It's just a nice offshoot of the project.

In fact, one of the things I like to do at the exhibition is actually see the reactions of the children.

And, you know, standing in front of a three-meter insect might have terrified them.

But it's not. they look curious.

This little guy here stood there for five minutes without moving.

(Laughter) And at the end of the day, in fact, at the end of the day at the exhibition, you have to wipe the bottom third of the big footprint -- (Laughter) because they just want to touch the big bug just to get rid of all the sticky handprints.

If you don't mind, I'd like to leave one last image.

This has something to do with Charles Darwin.

Here is one of the images I took recently.

I'm talking about the creature in the box, not my cat.

This is a shield bug that Charles Darwin brought back from Australia on board the Beagle in 1836.

And when I got home, I stood in the kitchen and stared at it for about 20 minutes.

I couldn't believe I had such a beautiful creature.

And in that moment I vaguely realized that this was the legitimacy of the project for me.

The fact that the museum would risk me playing with this stuff showed that my images had value. That means they are not disposable.

That's the image I created.

Looking at this, I still often wonder, what would Charles Darwin judge of these images?

Do you think he'll like the picture of his shieldbug?

So -- (applause) I think this is kind of weird, you know.

I'm a visual person, a creative person, but I still needed the eyes of a child to find my particular subject.

That's what it was.

So all I can say is, Sebastian, thank you so much. Thank you very much.

thank you.

(applause)

In 1915, just over 100 years ago, Einstein published his General Theory of Relativity. It's a weird name, but it's a theory that explains gravity.

It states that mass - all matter, planets - attracts mass not because of instantaneous forces, as Newton argued, but because all matter - all of us, all planets - wrinkles the flexible fabric of space-time.

Space-time is what we live in and what connects us all.

It's like lying on a mattress and having its contours distorted.

The masses move not because of Newton's laws, but because they see this curvature of space-time and follow small curves. Same when bedmates snuggle up to us because of the curvature of the mattress.

(Laughter) A year later, in 1916, Einstein theorized that gravitational waves exist and that these waves are produced when mass moves, such as when two stars rotate around each other, creating a fold of space-time that carries energy out of the system and the stars move toward each other.

However, he also estimated that these effects would be so minute that they would never be possible to measure.

I am going to tell you the story of how gravitational waves were first discovered only recently, in 2015, through the efforts of hundreds of scientists working in many countries over decades.

It's quite a long story.

It started 1.3 billion years ago.

A long time ago in a galaxy far, far away -- (Laughter) there were two black holes revolving around each other -- "dancing the tango," I mean.

It started slowly, but as it emitted gravitational waves, they drew closer together, accelerating in speed, until they fused together into a single black hole that spun at nearly the speed of light, weighing 60 times the mass of the Sun but compressed to 360 kilometers of space.

That's the size of Louisiana where I live.

This incredible effect created gravitational waves that carried the news of this cosmic embrace to the rest of the universe.

Since the method of measuring gravitational waves looks for distance effects, it took a long time to figure out the effects of these gravitational waves.

I want to measure longitude and distance.

When these gravitational waves passed through Earth, it was 2015, and they changed all distances: the distance between you all, the distance between you and me, our height. All of us stretched and shrunk little by little.

Predictions show that the effect is proportional to distance.

But it is so small that even at distances much greater than my modest stature the effect is insignificant.

For example, the distance between the Earth and the Sun changes by one atomic diameter.

How can it be measured?

How can it be measured?

Fifty years ago, some visionary physicists at Caltech and Massachusetts Institute of Technology - Kip Thorne, Ron Drever, and Rye Weiss - thought that distance could be measured accurately using a laser that measures the distance between mirrors several kilometers apart.

It took many years, a lot of effort, and many scientists to develop the technology and develop the idea.

And 20 years later, almost 30 years ago, they started building two gravitational wave detectors and two interferometers in the United States.

Each is 4 kilometers long. One in the middle of a beautiful forest in Livingston, Louisiana, and another in the middle of the desert in Hanford, Washington.

The interferometer has a laser that travels 4 kilometers from its center through a vacuum and is reflected back by mirrors.

Measure the difference in distance between this arm and this arm.

These detectors are very, very sensitive. They are the most precise instruments in the world.

why did you make two?

That's because the signal we want to measure is coming from space, but because the mirror is always in motion, we can distinguish gravitational wave effects (which are astrophysical effects and should appear on two detectors) from local effects that appear separately on one or the other detector.

In September 2015, we were completing the implementation of second generation technology in our detectors, but we were still short of the optimal sensitivity we wanted. Two years later, I still haven't reached that sensitivity. But I wanted to collect data.

I didn't expect to find anything, but I was preparing to start collecting months' worth of data.

And then nature surprised us.

On September 14, 2015, both detectors detected gravitational waves.

For both detectors, signals with cycles of increasing amplitude and frequency and then decreasing were observed.

And they were the same for both detectors.

Those were gravitational waves.

That's not all. By deciphering this type of wave, we were able to deduce that it came from the merger of black holes into one more than a billion years ago.

It was— (applause) great.

I couldn't believe it at first.

We never imagined this would happen until much later. It was a surprise for all of us.

It took me months to be sure it was true because I didn't want to leave any room for error.

But it's true, and in December of the same year, another gravitational wave, smaller than the first, was measured to clear doubts about whether the detector could really measure these things.

The first gravitational waves produced a distance difference of four thousandths of a proton over four kilometers.

Yes, the second detection was smaller, but still very convincing by our standards.

Despite the fact that these are space-time waves, not sound waves, we like to put them in speakers and listen to them.

We call this "cosmic music".

I would like you to listen to the first two notes of the music.

(chirping) (chirping) The second short sound is the final part of the second of the two black holes, during which an enormous amount of energy was released. So much energy, it was like 3 suns converted into energy according to that famous formula E = mc2.

Remember that?

We love this music so much that we actually dance to it.

Let me ask you again.

(crying) (crying) It's cosmic music!

(Applause.) Now people often ask me, "What can gravitational waves be used for?"

And now that you've discovered them, what else do you need to do? ”

What can gravitational waves be used for?

When they asked Borges, "What is the purpose of poetry?"

He replied, "What is the purpose of Dawn?"

What is the purpose of caressing?

What is the purpose of coffee aroma? ”

He replied, "The purpose of poetry is for joy, for feeling, for living."

And so is the human curiosity to understand the universe, to know how everything works.

Since ancient times, every human being, even as a child, has wondered, "What are the stars?"

That curiosity is what makes us human.

And that's what we do in science.

We want to say that gravitational waves have a purpose, as we are opening up new ways to explore the universe.

Until now, we have been able to see starlight through electromagnetic waves.

We can now hear cosmic sounds that do not emit light, such as gravitational waves.

(Applause.) Thank you.

(Applause.) But are they useful?

Can't we derive some technology from gravitational waves?

Yes maybe.

But it will probably take quite some time.

We've developed techniques to detect them, but when it comes to the waves themselves, perhaps in 100 years they'll prove useful.

But deriving technology from science takes a lot of time, and that's not why we do it.

All technology is derived from science, but we practice science for fun.

Is there anything left to do?

many.

Many; this is just the beginning.

As we make our detectors more and more sensitive, we have a lot of work to do, but not only will we be able to observe more black holes and catalog their numbers, locations and sizes, but we will be able to see other objects as well.

Neutron stars will be seen merging into black holes.

You will see black holes being born.

You'll be able to see the rotating stars of our galaxy producing sine waves.

We will be able to see supernova explosions in our galaxy.

We will see a whole range of new sources of information.

We would like to say that we have added a new sense to the human body, which is hearing in addition to sight.

This is a revolution in astronomy, like when Galileo invented the telescope.

It's like when you add sound to a silent movie.

This is just the beginning.

We believe that the road to science is very long, very fun, but very long. And I would like to think that we, this large international community of scientists, come from many countries, work together as a team, and contribute to building that path. We shine a light, sometimes run into detours, and perhaps build a highway to space.

thank you.

(applause)

Billy Pilgrim can't sleep because he knows aliens will arrive and kidnap him in an hour.

He knows aliens are coming. Because he is not "trapped" in time, he experiences events out of chronology.

Over the course of Kurt Vonnegut's Slaughterhouse-5, he alternates between his childhood trips to the Grand Canyon, life as a middle-aged optometrist, prison life in an intergalactic zoo, and the humiliation he endured as a prisoner of war.

The title of The Slaughterhouse Five and much of its original story is based on Vonnegut's own experiences in World War II.

He lived as a prisoner of war in a former slaughterhouse in Dresden and took refuge in an underground meat locker during the Allied bombing of the city.

When he and the other prisoners finally emerge, Dresden is completely destroyed.

After the war, Vonnegut tried to understand human behavior by studying an unusual aspect of anthropology: the shape of the story, which he argued was as interesting as the shape of a pot or the tip of a spear.

To find that shape, he charted the hero's fortunes from beginning to end of the story.

The funny curves he produced revealed common types of fairy tales and myths that resonate across many cultures.

However, this form may be the most interesting.

In a story like this, it is impossible to distinguish between the good and bad luck of the characters.

Vonnegut thought that this kind of narrative, in which we are all victims of a series of accidents and cannot predict how the events will affect us in the long run, is the most true to reality.

He found the orderly and satisfying arcs of many stories at odds with this reality and set out to explore the ambiguity between good and bad luck in his work.

When Vonnegut abandoned a clear destiny, he also abandoned a simple chronology.

Rather than proceeding methodically from beginning to end, in his stories “every moment, past, present, and future, is and always will be.”

They "can see where each star goes and where it goes, so that the heavens are filled with thin, shining spaghetti."

The Trafalmadrians may be comfortable with their lack of agency, but Vonnegut's human characters are still getting used to it.

In Sirens of Titan, when they search the vastness of the universe for meaning in life, they find nothing but "empty heroism, petty comedy, and meaningless death." And the man and his dog witness their catastrophic future on Earth from a vantage point within the "chronosyncratic funnel", but are unable to turn the course of events.

There are no easy answers, but they ultimately conclude that the purpose of life is to love those who are to be loved. In The Cat's Cradle, Vonnegut's characters look to another source of meaning. It is boconism, a religion based on harmless lies that all adherents recognize as lies.

They are aware of the lies of boconism, but live their lives according to these doctrines anyway, and develop genuine hope in doing so.

They join a group called Caraces. This group is made up of people we “stumble upon but […] stick by choice” and are cosmically connected around a common purpose.

Don't confuse these with Granfarons. Gran Fallon is a group of people who give importance to associations that are really meaningless, such as where they grew up, political parties, or even whole nations.

Vonnegut had a dark view of the human condition, but he firmly believed that "we are all here to help each other through this, whatever it may be."

We may be pooped and demoralized, but Vonnegut sprinkled his harsh assessment with a little hope.

His fictional alter ego Kilgore Trout told the following parable. Two yeasts sat down, "eating on sugar and choking on their own excrement, discussing possible purposes of life.

Due to their limited intelligence, they could never guess that they were making champagne. Despite his insistence that we are all here to fart, despite his deep concern about the course of human existence, Vonnegut also hinted at the possibility that we might eventually make something good, even if only slightly.

If it's not good, what's good?

I picked up a cell phone and inadvertently made myself famous.

(Laughter) I was just talking about something that caught my attention, but with the click of a button, I was sent to a provocative viral video and shot to stardom overnight.

When I say all night long, I literally woke up the next morning to find a bunch of notifications on my phone, wondering if I was sleeping through a national tragedy.

(Laughter) Guys, it was the craziest thing, but I literally took a quantum leap when it came to my influence and exposure.

So I made another video. The subject of my videos was often the most contentious subject of American life, but what made me something of a digital lightning rod was the way I articulated my race.

See, being a police brutality survivor myself and having lost my childhood friend Alonzo Ashley to the police, I wanted to say a few words on the subject.

You see, this was the height of the Black Lives Matter hype, and people seemed to be relying on me to clarify their views, but honestly, it was kind of overwhelming.

As you know, the Internet has such interesting properties.

In a way, it completely brought the world together. When I was a kid, I remember the utopian propaganda being thrown at us about how the World Wide Web would reach people all over the world.

But at the end of the day, people are people.

(Laughter) And this magical superhighway got rid of our essential demons and gave them Ferraris.

(Laughter) You see, technology is a lot like money.

It just brings out what is already in you and amplifies it.

So I quickly became familiar with the phenomenon of internet trolls.

It looks like these guys live under that highway bridge -- (Laughter) And they missed the note about enlightenment in the Internet age.

I remember being bombarded with a wide variety of racial slurs from people who used the anonymity of the internet as clan food.

And some of them were actually pretty creative, but some were pretty scarred, especially in my timeline where all these people were murdered and navigating the post-traumatic world of someone who survived police brutality in the middle of Black Lives Matter.

I was no human to these trolls.

I was an idea, an object, a caricature.

Did I mention that this racial issue can cause some kind of division?

You see, I'm a curious person by nature, and when I drew my sword to engage in epic battles in the comments section, (laughs) I also started to realize that some of my trolls actually have brains. That made me even more curious and needed to understand what more.

And while these supposed fools seemed to have some original ideas, I said to myself, "Oh, at least to my knowledge, they are very misinformed."

Where do these guys get that argument from?

For example, was there some kind of alternate world containing other facts?

(Laughter.) (Applause.) Were history and gravity an option there?

But I needed to know. Like, I wanted to know.

After all, I knew nothing about digital echo chambers.

The same targeted marketing algorithms that feed more of the products you want to buy also feed more of the news you want to hear.

I have lived in an online world that mirrors my world view.

So my timeline was pretty free.

There was no Breitbart, no Infowars, no Fox News.

No, I was all MSNBC, The Daily Show, CNN and theGrio.

Well, these trolls were flying around dimensional portals, and I had to figure out how.

(Laughter) So what I tried to do was trick the Facebook algorithm into giving me more news that I didn't necessarily agree with. This worked for a while, but it wasn't enough. Because my online footprint had already established the pattern I wanted to hear.

So I took advantage of the anonymity of the Internet to infiltrate.

(Laughs) I set up this ghost profile and went crazy.

Now, on a practical level it was pretty straightforward, but on an emotional level it was kind of daunting, especially in the case of the racist acerbity I experienced.

But what I didn't realize was that the trolls vaccinated me, thickened my skin, and made me immune to views I didn't necessarily agree with, so I no longer reacted the same way I did months ago.

have understood? So I kept pushing.

Realizing that this sort of thing works on YouTube, I became a white supremacist lurker, Lucius 25 -- (laughter) and began digitally infiltrating the infamous alt-right movement.

Well, my doppelganger was Edgar Rice Burroughs' John Carter character -- (laughs) a sci-fi hero who used to be a Confederate soldier.

And years ago, I would have needed acting training, makeup and fake ID.

Now you can just hide.

So I started with little Infowars, then American Renaissance, then National Vanguard Alliance, then commenting on videos and ranting about Al Sharpton and Black Lives Matter.

I started lamenting racists like Eric Holder and Barack Obama and just echoed the anti-black sentiment thrown at me.

And to be honest, it was kind of exhilarating.

(Laughter) I literally spent days clicking on new racist profiles -- (Laughter) fooling around at work in Aryan land. it was something else.

(Laughter) So I started visiting some former troll pages. And many of them were regular Joes, lots of outdoorsmen, hunters, computer geeks, and even families with family videos.

So, as far as I know, some of you may be in this room right now. right?

(Laughter) But when I went undercover, there were a lot of great characters, people like Milo Yiannopoulos, Richard Spencer, David Duke.

All of these people were thought leaders in their own right, but over time the alt-right movement would use their information to fuel its momentum.

And I will tell you another factor that has brought the alt-right momentum. It is the Left's total demonization of all whites and men.

If you are white and have a penis, you are allied with Satan.

(laughter) Now, can you believe that some people find this offensive?

And -- (laughter) So, I mean, listen, the fact is, millennials get a history of diet brands for a lifetime.

So America seems eager to embed CliffsNotes' version of its dark past into textbooks.

It radically decontextualises race and its associated anger, making it fertile ground for alternative facts to grow.

Add in the wildness of the internet and it's easy to sell the idea of ​​a rebranded Mein Kampf to a generation that has been frustrated in public schools.

Many of these ideas are easily debunked.

Alternative facts have their nature.

But a theme kept screaming at me through the subtext of those discussions. It was why I couldn't help but be hated.

As a black man in America, it resonated with me.

You spent a lot of time demonizing me and defending yourself from attempts to make me apologize for who I am, trying to portray me as something I'm not, like a thug or a gangster, a threat to society.

unexpected compassion.

oh.

Now listen, the historical origins of the demonization of black men and white men are vastly different, and whether or not it applies to this debate tends to be a natural coincidence, sadly.

Now, you were probably taken aback by this perspective, and so was I.

Never in a billion years have I thought that I could have some kind of sympathy for those who dislike my guts.

Let me tell you, I'm not considerate enough to want to be your friend.

I don't have endless olive branches to reach out to people who don't want to see me on this earth. right?

But compassionate enough to understand how they got here.

To be honest, there were some justified points.

One of them was how liberals are so widely accepted by everyone, except those with honestly conservative views.

(laughter) Heaven forbid you to love God and really love this country. right?

And the other thing they were talking about was the fear they had about what they called “white genocide,” that diversity could be their annihilating force.

Listen, I know what it means to fear the fate of your people.

Between rifts, AIDS, gang violence, mass incarceration, gentrification and police shootings, blacks have every reason to stay up late.

But if nature values ​​diversity and you don't, you'll lose the battle, buddy.

(Laughter.) (Applause.) You know, nature doesn't care about your race. it is artificial.

Nature only cares about healthy organisms, and your precious ethnic traits are used for that purpose.

So the moment you let go of your racist identity and regain your humanity, all your problems will be solved.

(Applause.) I'm going to tell you about an immortal race, the human race.

join the party. Water is great.

Until the water gets too hot, but that's another TED Talk.

(Laughter) The point is that in order to reach this understanding, we need to let go of fear and embrace curiosity, but unfortunately too many people are not willing to take that journey to see the world from the inside out.

And let's be honest, that goes for right-wingers and conservatives as well as progressives.

You know, some of their points were fair, but they were still trapped in their own echo chambers, reusing old and outdated perspectives, not getting perspective diversity, and not having a fulfilling worldview.

So they don't listen to certain anti-racist and political voices like Tim Wise, Michelle Alexander, Dr. Joy DeGruy, Boyce Watkins, Tariq Nasheed.

All of these voices have the answer to the question they desire, but unfortunately due to the power of these echo chambers they cannot hear it.

We need to break down these digital divides because as technology advances, the effects of tribalism become more dangerous.

And this whole experience taught me something. Our gadgets can't save us.

All these technological devices only rule the universe there, not the one here.

So it's all IQ, not EQ.

It's a dangerous imbalance.

Virtues like intelligence of mind, character development, patience, perseverance, compassion, you know, however advanced these devices are, where do you get them to be a blessing rather than a curse?

It seems to me that humanity itself needs an upgrade.

Now -- (Applause) Of course, I don't believe in invincible monsters.

There were probably no giants without a simple Achilles heel.

And what if I told you that one of the best ways to really overcome this is to have the courage to have conversations with the picky people—people who don't see the world the way you do?

So yeah folks, conversation could indeed be the key to that upgrade. Remember, language was the first form of virtual reality.

It is literally a symbolic representation of the physical world, and through this device we change the physical world.

Conversations stop violence, conversations create nations and build bridges. Remember, when the chip is down, conversation is the last tool humans use before picking up guns.

And I'm not talking about secure conversations online from laptop security.

I'm talking about candid conversations with real, living people.

And for me, this is like running a community forum called Shop Talk Live.

Well, it's a shop talk live, has anyone ever attended?

Shop Talk Live has conversations that change lives.

We've met communities where they are, and we've done everything from avoiding gang violence in real time to find people jobs, to mentoring homeless youth.

And the reason we needed to do this was because of the violence of the rift era, there was a significant lack of trust in the black community.

And we ended up taking ownership and solving our own problems instead of waiting for someone else.

And the truth is, you'll find them in that barber shop, from mayor to felon.

So all we did was sort out what had already happened.

So what I started with was mining these alternative perspectives from these alternative digital worlds, analyzing them, and breaking them down into controversial issues.

Then I turned the internet inside out with my cell phone and started broadcasting these live conversations to my online followers.

This made them want to leave their secure laptops and meet us in person to have real conversations with real people.

and we did this. thank you.

(Applause.) Sometimes I sit and reflect on the contradiction between me just trying to solve a problem and us trying to solve a problem in our community. We have built bridges to many other communities, from the LGBTQ community to the Arab immigrant community, and have even sat down with someone with a Confederate flag on their hat and talked about what really matters.

It's time to stop trying to hack the human experience.

There is no escape from each other.

Stop trying to find it.

(Applause.) We have to understand something.

All humans want the same things and must overcome each other to get them.

These courageous conversations are the way to build bridges.

It's time we start seeing people as people, not just the thoughts we project or react to.

Humans are not barriers, but gateways to exactly what we want.

This is a collective and conscious evolution.

My journey began with a wildly popular cell phone video and a friend who had fallen.

Your journey begins now.

Join the relationship renaissance.

It happens without you.

My suggestion is to pick a topic and start a community dialogue in the edge of the woods.

Go back to real life and meet people.

And I want to tell you, if you cheat the algorithms of your existence, you will get some diverse experiences.

It's time to grow up, folks.

And if we do or not, when we do this, it will become clear that the key to this upgrade will always be our inner world, not some device we have created, but the gateway to this experience is and will forever be each other.

thank you.

(applause)

What are you doing on this stage in front of so many people?

(laughs) Run!

(laughs) Run away now.

That's the voice my anxiety speaks for.

Even when all is well, it can feel overwhelmingly doomed, like danger lurking around the corner.

As you know, a few years ago I was diagnosed with Generalized Anxiety and Depression. These two symptoms are often closely related.

Now, there was a time when I didn't tell anyone, especially in front of a large audience.

As a black woman, I had to develop extraordinary resilience to succeed.

And like most people in my community, I had the misconception that depression was a sign of weakness, a character flaw.

But I was not weak. I was a high achiever.

I had a master's degree in media studies and had a series of high-profile jobs in the film and television industry.

Her efforts have been recognized, and she has won two Emmy Awards.

Indeed, I was completely wasted, had no interest in the things I used to enjoy, ate very little, suffered from insomnia, and felt isolated and depleted.

But are you depressed?

no, it's not me

It took me weeks to admit it, but my doctor was right. I was depressed.

Still, I hadn't told anyone about my diagnosis.

It was too embarrassing.

I thought I had no right to be depressed.

I had a blessed life with a loving family and a successful career.

And my shame deepened when I thought of the unspeakable horror my ancestors experienced in this country so that I could have a better life.

I stood on their shoulders.

How can we disappoint them?

I'll put a smile on my face and never tell anyone.

On July 4th, 2013, my world collided with me.

My mother called me that day to tell me that my 22-year-old nephew, Paul, had taken his own life after years of battling depression and anxiety.

There are no words to describe the devastation I felt.

Paul and I were very close, but I had no idea he was in so much pain.

Neither of us had ever spoken to each other about our suffering.

Shame and stigma silenced us both.

Now, my way of dealing with adversity is to face it head-on. So I spent the next two years researching depression and anxiety. What I found there was amazing.

The World Health Organization reports that depression is the leading cause of disease and disability worldwide.

Although the exact cause of depression is not clear, research suggests that most mental disorders develop, at least in part, due to chemical imbalances in the brain and/or an underlying genetic predisposition.

So you can't shake it off.

Black Americans are about half as likely to seek mental health services as white Americans, even though they have a 20 percent higher risk of developing mental illness due to stressors such as racism and socioeconomic disparities.

One reason is stigma, with 63 percent of black Americans mistaking depression as a weakness.

Sadly, black child suicide rates have doubled in the last 20 years.

Well, good news. 70% of people suffering from depression get better with therapy, treatment and medication.

With this information in hand, I decided that I would no longer be silent.

With the family's blessing, we want to share our story in hopes of sparking a national conversation.

"To be strong is to kill us," said her friend Kelly-Pierre-Louis.

she is right

We must do away with the old, exhausting narrative of strong black women and super-masculine black men who, no matter how many times they get knocked down, shake it off and keep fighting.

Having feelings is not a sign of weakness.

Having emotions means that we are human.

And when we deny our humanity, we feel a emptiness in our hearts and look for ways to self-medicate to fill that emptiness.

My medicine did well.

These days, I openly share my story and ask others to share theirs as well.

I believe that's what it takes to let those who are quietly suffering know that they are not alone and that with help they can heal.

I still struggle, especially with anxiety, but I manage through daily meditation, yoga, and a relatively healthy diet.

(Laughter) When I feel like things are starting to spiral, I make an appointment to see a therapist. Dawn Armstrong, a dynamic black woman with a great sense of humor and friendliness, is very reassuring.

I will always regret not being with my nephew.

But my sincere hope is that I can inspire others with the lessons I learn.

life is beautiful.

It can be messy at times and is always unpredictable.

But all is well if you have a support system to get you through it.

When your burden gets heavy, I want you to lend a hand too.

thank you.

(applause)

Today begins with a story and ends with a revolution.

(laughs) Are you ready?

Audience: Yes!

Naomi McDougal-Jones: This is the story.

Ever since I was born, I wanted to be an actress.

Ever since I was little, I have been fascinated by stories and wanted to be a part of them.

So, at the ripe age of 21, I had graduated from the American Academy of Dramatic Arts in New York City, with glowing eyes and a bushy tail, ready to take its rightful place as the next Meryl Streep.

It's my grandmother, not Meryl Streep.

(Laughter) Now, the point of this story is to understand that I was raised by a raging feminist.

I mean, just think about it, when I was five or six years old, I was running around singing "I'm 16, 17" every day, obsessed with The Sound of Music, and my mom sat me down and had a serious conversation and said, 'Okay, look.'

I'm not saying you shouldn't sing that song, but if you do, you need to understand the very problematic gender structure it fosters. ”

(Laughter) That's where I come from.

So, to be honest, it never occurred to me that I could not do anything in my life because I am a woman.

OK. Then I graduate.

Then you start auditioning and slowly start getting jobs.

However, I started to realize that the women's parts were terrible.

But remember, I'm here to play a smart, strong-willed, complex, interesting, complex, confident female character, right?

like Merrill.

And suddenly I find myself wrestling with 300 other gorgeous and talented women...

"[Woman] No conversation.

The character can simply stand on the balcony and walk forlornly back into the house.

Partial nudity only. ”

(laughs) "[Sarah] Brian's boyfriend.

Attractive, cute, and flirtatious, she is the ideal girl and Brian's prize throughout the film. ”

"[Mother] is a true Southern beauty who comes to terms with the fact that her sole purpose in life is to take care of her husband."

"[Abby] should be okay with filming gang rapes with good taste while performing 19th century dances."

(Laughter) That's the actual casting notice.

So I mentioned this to my agent one day and he said, 'I feel like I can't really be in a role that I'm really excited to play.

And he said, "Yes, I really don't know what to do with you.

You're too smart for a role written for women in their 20s and not pretty enough to be popular, so I think you'll still work at 35. ”

(Laughter) So I said, 'Oh, that's interesting.

I always thought that when you were 35, you were kind of over the edge as an actress and relegated to being the mother of a 20-year-old kid. ”

And he said, "Well, (laughter) that's exactly right."

So, maybe a year or so from now, I'm having lunch with an actress friend and we're discussing how insane this is.

And we decide, you see? no problem.

And I will write about two complicated female characters.

So I will.

We started making this film, and by some sort of coincidence, we ended up hiring an all-women writer, director, and producer team, and this is a film about two women.

And soon we were sitting in the office of a successful male producer and he said,

So you understand that at some point you have to bring in a male producer in-house, right?

To make people trust you with money. ”

Over and over again people tell us, 'Yeah, but people don't want to see too many movies about women, so maybe we should think about making something else.

That's exactly right. ”

So I'm going to make a movie anyway.

We raked in $80,000 to make it, and it worked very well.

We've been to a lot of festivals, won a lot of awards, and it's big and exciting.

But these experiences I've had continue to haunt me.

So I started talking about them in Q&A sessions after the films, and then I was invited to speak at panels and conferences.

And what's really amazing is, first of all, when I come to the film industry and I'm talking to audiences and other people, the reaction all over the world is, "Oh my God! This is terrible. What do we do about this?"

But when I got on the bigger panel, suddenly an Oscar nominee said to me, "Look, I totally agree with everything you say.

But you have to be very careful where you say it. ”

The Oscar-winning producer told me that playing the woman card wasn't a good idea.

That's exactly right.

And I think this is what sexism continues to be in 2016, right?

Most of the time it happens casually, even unconsciously.

It happens because people try to fit in with the existing system.

It probably comes from a genuine desire to teach young women that the world is "as it is."

The problem is that the world will always be that way unless we do something about it.

So why should we care about this?

right?

In short, we are facing some pretty serious problems in the world right now. What if I can't get a job or you're stuck watching Transformers 17?

(Laughter) Well, let me tell you. The year "Jaws" was released, Americans suddenly began to list "sharks" among their top 10 major fears.

In 1995, BMW paid the James Bond franchise $3 million to switch James Bond from driving an Aston Martin to a BMW Z3.

That one move got so many people to buy the car that BMW made $240 million in pre-orders alone.

Women's participation in archery increased by 105% in the year "Brave" and "The Hunger Games" were released.

(Laughter) In fact, research shows that the movies you watch not only affect your tastes, but also career choices, emotions, identities, relationships, mental health, and even marital status.

Now consider the following. If you've watched mostly American movies so far, 95 percent of the movies you've seen have been directed by men.

80-90% of the main characters you've ever seen were male.

In the last five years alone, 55% of the time I saw a woman in a movie, she was either naked or in skimpy clothes.

it affects you.

It affects us all.

I really can't even imagine how much this will affect us.

The story – and the film is just a modern story – is not frivolous.

These are actually the mechanisms by which we process the experience of being alive.

They are the way we understand the world and our place in it.

These are ways we develop empathy for people who have different experiences than we do.

And now it's all pouring into us through the prism of this one point of view.

Not that it's a bad look, but aren't we all worth listening to?

How would the world change if all the stories were told?

So what do we do about this?

This may be new to many of you, but many in the film industry have spent years—much longer than I have—speaking, paneling, writing, researching, and just yelling at Hollywood to do better on the subject.

I mean, we've been really yelling at them.

Nonetheless, Paramount and Fox recently announced their timelines, and out of the 47 films they plan to release between now and 2018, none will be directed by a woman.

So I'm starting to wonder if waiting for Hollywood to develop a conscience isn't really a winning strategy.

As a matter of fact, whenever there is a minority ruling class who have all the money and power and resources, they actually seem less excited to part with it.

So asking or yelling at them won't get you any change.

We must bring about that change through revolution.

please do not worry. Here I promise that today, today, our bodies will be very few in number.

(Laughter) So before I get into my 4-point plan on revolution, yes I have a 4-point plan, but I have two very good and important news.

Good news number one is that there are female filmmakers.

(Cheers and applause) Yes! know!

(Applause.) We exist!

In fact, we graduated from film school at the same rate as men: 50 percent.

There are 50 women here.

The problem is that when you get to micro-budget movies, movies that are very small, you're already only directing 18 percent.

Then there are the slightly larger indie films with budgets in the $1 million to $5 million range, down to 12 percent.

So by the time it hits the studio system, we're only directing 5 percent of the film.

Now, looking at this, I think some people secretly think, "Maybe women are bad film directors."

And it's not a completely insane question.

I mean, we want to believe that the movie industry is meritocracy, right?

(Laughter) (Laughter) But look at this trajectory.

You have to accept that women's talent is actually 5 percent of men's, but I'm not. Or we have to accept that there are serious systemic issues that are preventing us from getting from here to there.

But the good news is that we exist and there is a huge amount of untapped potential here.

Good news number two, this is really good news. Movies by and about women are making more money.

yes! yes! That's true!

(Cheers and applause) It's true.

The Washington Post recently published a study showing that films with women earn 23 cents more per dollar than films without them.

In addition, my colleagues and I commissioned a study that compared 1,700 films made in the last five years, looked at the average return on investment, how much the films made, and whether the roles of director, producer, writer, and lead actor were filled by men or women.

And in every category, women get a higher return on investment.

Fact: Women buy 51% of all movie tickets.

Movies by and about women make more money.

And of course, at least part of the male population likes women too - (laughs) so "films for women" isn't just for women.

Yet Hollywood only targets 18 percent of all films as "women's movies."

That leaves you with a huge underserved audience and untapped profit potential.

So we exist and we have a story to tell.

We have many stories to tell.

And despite everything we've heard, you want to meet them.

The problem is that we have this -- let's call it "Hollywood" -- (Laughter) No, no, I'm kidding. I met some very nice people in Hollywood. Hollywood is unable to contact you.

Here are four plans for my revolution. Man or woman, in this room or anywhere in the world, everyone will be collaborating.

And this revolution is not just for women.

The same principles apply to those who are disenfranchised and those whose stories are not being told. We sincerely hope that together we can make a revolution.

My 4 points plan.

The first is watching movies.

Isn't this a good revolution?

(Laughter) Well, first of all, I would like to talk to people who watch movies.

Who watches movies here?

wonderful!

Will you pledge to watch one movie a month directed by a female director?

That's it, start there. wonderful!

Visit the website moviebyher.com if you need help finding them. A database that allows you to easily search for movies by women.

And when you start watching all the movies, I want you to pay attention to the female characters.

how many of them are there?

what are they wearing

or not?

Can they do cool things, or are they just there to support men emotionally?

Let me tell you, once you've seen this, you can't stop watching it again.

And once you start noticing this, your viewing habits will change.

And this already large market will continue to grow.

Step 2: Create your movie.

So I'm talking to you women filmmakers now. I want you to be very brave.

Making a movie is going to be difficult.

In fact, the entire industry will keep saying your story doesn't matter.

Anyway, I need you to make it.

It is our responsibility to fix 18% within the micro-budget.

No need to wait for permission.

Don't wait for someone to choose you. 95% said they would not choose.

cloud fund.

Write a letter to a quirky relative.

I know how difficult it is, but now, today, I have to make feature films instead of short films.

They have an audience and they want and need to meet them.

3: Invest in each other.

Female filmmakers, I think we should stop wasting so much energy on a system that doesn't need us.

We need to find our audience and invest in nurturing it.

If you can find a way to make a movie and get it to the audience that wants it, then you're done.

That's the whole game.

And whatever they do in between will become less important.

Dear viewers, please invest in us.

Let us help you create the movies you want to see.

If you can donate $25 to a female film director in a crowdfunding campaign, that's great.

If you're willing to invest more seriously and help us get over that critical $1 million hurdle, please do so.

Invest in seeing the other half of the story, though.

4: Disrupt through business.

So I'm talking to business people and entrepreneurs right now.

Things like this don't happen very often in the world, but here we have the perfect conditions to make big social changes while making money.

Hollywood is a system ripe for collapse.

The old model of lending and distribution is crumbling. Please come in and destroy it.

Let's take an example.

Now I'm launching The 51 Fund with some amazing women.

This is a venture capital fund that finances films written, directed and produced by women in its significant $1 million to $5 million range.

We provide opportunities for many female filmmakers to make films and deliver films to audiences who want them.

Good for equality and good for business.

But this is just one example and we need more examples.

There is room for much more.

So I tell you: Hollywood leaves money on the table.

Please come get it.

(Applause.) Now, all of this may seem like a lot, but it's actually very doable.

An established system doesn't change because you ask the person in charge to do it, but because people who don't have what they want stand up and make a change.

don't you want?

I'm curious to know what the remaining 51% of the population say.

I want to watch movies that teach me about people who are different from me.

I want to see a video of a woman's imperfect body.

I want to give little boys a chance to empathize with female characters so that they can become more complete men.

And I really want to give little girls who may not have real-life role models the chance to watch a movie and see women doing all the things they dream of achieving.

This is not about making one industry better.

This is making a better world.

can you help?

The time to wait is over.

The time for revolution is now.

(Cheers and applause)

A few months ago I was visiting this East African city and got stuck in a traffic jam.

And this vendor suddenly approached my window with a half-open alphabet sheet.

I glanced at the alphabet sheet and remembered my daughter. I thought it would be great if I could spread this out on the floor and play with it to learn the alphabet.

So the traffic moved a little and I quickly grabbed a copy and moved on.

When I had time to fully open the alphabet sheet and take a closer look, I realized that I wasn't going to use this to teach my daughter.

I regretted my purchase.

Why?

Looking at the alphabet sheet reminded me of the fact that the African curriculum hasn't changed much.

Decades ago I was taught using a similar alphabet sheet.

And because of that, I struggled for years.

I struggled to reconcile my reality with the formal education I received at school and the schools I attended.

I was having an identity crisis.

I was looking down at my reality.

I looked at my ancestors and looked at my lineage with contempt.

I had very little patience for what my life had to offer.

why?

"A is an apple."

"A is an apple."

"A is for apples" is for those kids who live in that part of the world where apples grow. A person with an apple in his lunch bag. When I go to the grocery store with my mother, I see red, green, yellow, all shapes, colors and sizes of apples.

Therefore, introducing education to these children with such alphabet sheets fulfills one of the main functions of education. It is to bring the learner an awareness of the learner's environment and a curiosity to explore further to add value.

For myself, the apple was an exotic fruit in the time and place I grew up in Africa.

Two or three times a year I was able to get yellowish apples with brown dots. This means it has traveled thousands of miles and been stored in warehouses before it came to me.

I grew up in the city with very wealthy parents, so that was my dignified reality. Apples didn't count as part of my reality, just as cassava fufu and ugali don't make frequent appearances in American, Chinese, and Indian diets.

So what this has done for me is that it has made education abstract by introducing it to me as "A is the A in apples."

It was a phenomenon that was beyond my reach, a foreign concept, a phenomenon in which I had to constantly and perpetually seek the legitimacy of the people to which it belonged, in order to progress in it and with it.

It was a big deal for a child. It will be hard for everyone.

As I grew up and improved my academic performance, my reality became more and more disconnected from my education.

Throughout history, we were taught that the Scottish explorer Mungo Park discovered the Niger River.

That's why I was curious.

My great-great-grandparents grew up pretty close to the edge of the Niger River.

(Laughter.) And who has had to travel thousands of miles from Europe to discover a river in front of them?

(laughs) No!

(Applause and cheers) What did they do with their time?

(laughs) Playing board games, baking fresh yams, and fighting tribal wars?

So I knew my education was preparing me to go somewhere else to practice and deliver in a different environment where it belonged.

It didn't apply to my environment, the times and places I grew up in.

And this continued.

This philosophy underlies my research throughout my studies in Africa.

It took me a lot of experience and some studying to change my way of thinking.

Here are some notable ones:

While studying for my PhD in Washington, DC, USA, I got a job as a consultant for the World Bank Africa region.

I remember one day my boss was talking about a project and he mentioned a specific project at the World Bank. It was a large multi-million dollar irrigation project in the Republic of Niger that had stalled sustainably.

He said the project is not very sustainable, which worries the people who launched the whole package.

But then he mentioned a particular project, a particular traditional irrigation method that had been so successful in the same Republic of Niger that the World Bank project had failed.

That made me think.

So I did some more research and found out about Tassa.

Tassa is a traditional irrigation method in which a hole 20-30 cm wide and 20-30 cm deep is dug and plowed in the fields.

Next, build a small dam around the field and plant the entire surface area with crops.

When it rains, the holes store water so that the plants can supply water according to their water needs.

Plants can only absorb as much water as they need by harvest time.

Since Niger is 75 percent scorching desert, this is a life-or-death situation and has been in use for centuries.

The experiment conducted involved two similar plots of land, one of which was not treated with Thassa technology.

Similar plot.

Another, Thassa technology was built.

Similar millet was then planted in both plots.

During the harvest season, 11 kilograms of millet per hectare were harvested on plots of land not using the Tassa technology.

553 kilograms of millet per hectare were harvested from the plots using the Tassa technology.

(Applause.) I looked at the research and looked at myself.

I said, "I studied agriculture for 12 years, from elementary school to 6th grade in East Africa, and SS3, or 12th grade, in West Africa.

No one had taught me about traditional African farming knowledge—harvesting and all that knowledge—that would work and actually succeed in modern times when it's hard to succeed with anything imported from the West.

That's when I knew the challenge, the African curriculum challenge. And so I began my life and my life's work in a quest to learn and research Africa's unique body of knowledge so that I could advocate for its mainstreaming in education, research and policy across disciplines and industries.

I think another conversation and experience at the bank helped me make the final decision on where to go. Even if it wasn't the most lucrative research, it was about what I believed.

So one day my boss said he would love to go to Africa to work on World Bank loan negotiations and World Bank projects.

And I was intrigued. I asked him why.

He said, "Oh, it's so easy when you go to Africa.

Just write loan papers and project proposals in Washington, DC, go to Africa, and get everything signed.

Grab the best deal and return to base.

My bosses are happy with me. ”

But then he said, "I don't want to go to Asia...".

And he mentioned specific countries, Asia, and some of those countries.

"They are holding me back for this to try and get the best deal for their country.

they get the best deals.

They tell me, "Oh, that clause doesn't work in our environment."

It's not our reality. It's very Western. ' And they say to me, 'Oh, we have enough experts to deal with this.

Not enough experts.

we know our purpose. ’ And they just go on going through all these things.

By the time they finish yes they can get the best deal but I'm so tired I can't get the best deal for the bank and we stay in business. ”

"Really?" I thought "OK" in my head.

I had the privilege of attending a loan negotiation in an African country.

Since I was a PhD student, I worked as a consultant during the summer.

And I traveled with the World Bank team as a helper with organizational matters.

However, I was present during the negotiations.

The people I was with were mostly European Americans from Washington, DC.

And I looked across the table at my African brothers and sisters.

There was a threat on their faces.

They didn't believe they had anything to offer Mungo Park's great-grandchildren, the "apple" owners of "A for apples."

They just sat there and watched, 'Oh, give it a minute, let's sign it.

you own the knowledge you know it all

But where should I sign? Show me and let me sign. ”

they had no voice. They didn't believe in themselves.

excuse me.

So I've been doing this for 10 years.

I do research on the African system of knowledge, its own authentic and traditional knowledge.

In the few cases where this has been done in Africa, remarkable success has been recorded.

It reminds me of Gachaka.

Gacaca is Rwanda's traditional judicial system used after the genocide.

When the genocide ended in 1994, Rwanda's domestic court system was in turmoil. There were no judges or lawyers to judge hundreds of thousands of massacres.

So the Rwandan government came up with this idea to revive the traditional judicial system known as gachaka.

Gacaca is a community-based justice system in which members of the community band together to elect men and women of proven integrity to try crimes committed within the community.

As such, approximately 1.2 million cases had been tried in 12,000 community-based courts before Gacaca closed its trials of genocide cases in 2012.

it's a record.

(Applause.) Most importantly, Gachaka emphasized the traditional Rwandan philosophy of reconciliation and reintegration against the whole idea of ​​punishment and expulsion that underlies the current Western style.

Not for comparison, just to say that it really highlights the traditional Rwandan philosophical methods.

And it was the former president of Tanzania, Mwalim Julius Nyerere, who said that you can't grow people (applause).

People have to grow themselves.

I also agree with Mr. Muwalim.

I believe that Africa's further transformation, Africa's progress, will only depend on recognizing, validating and mainstreaming Africa's own traditional, authentic and original indigenous knowledge across education, research, policy-making and disciplines.

This is not easy for Africa.

It will not be easy for a people accustomed to being told how to think, what to do, and how to act, a people long exposed to the intellectual guidance and direction of others, be it colonial rulers, the aid industry, or the international press.

But it's the work we have to do to progress.

I am strengthened by the words of Joseph Shabalala, founder of the South African choir Ladysmith Black Mambazo.

He said the challenges before us can never exceed the power within us.

I can do it.

We can forget to look down on ourselves.

We can learn to value our reality and our knowledge.

thank you.

(Swahili) Thank you.

(Applause.) Thank you. thank you.

(applause)

The art of “Roban Kubach Bolan,” or Khmer classical dance, is over 1,000 years old.

It developed as a movement to pray for rain, fertility, and the prosperity of an agricultural society.

Male and female dancers were dedicated to temples and served as living bridges connecting heaven and earth.

Their dancing bodies carried people's prayers to God, and God's will was carried through them to people and to the earth.

There are many curves in Khmer dance.

Our backs are arched, our knees are bent, our toes are hunched, our elbows are hyperflexed, and our fingers are arched back.

All these curves give the impression of a serpent, which is important because animism was practiced by the Khmer and other peoples around the world before the introduction of major religions.

The serpent was particularly important in this belief system because its fluid, curving movements mimic the flow of water.

Thus, to invoke the serpent in its dancing body is to evoke the image of a river across the earth, stimulating the flow of life-giving waters.

As we can see here, Khmer classical dance is a natural transformation of both the physical world around us and our own inner universe.

There are four main hand gestures we use.

Why don't you try it together?

yes? OK.

this is a tree

The tree grows and then leaves.

After the leaves come out, the flowers bloom, and after the flowers bloom, the fruits grow.

Its fruits fall and new trees grow.

And these four movements contain the cycle of life.

These four gestures are used to create a whole language for dancers to express themselves.

For example, you can say "I am".

"I."

In dance it is...

"I."

Or I can say...

"Hey you, come here, come here."

In dance...

"Come here," or "Go, go."

(Laughter) "Let's go."

And all from...

like ...

Sadness and (stomping) anger can also be expressed through dance.

There is a certain magic in the way things are filtered, transformed and combined to create endless possibilities for art.

Silapak, which means art in Khmer, actually means "magic" in its etymology.

Therefore, the artist, Shirapakal or Shirapakalani is nothing more than a magician.

I am very proud to belong to a long lineage of magicians, from my teacher Sofiline Chem Shapiro, to her teacher who was a royal star, the ancient dancers of Encore, and the primordial villagers who originally brought this art form to life.

That being said, our treasured heritage was once almost completely destroyed.

If you wear glasses, please stand up.

Please stand up if you speak more than one language.

If you have light skin, please stand up.

Your glasses were meant to cover your medical bills.

The second or third language you speak indicates your elite education.

Your skin is light, so you didn't have to work in the sun.

Under the Khmer Rouge who took over Cambodia from 1975 to 1979, we would be dead by now, targeted for privilege.

As you know, the Khmer Rouge turned to Cambodia and saw centuries of stark inequality.

The king and the small elite around him enjoyed all the pleasures and comforts of the world, while the majority of the people suffered from hard labor and severe poverty.

You don't need a history book to know this is true.

Khunhom ​​is the Khmer word for "I" or "I".

This same word can also mean "slave" and the dancers were actually known as "Khnom Preah Loban", or "sacred dance slaves".

The Khmer Rouge tried to abolish slavery in Cambodia, but somehow enslaved everyone for it.

They wanted to end oppression.

They evacuated the capital and sent people to forced labor camps.

They have torn families apart and brainwashed children against their own parents.

Everywhere people were dying, being killed, dying of disease, overwork, executions and starvation.

The result was the loss of a third of Cambodia's population in less than four years, including 90 percent of the Khmer dance artists.

In other words, nine out of ten traditions and visions of the future are lost.

But thankfully, it was my teacher's teachers Chia Sammy, Sot Samwon, and Chen Fong who spearheaded the revival of this art form from the ashes of war and genocide. It was one student, one gesture, one dance at a time.

They wrote down the love, magic, beauty, history and philosophy of our bloodline into the bodies of future generations.

Nearly 40 years later, Khmer classical dance has returned to new heights.

But somehow it still exists in a vulnerable environment.

The tragic effects of war still haunt the Khmer people.

It's written into our bodies, manifesting in the genetic course of PTSD and in families facing cycles of poverty and huge cultural and language barriers.

But beauty is the most resilient thing.

Beauty has the ability to grow anytime, anywhere.

Beauty transcends time and place and connects people.

Beauty is freedom from suffering.

As Khmer artists work to revive our culture and country, we realize that the future has many avenues to explore.

And in a tradition where we often don't know the names of the dancers, who they were, what their lives were like and what they felt, let me suggest moving forward honestly and openly from 'Kung Hom'.

Like Khun Hom is serving consciously, not as a slave.

Khnom: "I", "I", "flowering".

My name is Pulmsodun Ok.

I am Khmer and American.

I am a refugee child, a creator, a healer and a bridge builder.

I was my teacher's first male student and founded Cambodia's first gay dance company, in a tradition that many understand as a woman.

I am the personification of the beauty, dreams and power of my predecessors.

Fusion of past, present, future, individual and collective.

Allow me, then, to play out the ancient and timeless role of the artist as a messenger by sharing Chen Feng's words, "A garden planted with only one type of flower, or with only one color of flower is no good."

This is a reminder that our strength, growth, survival, and existence itself lie in diversity.

But it is also a message of courage.

Because flowers don't ask anyone's permission to bloom.

Born to offer itself to the world.

Fearless love is its nature.

thank you.

(applause)

I want to start by thinking about this device, the phone that is most likely in your pocket right now.

Over 40% of Americans check their phones within five minutes of waking up each morning.

And we see it 50 more times a day.

Adults consider this device a must-have.

But now, imagine it in the hands of a 3-year-old, it makes us uneasy as a society.

Parents are very concerned that this device will hinder their child's social development. that it would prevent them from getting up and moving. Somehow this would end up disrupting childhood.

So I would like to challenge this stance.

You can imagine a future where preschoolers get excited about watching them interact with a screen.

These screens can further inspire and motivate children.

Tests have the power to tell you more about what your child is learning than standardized tests.

And here's a really crazy idea. I believe these screens have the power to encourage more realistic conversations between children and their parents.

Well, I was probably an unlikely champion for this purpose.

I studied children's literature because I was planning to work with children and books.

But about 20 years ago, I had an experience that changed my focus.

I was helping lead a research study on preschoolers and websites.

And when I got in there, I was assigned a three-year-old named Maria.

Maria had never actually seen a computer before.

So the first thing I had to do was teach her how to use the mouse. When I opened the screen, she moved the mouse across the screen and stopped on a character named X, an owl.

Then the owl raised its wings and waved at her.

Maria dropped her mouse, was pushed back off the table, jumped up and started waving frantically at him.

Her connection to the character was instinctive.

This was not a passive screen experience.

This was a human experience.

And it was just perfect for a 3 year old.

I have now worked for PBS Kids for over 15 years, where my work is focused on harnessing the power of technology to positively impact children's lives.

As a society, I think we are missing a huge opportunity.

Our fear and skepticism about these devices prevents us from realizing their potential in our children's lives.

Fear of children and technology is nothing new. We have been here before.

More than 50 years ago, the debate was boiling over the new mainstream medium: television.

That box in the living room?

It can lead to children being separated from each other.

It may keep them away from the outside world.

But this was the moment Fred Rogers, the longtime host of "The Neighborhoods of Mr. Rogers," appealed to society to see television as a tool, one that fosters emotional growth.

He looked out from the screen and spoke as if he were talking to each child individually about their emotions.

And he stopped and made them think.

His influence can be seen all over the media today, but at the time, this was revolutionary.

He changed the way we look at television in our children's lives.

Today it's not just one box.

Children are surrounded by various devices.

As a parent myself, I understand this feeling of unease.

But I want you to look at three common fears that parents have and consider whether you can shift your focus to the opportunities within each.

So.

Fear number one is, "The screen is passive.

This prevents children from getting up and moving. ”

Chris Kratt and Martin Kratt are zoologist brothers who host a show about animals called 'Wild Kratts'.

And they asked the PBS team, "What can we do with the cameras that are now built into every device?"

Would those cameras be able to capture the very natural play patterns of children pretending to be animals?"

So we started with bats.

And when the kids came over to play this game, they loved seeing themselves on screen with wings.

But what I like most about this is when the game ends and the screen is turned off.

Children remained bats.

They kept flying around the room, turning left and right to catch mosquitoes.

And they remembered things.

They remembered that bats fly at night.

And they remembered that when bats sleep, they hang upside down and fold their wings.

This game definitely cheered and moved the kids.

But also, now, when children go out, do they look at birds and think, "How does a bird fly differently than when I was a bat?"

Digital technology has prompted tangible learning that children can take with them into the world.

Fear #2: "Playing games on a screen like this is just a waste of time.

It would be a distraction from their children's education. ”

Game developers know that they can learn a lot about player skills by examining backend data. That is, where did the player pause?

Where did you make a few mistakes before finding the correct answer?

My team wanted to apply that toolset to academic learning.

Boston producer WGBH has created a Curious George series of games focused on mathematics.

Then researchers came along and had 80 preschoolers play these games.

Then, they gave all 80 of those preschoolers a common math test.

We were able to see early on that these games were actually helping kids develop some key skills.

But our UCLA partners wanted us to dig deeper.

It focuses on data analysis and student assessment.

And they wanted to see if they could take back-end gameplay data and use it to predict a child's math score.

So they created a neural network. In other words, they trained a computer to use this data. Here are the results:

This is a subset of the child's standardized math scores.

This is a computer prediction of each child's score based on the results of playing the Curious George game.

This prediction is surprisingly accurate, especially considering the fact that these games weren't built for evaluation.

The team that conducted the study believes that such games can teach children more about cognitive learning than standardized tests.

What if games could save you time on tests in the classroom?

What if you could reduce the anxiety of testing?

How can we provide a snapshot of insights so teachers can better focus on individualized learning?

So the third fear I want to address is what I consider to be the biggest of many.

It's this: "These screens are isolating me from my children."

Let's play the scenario.

Let's say you're a parent and you need 25 minutes of uninterrupted time to prepare dinner.

To do this, give your 3-year-old a tablet.

Now, this is probably the moment you are feeling very guilty for what you have done right now.

But now imagine: 20 minutes later I receive a text message.

With your mobile phone within reach at all times.

"Alex matched just five rhyming words.

Ask him to play this game with you.

Can you think of a word that rhymes with "cat"?

Or how about a "ball"? ”

In our study, parents felt empowered when they received simple cues like this.

They were so excited to play these games at the dinner table with their children.

And the kids loved it too.

Not only did it feel magical when parents knew what they were playing, but kids love playing games with their parents.

The mere act of talking to children about their media can be incredibly empowering.

Last summer, Texas Tech University released a study that found that the show "Daniel Tiger's Neighborhood" could help children develop empathy.

However, this study had a very important pitfall. The biggest benefit was only when parents told their children about what they watched.

It was not enough just to see, nor was it enough to just talk. The key was the combination.

So when I read this study, I started thinking about how little parents of preschoolers actually talk to their children about what they're playing with and what they're seeing.

So I decided to try it with my 4 year old.

I said, "Did you play a car game earlier today?"

Then Benjamin cheered up and said, "Yes! And did you see that I made a car out of pickles?"

It was really difficult to open the trunk. ”

(Laughter) This hilarious conversation about what was fun about the game and what could have been better continued all the way to school that morning.

I am not here to suggest that all digital media is best for children.

We have good reason to be concerned about the current state of child-friendly content on these screens.

And we are right to think about balance. Where does the screen fit in with all the other things children need to learn and grow?

But if you cling to the fear of it, you forget what really matters. It means that children live in the same world we live in, a world where adults check their phones more than 50 times a day.

Screens are part of children's lives.

And if we pretend not to use them or are overwhelmed with fear, children will never learn how and why to use them.

What if we start raising expectations for this medium?

What if you started talking to your kids about the content of these screens on a regular basis?

What if we started looking for the positive impact this technology could have on our children's lives?

This is when the potential of these tools becomes a reality.

thank you.

(applause)

So there's a lot of legitimate concern these days that our technology has gotten too smart and is on our way to a future where we're unemployed.

In fact, I think the self-driving car example is the most obvious.

So these would be great for a variety of reasons.

But did you know that 'driver' is actually the most common job in 29 of the 50 US states?

What will happen to these jobs when we no longer drive cars, cook meals, or even diagnose our own illnesses?

A recent Forrester Research study predicted that 25 million jobs could be lost over the next decade.

Put into perspective, this is three times the jobs lost in the aftermath of the financial crisis.

And it's not just blue-collar jobs that are at risk.

Across Wall Street and Silicon Valley, we're seeing huge improvements in the quality of analysis and decision-making thanks to machine learning.

So even the smartest and highest paid people will be affected by this change.

What is clear is that whatever your job is, in the next few years at least some, if not all, of your work will be done by robots or software.

And that's exactly why people like Mark Zuckerberg and Bill Gates are talking about the need for a government-funded minimum income level.

But if our politicians can't agree on things like health insurance and school lunches, I don't see a way to get agreement on something as big and expensive as universal basic living income.

Rather, I think it is necessary for us in the industrial world to take the lead and respond.

We have to recognize the coming changes and start designing new kinds of jobs for the robot age.

The good news is that we've faced and recovered from two massive job losses.

Between 1870 and 1970, the share of American workers in farms dropped by 90 percent, and then between 1950 and 2010, the share of American workers in factories dropped by 75 percent.

However, the challenge we face this time is a matter of time.

It took us 100 years to go from farm to factory and then 60 years to fully build a service economy.

The rate of change today suggests that we may only have another 10 or 15 years to adapt, and if we don't react quickly enough, by the time today's grade schoolers are in college, we could be living in a robotic world, largely unemployed and in a kind of non-depression.

But I don't think it has to be this way.

As you know, I work in the innovation space, and part of my job is shaping how big companies apply new technologies.

Indeed, some of these technologies are specifically designed to replace human workers.

But if we take steps now to change the nature of work, I believe we can not only create an environment where people love to go to work, but also create the innovation needed to replace the millions of jobs lost to technology.

I believe the key to preventing our future of unemployment is to rediscover what makes us human and create a new generation of human-centered jobs that can unlock the hidden talents and passions we carry every day.

But first, I think it's important to recognize that it's us who caused this problem.

It's not just because we build robots.

But even though most jobs left the factory decades ago, we still have the factory mentality of standardization and deskilling.

We still define jobs based on procedural tasks and pay employees for the number of hours they perform those tasks.

We created narrow job definitions, such as cashiers, loan processors, and taxi drivers, and asked people to shape their entire careers around these single tasks.

These choices actually left us with two dangerous side effects.

The first is that these narrowly defined jobs are the first to be replaced by robots, since single-task robots are only the easiest kind to build.

But second, we have mistakenly left millions of workers around the world with incredibly boring working lives.

(Laughter) Take the example of a call center agent.

Over the past few decades, we've taken most of the brain power we need out of humans and put it into our systems, which boasts of lower operating costs.

They spend most of their day clicking on screens and reading scripts.

They behave more like machines than humans.

And unfortunately, as our technology becomes more advanced over the next few years, we will see the majority of their jobs disappear, along with people like clerks and bookkeepers.

To combat this, we must start creating new jobs that are not centered around the tasks individuals perform, but rather the skills they bring to the job.

For example, robots excel at repetitive, constrained tasks, while humans have an amazing ability to combine competence and creativity when faced with never-before-seen problems.

It's time to get a little surprised every day that we're designing jobs for humans instead of robots.

Our entrepreneurs and engineers already live in this world, but so do our nurses, plumbers and therapists.

You know, it's the nature of too many companies and organizations to ask people to just come in and do their jobs.

But if your job is better done by a robot, or your decisions are better made by AI, what should you do?

Well, I think managers need to be realistic about tasks that will disappear in the next few years and start planning more meaningful and valuable work to replace them.

We need to create an environment where both humans and robots thrive.

Let's give robots more work and start with the jobs we never want to do.

Come on, robot, take care of this painfully stupid report.

(laughter) And move this box. thank you.

(Laughter) And as humans, we should follow the advice of Harry Davis of the University of Chicago.

He said people should make sure they don't leave too much of themselves in the trunk of their car.

Weekend people are amazing.

Think about people you know and what they do on Saturdays.

They are artists, carpenters, chefs and athletes.

But on Monday, I'll be back at Junior HR Specialist and Systems Analyst 3.

(Laughter.) You know, not only do these narrow job titles sound boring, they actually subtly encourage people to contribute to narrow and boring work.

But I've seen first-hand that if you encourage people to grow more, they can surprise us with how much they can grow.

A few years ago, I worked at a large bank that was looking to introduce more innovation into their corporate culture.

So my team and I have put together a prototyping contest where anyone can build whatever they want.

We were actually trying to figure out whether the main limiting factor for innovation was a lack of ideas or a lack of talent, and it turned out to be neither.

It was an authorization issue.

And the results of the program were astonishing.

We started by asking people to re-envision what they could bring to the team.

This contest was not only a chance to build what you wanted, but a chance to build whatever you wanted.

And once people were no longer confined to their day-to-day job titles, they had all sorts of different skills and talents at their disposal for the problems they were trying to solve.

We've seen technology people become designers, marketers become architects, and even finance people flaunt their ability to write jokes.

(Laughter) We ran this program twice, and each time, more than 400 people showed their unexpected talent to solve problems they've been wanting to solve for years.

Collectively, they've created millions of dollars in value by building better touchtone systems for call centers, easier-to-use desktop tools for branch offices, and even a thank you card system that has become the foundation of the employee work experience.

Over the course of eight weeks, people worked muscles they never dreamed they'd use at work.

People learned new skills, met new people, and finally someone pulled me aside and said: “I have to say that the last few weeks have been one of the most intense and hardest working experiences I have ever had in my life, but not a single second felt like work.”

That's the key.

People had to become creators and innovators in the last few weeks.

They dreamed of a solution to a problem that had plagued them for years, and this was their chance to make those dreams a reality.

And that dream is the key part that separates us from the machine.

So far, our machine has never been frustrated or frustrated, and certainly nothing we imagine.

But we humans feel pain and get irritated.

And it is precisely when we are most frustrated and most curious that we are motivated to delve into issues and create change.

Our imagination creates new products, new services and even new industries.

I believe the jobs of the future will be born in the heads of those we call analysts and experts today, but only if we give them the freedom and protection they need to grow into explorers and inventors.

If we really want to robotize our work, we as leaders need to get out of the mindset of telling people what to do and instead start asking what problems they want to solve and what talents they want to bring into the workplace.

Because when I can bring my Saturday self to work on Wednesday, I look forward to Mondays more. Because these feelings about Mondays are part of what makes us human.

And I invite you to join me in redesigning work for the age of intelligent machines, bringing a more human touch to our working lives.

thank you.

(applause)

I recently read in Harvard Business Review what the younger generation of workers want.

One of the things that sticks out to me is not just talking about impact, but having impact.

I'm a little older than you, maybe a lot older than you, but this is exactly the same goal I had when I was in college.

I wanted to have my own influence on people who live in injustice. That's why I became a documentary journalist and why I was a prisoner of war in North Korea for 140 days.

It was March 17, 2009.

Today is St. Patrick's Day for everyone, but it was the day that changed my life.

My team and I were making a documentary about North Korean refugees living a normal life in China.

we were at the border.

It was the last day of shooting.

There were no wire netting, fences or signs to mark the border, but it is a place many North Korean defectors use as an escape route.

It was still winter, so the river was frozen.

We were in the middle of a frozen river, filming the cold conditions and environments that North Koreans have to face in their quest for freedom.

Suddenly, one of the team members shouted, "Soldiers!"

I turned around and saw two little soldiers in green uniforms chasing us with rifles.

We all ran as fast as we could.

I prayed that they would not shoot me in the head.

And I thought that if my feet were on Chinese soil, I would be safe.

And then we arrived in China.

That's when I saw my colleague Laura Lynn fall to her knees.

At that moment, I didn't know what to do, but when she said, "Una, I can't feel my legs," I knew I couldn't leave her alone.

In no time we were surrounded by these two Korean soldiers.

They weren't much bigger than us, but they were determined to take us to their army base.

I cried out for help, hoping someone would come from China.

Here I was stubborn against trained soldiers with guns.

I looked him in the eye.

he was just a boy

At that moment he raised his rifle to attack me, but I saw him hesitate.

His eyes were trembling, his rifle still held in the air.

So I shouted to him, "Okay, okay, I'll walk with you."

And I got up.

My head was spinning with these worst-case scenarios when we arrived at their Army base, and my colleague's remarks didn't help.

"We are enemies," she said.

she was right we were the enemy.

And I should have been scared too.

But I kept having strange experiences like this.

This time, an officer brought me a coat to protect me from the cold because I lost my coat in a frozen river while fighting one of my soldiers.

I will tell you what these strange experiences mean.

I grew up in South Korea.

North Korea has always been our enemy, even before I was born.

Since the end of the Korean War, the two Koreas have been in a state of truce for 63 years.

And growing up in South Korea in the 80s and 90s, we were taught propaganda about North Korea.

I also heard many graphic stories, such as a young boy being brutally murdered by a North Korean spy just because he hated communists.

Alternatively, I saw this cartoon series in which a South Korean boy defeats a fat big red pig that represented North Korea's first leader at the time.

And the word "enemy" was planted in young minds under the influence of hearing these terrifying stories over and over again.

And at some point I think I came to dehumanize them and equate the North Korean people with the North Korean government.

Now, back to the subject of detention.

It was my second day in solitary confinement.

I hadn't slept since I left the border.

This young jailer came into my cell, held out this little boiled egg, and said, "This will give you the strength to keep on living."

Do you know what it's like to receive a small kindness at the hands of your enemy?

I thought that if I received kindness, the worst would come after that kindness.

A police officer noticed my nervousness.

He said, "Did you think we were all red pigs?"

I'm talking about the cartoon I showed you earlier.

Every day was like a psychological warfare.

The interrogators sat me down at a table six days a week and made me write about my journey and work over and over until I wrote down the confessions they wanted to hear.

After about three months of detention, a North Korean court sentenced me to 12 years in a labor camp.

So I just sat in my room to be transferred.

I didn't really have anything to do at that time, so I focused on the two female security guards and listened to them.

Security guard A was older and was studying English.

She seemed to come from a wealthy family.

She often showed up in these colorful dresses and loved to show off.

And security guard B was younger and sang very well.

She loved to sing Celine Dion's "My Heart Will Go On", sometimes too much.

She unknowingly knew how to torture me.

(Laughter) And this girl, like you see in the lives of other young girls, spent a lot of time putting on makeup in the morning.

And they loved watching this Chinese drama in better quality.

I remember security guard B saying, "You can't watch our TV show anymore after seeing this."

She was scolded for degrading a television program produced by her country.

Security guard B had a more free personality than security guard A, and security guard A often scolded him when he expressed his opinion.

One day they invited all of their female colleagues--I don't know where they came from--to the place of confinement, invited me to the security room, and asked if one-night stands really happen in America.

(Laughter) In this country, young couples aren't even allowed to hold hands in public.

I don't know where they got this information, but they were shy and giggle before I even said anything.

I think everyone forgot that I was a prisoner, but it felt like being back in a high school classroom.

It turns out that they grew up watching similar cartoons, but it was nothing more than propaganda against South Korea and the United States.

I began to understand where their anger was coming from.

If they grew up knowing we were enemies, it's only natural that they would hate us as much as I feared.

But in that moment, beyond the ideologies that separated us, we were just girls sharing the same interests.

After returning home, I told these stories to my boss at Current TV at the time.

His first reaction was, "Yuna, have you heard of Stockholm Syndrome?"

Yes, and I distinctly remember feeling fear and intimidation and tension building between me and the interrogators when we talked about politics.

Certainly there was a wall that could not be crossed.

But we were able to see each other as human beings when we talked about family, everyday life, and the importance of our children's future.

About a month passed before I returned to Japan.

I got really sick.

As Warden B was leaving the detention center, I stopped by my room to say goodbye.

She made sure no one was watching and no one was listening to us and said quietly: "I hope you get well and get back to your family soon."

The police officers who brought me my coat, the guards who gave me boiled eggs, the female guards who asked me questions about dating life in the US, these are the people I remember about North Korea, people like us.

The North Koreans and I were not ambassadors for both countries, but I believe we represented humanity.

Now I'm back home and back to my old life.

Memories of these people have become fuzzy over time.

And here I am, reading and hearing stories about North Korea provoking the United States.

I realized how easy it was to see them as enemies again.

But I must keep reminding myself that when I was there, I could see more humanity than hate in the eyes of the enemy.

thank you.

(applause)

I hope you know that I am not speaking of my own tragedy, but of other people's tragedies.

It's much easier to be comfortable with someone else's tragedy than with your own. I want to keep it in the spirit of the conference.

So, if the media reports are to be believed, being a drug dealer at the height of the crack cocaine epidemic was a very glamorous life, in the words of Virginia Porrell.

Money, drugs, guns, women, jewelry, glitter, it was all there.

What I'm going to talk to you about today is, in fact, based on 10 years of research and a unique opportunity to get inside the gang - to see the actual books and financial records of the gang - the answer is that being in a gang was not a glamorous life.

But more realistically, being in a gang—selling drugs for gangs—is probably the worst job in all of America.

That is what I would like to convince you of today.

There are three things I want to do.

First, I want to explain how and why crack cocaine has had such a huge impact on urban gangs.

Now I want to talk about how someone like me could see the inner workings of a gang. I think this is an interesting story.

And third, in a very superficial way, I want to talk about some of the things that I learned when I actually looked into the gang's financial records and books.

Before that, just one caveat. That said, this presentation has been rated an "R" by the Motion Picture Association of America.

Contains adult themes and adult language.

Considering who's going to be on stage, you'll be happy to know that there's actually no nudity -- (laughter) unexpected wardrobe malfunctions aside.

(Laughter) So let's talk about crack cocaine and how it changed gangs.

To do that, you really have to go back to the early '80s, pre-crack cocaine, and look at it from the perspective of a gang leader.

In the mid-eighties, or early eighties, being a gang leader in the inner city wasn't so bad.

Well, you had great power and had to beat people - you got a lot of fame and a lot of respect.

But the problem is, there was no money there.

The gang had no way of making money.

Gang members had no money, so they could not charge gang members dues.

Selling marijuana doesn't really make money - marijuana turned out to be too cheap.

You can't get rich by selling marijuana.

You couldn't sell cocaine. Cocaine is a great product - powdered cocaine - but you should know wealthy white people.

And most inner-city gang members didn't know any wealthy white people, so they couldn't sell in that market.

Absolutely no petty crime.

After all, petty crime is a horrible way to make a living.

As a result, as a gang leader, you were in power. It's a pretty good life. But the problem is, after all, you lived at home with your mother.

So it wasn't really a career.

There was a limit to how powerful and important you could be if you had to live at home with your mother.

Then comes crack cocaine.

In the words of Malcolm Gladwell, crack cocaine was the ultra-rich version of tomato sauce for the inner city.

(Laughter) Because crack cocaine was an incredible innovation.

I don't have time to talk about that today, but when I think about it, of all the inventions and innovations that have happened in this country in the last 25 years, crack cocaine has had the greatest impact on the well-being of urban dwellers.

And for the worse—not for the better, but for the worse.

It made a big impact on my life.

But what about crack cocaine?

It was a great way to get your brain high.

Because you can smoke crack cocaine, but not powdered cocaine. Also, smoking is a much more efficient mechanism of euphoria than sniffling.

And it turns out there's an audience that didn't know they wanted crack cocaine, but when it actually came, it really did.

And it was the perfect medicine. You can buy loaded cocaine for $1 and sell it for $5.

Very addictive and the high was very short.

In other words, you're going to be as high as you can get for 15 minutes, and then when you're down, you just want to get high again.

Created a great market.

And for those who ran gangs, it was seemingly a great way to make a lot of money.

At least for those at the top.

Now let's get down to business.

not the real me I'm actually a bit of a player in all this.

Sudhir Venkatesh, my co-author, is the main character.

Although he majored in mathematics in college, he had a good heart and decided he wanted to pursue a doctorate in sociology, so he enrolled at the University of Chicago.

Well, he spent three months chasing the Grateful Dead before coming to Chicago.

And in his own words, he "looked like a freak."

He's South Asian, a very dark-skinned South Asian.

He was a big man, with hair, as he put it, "up to his buttocks."

Ignored all kinds of boundaries. Was he black or white? Was he male or female?

He saw a very strange sight.

So he showed up at the University of Chicago, where the famous sociologist William Julius Wilson was writing a book involving surveying people across Chicago.

He took one look at Sudhir, who was going to do some research for him, and decided he knew exactly where to send him. It was one of the toughest and most notorious housing projects, not just in Chicago, but across the country.

So Sudhir, a suburban boy who hadn't been to the city center much, dutifully walked with a clipboard to this housing project and arrived at the first building.

first building? Well, nobody there.

However, he heard some voices in the stairwell, so he climbed the stairs and turned a corner to find a group of young African-American men playing dice.

This was at the peak of the crack craze around 1990.

This is a very dangerous job as a gang member.

You don't want people around the corner to surprise you.

And the password was: "Shoot first". Ask me later.

Well, Sudhir was lucky - he was so weird that perhaps that clipboard saved his life. Because they didn't think other rival gang members would come shoot them with clipboards.

(Laughter) I mean, his greeting wasn't particularly warm, but they said, 'Well, okay, let's go over the survey questions.'

So, no kidding, the first question on the questionnaire sent to him was, "How do you feel about being poor and black in America?"

(Laughter) I have doubts about academics.

(laughter) So the answer options are: [A) very good B) good C) bad D) very bad] (laughter) Sudhir discovered that, in fact, the real answer was: [A) very good B) good C) bad D) very bad E) motherfucker]

He was held hostage overnight in a stairwell.

There were a lot of shootouts and he had a lot of philosophical discussions with gang members.

By morning the gang leader arrived, checked on Sudhir, determined he was not a threat, and sent him home.

So Sudhir went home, took a shower and took a nap.

And maybe you and I, when faced with this situation, think, "I'm going to write a paper on the Grateful Dead. I've been following them for the last three months."

(laughter) Meanwhile, Sudhir came right back, walked up to the housing project, went upstairs and said: "Hey guys, I had so much fun hanging out with you guys last night. I hope we can get together again tonight."

And that was the beginning of what turned out to be a beautiful relationship. Sudhir lived on and off in a housing project for ten years, hung out in a cracked house, went to jail with gang members, had his car window shot through, and had the police break into his apartment and steal his computer disks.

Ultimately, however, the story has a happy ending for Sudhir, who has become one of the country's most respected sociologists.

Especially for me, when I was sitting in my office with an Excel spreadsheet open waiting for Sudhir to come in and give me the latest data that the gang might be getting.

(Laughter) It was one of the most unequal co-authorships ever -- (Laughter) but I was happy to reap the benefits.

So what did we find?

Well, let me just say one thing. We had practical access to everyone in the gang.

We peeked inside the gang from the bottom to the top.

They trusted Sudhir in a way that no scholar, or indeed anyone, had ever earned the trust of these gangs, to the point of actually exposing what was most interesting to me, namely their books and the financial records they kept.

They provided them to us so that we could not only study them, but also ask questions about their content.

So, if I had to briefly summarize what I got from gangs, if I had to draw a parallel between gangs and other organizations, it would be that gangs are in many ways exactly like McDonald's, the McDonald's of restaurants.

First, in some ways, it's probably not the most interesting way, but it's a good way to start - the way you organize, the gang hierarchy, the way you look.

I don't know if you're familiar with org charts, but if I were to assign a stripped-down, simplistic McDonald's org chart, it would look exactly like this:

Surprisingly, the top level of the gang actually calls themselves the "Board".

(Laughter) And Sudhir said they didn't have a very sophisticated view of what was going on in American corporate life, but they did learn a little bit about what the real world was like by watching movies like Wall Street.

Now, under that board are basically the regional vice presidents, the people who manage, say, the South Side of Chicago and the West Side of Chicago.

Sudhir was well acquainted with the man tasked with the ill-fated attempt to usurp the Iowa franchise, but for this black gang it turned out not to be one of the brightest economic endeavors they undertook.

(Laughter) But what really makes this gang look like McDonald's is its franchisees.

The local gangs, the guys who run the four square blocks, are in some ways the same guys who run McDonald's.

they are entrepreneurs.

They get exclusive property rights to control drug sales.

They get the name of the gang behind them for merchandising and marketing.

And they basically decide whether they make a profit or lose a profit depending on how well they run their business.

Now, what I really want you to think about is the bottom group, infantry.

These are usually teens prominently selling drugs on street corners.

extremely dangerous work.

And the important thing to notice is that almost all the weights of this organization, all the people, are at the bottom, just like McDonald's.

So, in a way, infantrymen are a lot like people taking orders at McDonald's, and it's no coincidence that they look alike.

In fact, in these areas they would be the same people.

So the same kids working in gangs were actually working part-time at places like McDonald's around the same time.

This already foreshadows the main outcome I've been talking about: how crappy a job it is to be part of a gang.

Because, obviously, if being in a gang is such a great, lucrative job, why are these people silently working at McDonald's?

So what are the wages like? You might be surprised.

But based on being able to talk to them and see their records, in terms of wages:

The hourly rate the infantrymen were earning was $3.50.

It was below minimum wage. And this is well documented.

You can easily tell by looking at their spending patterns.

It's not really fiction, it's fact.

Gangs, especially the lower echelons, had little money.

Now, if you manage to stand up and become a local leader, the equivalent of a McDonald's franchise, you'll be making $100,000 a year.

And it was, in some ways, the best job a young black man growing up in a neighborhood like this could ever hope to have.

If I manage to make it to the top, I'd like to make $200,000 or $400,000 a year.

Indeed you will be a great success.

And one of the sad parts about this is that, among the many other influences of crack cocaine, the most talented individuals in these communities are certainly what they've been striving for.

Since there was no canonical route, they were not trying to succeed in a canonical way.

This was the best way.

And maybe trying to do it this way was actually the right choice.

Seeing this, my relationship with McDonald's breaks down here.

Money looks about the same.

Why such a terrible job?

Well, the reason this is a terrible job is that often someone is shooting at you.

What is the mortality rate from being shot with a gun?

Our buddies found that this wasn't really a standard situation. This era was one of intense violence and many gang wars, as the gang was in fact very successful.

The mortality rate in our sample was 7% per person per year, not to mention the rate of arrest, prison, and injury.

You've been in a gang for 4 years and have about a 25% chance of dying.

That's as high as you can get.

So, for comparison, let's consider other walks of life that are expected to be very risky.

Let's say you're a murderer and you've been convicted of murder and sent to death row.

The mortality rate for death row inmates from all causes, including executions, was found to be 2 percent per year.

(Laughter.) So it's a lot safer to be on death row than to be selling drugs on the street.

For those who believe the death penalty has a great deterrent effect on crime, this is a pause.

I'm not focusing on the downsides to give you an idea of ​​how bad the city center was during the crack, but really, I'd like to tell a different story there. If you look at the mortality rate among random young black men who grew up in inner-city America, the mortality rate during cracking was about 1 percent.

that's very high.

And this is a violent death--somewhat unbelievable.

To put it into perspective, for example, if you compare this to the Iraqi soldiers who are currently at war, it's 0.5%.

So in a very literal sense, young black men growing up in this country lived in war zones in the same sense that soldiers in Iraq are fighting wars.

So why would anyone want to sell drugs on a street corner for $3.50 an hour when they have a 25% chance of dying in the next four years?

why would they do that?

I think the first is that they were deceived by history.

Gangs used to be a rite of passage. That young people ruled gangs. You said you got out of the gang as you got older.

So what happened was that people who happened to be in the right place at the right time, who happened to be leading gangs in the mid-to-late 80s, became very wealthy.

The logic then was that they, like everyone else, would drop out of the gang and the next generation would take over and make their fortunes.

I think there are striking parallels with the internet boom.

The first people of Silicon Valley became very wealthy.

After that, all my friends said, "Maybe I should try it too."

And they were willing to work very cheaply for stock options they never got.

In a way, that's exactly what happened to the people we were looking at.

They were willing to start at the bottom, for example, in the same way a first-year lawyer in a law firm would be willing to start at the bottom, thinking they could be a partner and not so expensive.

However, the rules have changed and it is no longer possible to form a partner.

In fact, the same people who ran all major gangs in the late 1980s still run major gangs in Chicago today.

They didn't give away any of their wealth, so everyone was stuck in that $3.5 an hour job, and it was a disaster.

Another thing the gang was good at was marketing and trickery.

For example, one thing gangs do is that the leader of the gang has a lot of entourage, drives fancy cars, and wears fancy jewelry.

So, as he spent more time with them, Sudhir eventually realized that they didn't actually own those cars. They couldn't afford to own a luxury car, so they were just leasing it.

And they didn't really have gold jewelry, they had gold-plated jewelry.

It goes back to real-real-fake-real relationships.

And really, they did all sorts of things to convince young people of how big gangs could be.

For example, you would give a 14-year-old child a whole banknote.

The 14-year-old said to a friend, "Hey, look at all the gang money I've made."

It wasn't his money, but he was in debt to the gang and was kind of an indentured servant for a while until he spent it.

So you have a few minutes.

Finally, let me do one thing I thought I didn't have time for. That said, I would like to talk about what I learned about economics more generally from my gang studies.

As such, economists tend to speak in technical language.

Often our theories fail miserably with data overload, but what's interesting is that in this situation, some of the economic theories that didn't work so well in the real economy turned out to work, in some ways, very well in the drug economy. Because the drug economy is, in a way, unbridled capitalism.

There is an economic principle here.

This is one of the basic ideas of labor economics called "compensation disparity".

The idea is that an increase in wages demanded by workers will make them indifferent while they perform two jobs, one less unpleasant than the other.

Closing the Gap -- That's why we think garbage collectors are paid more than park workers.

I think the words of one of the gang members make it clear.

So, in the end, I got ahead of myself, but it turns out that in gangs, when there's a war going on, they actually pay double the infantry.

This is exactly the concept.

Because they don't want to take risks.

And the words of a gang member capture it very well, he says: "Can you stand here when all this shit is going on..." -- shooting -- "... if all this stuff is going on? No, right?

So if I'm asked to risk my life, then give me cash, dude. ”

I think gangsters have a much clearer picture of what is going on than economists.

(Laughter) There's one more thing.

Economists talk about game theory that every two-player game has a Nash equilibrium.

Below is a translation I got from a gang member.

They talk about their decision not to go shoot guns - one that turned out to be a great business tactic for gangsters. If you just go into another gang's territory and shoot in the air - people will come into your neighborhood for fear of going there to buy drugs.

As to why they wouldn't, he said: "If we start shooting around in other gang territory, no one, I mean, dig in, no one will step on their territory.

But we have to be careful, because they can shoot here too and we're all screwed up. ”

(Laughter) It's the same concept.

One thing we observed in our data was that gang leaders were always getting paid.

No matter how hard he was financially, he always paid for himself.

There have been several theories related to things like lack of cash flow and access to capital markets.

So we asked the gang member, "Why are you always getting paid but your employees are always not getting paid?"

His answer was, "There are a lot of black people under you who want your job?

So I thought and said, "CEOs often pay themselves millions of dollars in bonuses, even when the company is losing a lot of money.

And an economist would never have guessed that this idea of ​​'fucking the weaklings' really matters. ”

(Laughter) Perhaps "weak and shit" is an important hypothesis that needs further analysis.

thank you very much.

Back in the day, I was a professional animator.

(Music) [Eric Dyer] [Animator] [Composer] And at night I made my own experimental film.

(music) And I had spent so much time in front of the screen, so much time, working on the work that was shown on the screen, that I had a strong desire to dabble in the work again.

Well, before "The Simpsons", before "Gumby", before "Betty Boop", before there was such a thing as movies and television, animation was very popular in this form.

This is a zoetrope.

Rotate this drum and peek inside the drum through the slit to see the animation come to life.

This is animation in physics form, the animation I can get my hands on again.

I brought these ideas to Denmark.

I went there with my family on a Fulbright Fellowship.

That's my daughter, Mia.

I cycled around the city and photographed all the interesting moving elements of Copenhagen. Canal boating, spring bursts of color, free city bikes, love, texture and healthy food. (Laughter) And then I put all that video back into the physical world by printing it out on long strips of inkjet paper and cutting out the forms.

Well, I've invented my own form of zoetrope that removes the drum and replaces the slit with a video camera.

This was very exciting for me. Because it means you can create these physical objects and you can create movies out of those objects.

That's me on a bicycle.

(Laughter) I made about 25 paper sculptures about the size of a bicycle wheel.

I took them into the studio, spun them, shot them, and made the movie "Copenhagen Cycles."

(music) This project not only helped me get back to work, but it also gave me back my life.

Instead of spending 12-15 hours a day with my face glued to the screen, I was doing little adventures with my new family and filming videos along the way. It was a kind of symbiosis of art and life.

And I don't think it's a mistake to translate zoetrope as "the circle of life."

(music) But movies and videos flatten sculpture, so I tried to imagine how animated sculpture can be experienced by itself, and fully immersive animated sculpture.

So I came up with the idea of ​​a zoetrope tunnel.

As you walk around with your handheld strobe, point the flashlight anywhere and the animation will come to life.

We plan to complete this project within the next 30-40 years.

(laughs) But I made a half-scale prototype.

Covered with Velcro, you can lie down on this bridge and stick your animation sequences to the wall to test it out.

People will comment that it reminded them of an MRI.

And that medical connection spoke to me. Because when I was 14, I was diagnosed with a retinal degenerative disease that slowly blinded me. And I never reacted to that at work.

So I responded with this work called "Implant".

A hyper-enlarged fictional medical device that fits around the optic nerve.

And the masses are, in a way, miniaturized to experience it.

Using a handheld strobe to explore the sculpture, one can discover thousands of cell-sized robots working hard in and out of the optic nerve, deployed in the retina to repair it.

This is a sci-fi fantasy to cure my own incurable disease.

(Machine sounds) Well, in the real world of gene therapy and gene therapy research, viruses are used to inject healthy genes into unhealthy cells.

The piece contains a lot of colorful, fluffy hope, but also the eerie and menacing idea that a virus might become an invasive species within your body.

Losing my eyesight helped keep me away from the things that cut me off from the world.

Instead of being confined to a car, we ride bikes, take buses and trains, and walk a lot.

And instead of a visually intensive process in the studio, I mostly went outdoors and used more of my senses.

This landscape is a few hours east of San Diego, California.

That's how my brother lives.

My boyfriend and I went camping there for 4 days.

Then I grabbed my camera and walked through the canyon.

And I tried to imagine and understand what kind of movement exists in this very still, motionless place.

I think it's the quietest place I've ever been to.

Then I realized that the movement of my body in the landscape was what created the animation.

It was a shift in perspective.

So I made a work called "Mud Caves" based on those photos.

This is a multi-layered print work and can be thought of as a zoetrope laid flat.

It's like my western landscape panorama.

Next to the print work is a video monitor showing animation hidden in the artwork.

I think one of the best things about this project for me was being able to spend a lot of time with my brother who lives 4,500 miles away.

And we just sat and talked in this seemingly eternal landscape carved by water over millions of years.

We talked about children growing up, their parents slowing down, and their father suffering from leukemia, memory loss, and infections.

And I realized that we are finite as individuals, but as families we are a continuous cycle, a kind of wheel of life.

Here, I would like to pay tribute to one of my mentors.

She reminds me that physical presence matters, and that play is a necessity, not a luxury.

She's a pixie and our family dog.

And she loves jumping.

(dog barking) (dog barking and springing) And this is a new kind of zoetrope that I have developed at the Imaging Research Center at UMBC in Baltimore.

I call it a "real-time zoetrope".

(dog barking) (dog barking and springboin) Thank you.

(applause)

Workplace romance can be a difficult topic.

(music) [How we work] How do I manage the boundaries between my personal life and my work?

How do we deal with gender imbalances and power relations in the workplace?

There are a lot of gray areas in work relationships.

We would like to take a few minutes to answer some of your frequently asked questions.

So question one: Should I date my co-worker?

Well...it depends.

Why not date a colleague for a little fun?

Want to date and be in a relationship with a colleague?

Because then you're really better off with Tinder.

If you really want to date a coworker because you're in love with him or really have the potential for a long-term, committed relationship, you should probably date him.

Studies show that co-workers are generally more welcoming when you fall in love and see that you genuinely care about each other.

That's when a colleague senses something else is going on, and that can be confusing.

Question 2: Should I date my boss?

In most cases, no, you shouldn't date your boss. Because we are in a power relationship now.

Many negative emotions arise when it comes to boss-subordinate relationships, and those negative emotions tend to fall on those on the lower totem pole.

People usually assume some kind of favoritism or some kind of inside information, which can provoke anger.

A study published last year suggested that dating your boss could even have a negative impact on your career.

The researchers asked the online third-party raters to imagine that they were working at a law firm.

They asked us to make recommendations for which employees should be targeted for special training programs and which should be promoted to partners.

They looked at the qualifications of a fictitious employee and found that if the employee was described as dating or in a relationship with their boss, raters were less likely to select them for training programs or promotions, even if they had exactly the same qualifications as someone who wasn't dating a boss.

Evaluators also quickly dismissed their work.

Question 3: Can I date my direct report?

Still a big no.

Maybe you don't feel like you're really the boss, do you?

But it does exist for you, and there are dynamics that other couples don't have.

If you truly believe that you have a personal connection that feels genuine, honest, and lasting and meaningful, one of you may need to move on. Also, it doesn't necessarily have to be someone lower in the company hierarchy.

Question 4: I just started dating a colleague.

How should things be handled?

I get this question often.

"Are you dating? Are you not dating?"

don't keep it a secret.

No need to make a big deal out of it, but secrets tend to rot.

People tend to view work couples as a union or unit, so make it clear to your colleagues that you are not the same person. You love each other, but you wouldn't agree.

Question 5: Why are my colleagues attracted to each other?

Well, the obvious answer is that people tend to be more attracted to each other the more time they spend together.

But there is one more element that needs to be added. Attraction tends to occur when there is work that requires close collaboration.

So imagine you have a large group project with a tight deadline, working late into the night brainstorming ideas.

I look up and across the table, one of my colleagues has a really great idea.

You may feel something, it's natural.

This task is called interdependency.

It is the ripe soil of attraction.

A second reason people at work are attracted to each other is that they often resemble each other.

There are two old adages. "Feathered birds flock". And "opposition attracts."

Well, according to psychological research...

Birds of a feather flock, and we prefer people who are like ourselves.

Question 6: A colleague is flirting.

Irritated. what do i do?

Some researchers claim that flirting is good for people who flirt at work and that it can boost their creativity.

However, based on my own research, things seem to be different for people watching or being flirted with.

It can be embarrassing.

Witnessing flirting at work creates a feeling that you don't know the rules, don't know what's going on, or that you've seen something you shouldn't have seen.

People who frequently witness flirting at work actually report feeling less satisfied with their jobs and feeling unappreciated by their companies.

They are more likely to rate the work environment negatively and may even consider leaving.

For women, this association may be even stronger.

This seems to be the case even when people report that they don't mind flirting.

Even if you say it's fun, it's true.

That is, a frivolous environment can actually be harmful.

Question 7: Do you need a workplace relations policy?

A sexual harassment policy is certainly necessary and I think most HR departments are aware of it.

But the consent-based behavior we've been talking about is a little different.

HR people like to wave their magic wands and say, "Don't fall in love at work," but that's not realistic.

Emotional connection and sexuality are who we are.

I want you to flip the script a little.

I encourage HR to think more broadly about their role in not necessarily eradicating office romances. I know that's unrealistic, but how can we create a workplace climate and culture where people feel valued for their individual contributions, not their physical appearance, gender, or personal relationships?

So the bigger question is, how do you make sure people are valued and respected?

I spent months thinking about what I was trying to say here.

There is no bigger stage than TED, so I felt it was most important to get my message right in this moment.

So I searched for days to find the correct word structure.

And intellectually, I was able to bullet point the big ideas I wanted to share about this movement that Me Too and I founded, but I felt like I was falling short of finding the crux.

I wanted to put my heart and soul into this moment and tell you why even the possibility of curing or stopping sexual violence is worth standing up and fighting for.

I wanted to wake you up with an uplifting speech about the important work of fighting for the dignity and humanity of survivors.

But I don't know if I have one.

The reality is, after going through the Supreme Court nomination process, attacks from the White House, terrible misunderstandings, Internet trolls, rallies and marches, and heartbreaking testimony, I'm facing the hard truth of myself.

I'm numb.

And I am not surprised.

I have traveled all over the world to speak, and like clockwork, after each event, multiple people approach me and can speak their minds confidentially.

And I always tried to reassure them.

I want to provide them with local resources and give them a gentle reassurance that they are not alone and that this is their movement too.

We want to tell them that together we are stronger and that this is a movement of survivors and advocates doing great and small every day.

And more and more people are joining this movement day by day.

That part is clear.

People are strutting their bodies and yelling, "Enough is enough."

So why do I feel this way?

good ...

A person who made a credible accusation of sexual assault against him has again been granted a referral to the United States Supreme Court.

Crowds would roar if the US president, who was taped talking about how to grab as many female body parts as he wanted, would call survivors liars at a rally.

And in Australia, France, Sweden, China, and now India, where Me Too became popular, the voices of victims of sexual violence are being heard and denigrated all over the world.

And I've read article after article lamenting...

Wealthy white men soft-landed in golden parachutes after their terrible deeds were exposed.

And we are being asked to think about their future.

But what about survivors?

This move is always called a turning point or even a liquidation, but there are days when I wake up and feel like all the evidence points to the contrary.

It's hard not to feel numb.

I think some of you have felt numbness.

But let me tell you what else I know.

When we hear the word “numb,” we may think of a feeling of emptiness, lack of emotion, or even the inability to feel it.

But that's not necessarily true.

Numbness can result from memories creeping into your mind that you can't resist during the night.

Tears are trapped in the back of the eye and can come from not allowing yourself to cry.

For me, the numbness comes from seeing the faces of survivors and knowing all there is to say, but being unable to say anything.

It's a matter of comparing the scale of the task before you to your own wavering fortitude.

Numbness is not necessarily a lack of sensation.

Emotions can pile up.

And as survivors, we often have to hold onto the truth of what we've been through.

But now we have something, whether we want it or not.

Our colleagues continue to raise their voices, entire industries are rethinking workplace culture, and family and friends are having tough conversations about intimate truths.

Everyone is affected.

And then there's the backlash.

We've all heard of it.

"The Me Too movement is a witch hunt."

right?

"Me Too is dismantling due process."

Or, "Me Too sparked a gender war."

The media consistently rolls out headlines that frame the movement in ways that make it difficult for us to move forward, and right-wing pundits and other critics brandish topics that shift focus away from survivors.

A movement that started to help all survivors of sexual violence is suddenly talking like a vengeful conspiracy against men.

And I think, "Huh?"

(laughs) How did you get here?

Sometimes I don't recognize the Me Too movement I hear some people talking about because we've become so far removed from the origins of this movement that started a decade ago, or even the intent of the hashtag that started just a year ago.

But let me be clear. It's about 1 in 4 girls and 1 in 6 boys who are sexually assaulted every year and carry the scars into adulthood.

It concerns 84 percent of trans women who will be sexually assaulted this year, and Indigenous women who are 3.5 times more likely to be sexually assaulted than other groups.

Or people with disabilities who are seven times more likely to be sexually abused.

I'm talking about the 60 percent of black girls like me who will be sexually assaulted before they turn 18, and the thousands of low-wage workers who are still being sexually harassed in jobs they can't quit.

This is a movement about the pervasive power of empathy.

And that is the problem of millions of people who raised their hands “me too” a year ago, and they continue to raise their hands even though the media they consume erases them and the politicians they chose to represent them shy away from solutions.

It's understandable that the push and pull of this unique historical moment can feel like the emotional roller coaster that has paralyzed many of us.

This accumulation of emotions that many of us are experiencing together around the world is collective trauma.

but ...

It is also the first step towards actively building the world we want now.

What we do with this thing that we all have is proof that this is something bigger than a moment.

It is confirmation that we are in motion.

And the most powerful movements have always been built around possibilities, not just asserting what is in the moment.

Trauma stops possibility.

Activated by movement.

Reverend King famously quoted Theodore Parker, "The arc of the moral world is long, and it bends toward justice."

We have all heard this word.

But someone has to bend it.

The potential we create in this and other movements is the tilt of the weight in an arc in the right direction.

Movement creates possibilities, which are built on vision.

My vision for the Me Too movement is part of a collective vision for a world free of sexual violence, and I believe we can build that world.

full stop.

But getting there will require a dramatic shift in the culture that permeates the idea that vulnerability is synonymous with permission and that physical autonomy is not a basic human right.

In other words, we must dismantle the power and privilege that constitute sexual violence.

Much of what we hear about the Me Too movement is about individual villains and depraved detached behavior, with a lack of recognition that those in positions of power are privileged, making those without that power more vulnerable.

Teachers and students, coaches and athletes, law enforcement and citizens, parents and children, these are all relationships that can create incredible power imbalances.

But we will reshape that imbalance by raising our voices against it and creating a space to speak truth to those in power.

We need to re-educate ourselves and our children to understand that power and privilege do not necessarily have to be destroyed or taken away, but can be used to serve or build.

And we need to re-educate ourselves to understand that every human being has the right to live this life with full humanity.

Part of the work of the Me Too movement is to restore the humanity of survivors, because violence does not end in deeds.

Violence is also the trauma we carry after the act.

Remember, trauma blocks potential.

It acts as a hindrance, a stagnant, a disruptive and a killer.

So our commitment is to rethink how we deal with trauma.

For example, we don't believe that survivors should always tell the details of their story.

We don't have to repeat the pain over and over again for you to notice it.

We also strive to teach survivors not to rely on trauma, but on the joy they nurture in life.

If you can't find it, create it and rely on it.

But when life is traumatic, trying to find joy can feel like an insurmountable task.

Now imagine trying to do that while world leaders discredit your memory, the news media keep erasing your experiences, and people continually push your pain onto you.

Movement activates potential.

Like most blacks, my family has a legend about my great-grandfather, Lawrence Ware.

He was born a slave and his parents were slaves, but he had no reason to believe that a black man in America could not die a slave.

Yet, legend has it that when he was freed from slavery, he walked from Georgia to South Carolina to find his estranged wife and children.

And every time I hear this story, I think, 'How could he do this?

Wasn't he afraid that the white vigilantes would either catch him and kill him, or get there and they would be gone?"

So when I asked my grandmother once why she thought he made this journey, she said, "I think he had to believe it was possible."

I have lived most of my life driven by possibilities.

I am here because, starting with my ancestors, someone believed that I had potential.

Twelve years ago in 2006, I was lying on a mattress on the floor of my one-bedroom apartment, frustrated by all the sexual violence I saw in my community.

I pulled out a piece of paper, wrote “Me Too” on it, and began writing an action plan to build a movement based on empathy among survivors that would make them feel like they could heal and not be the sum of what happened to them.

Possibility is a gift, folks.

It creates new worlds, it creates visions.

I'm tired too, so I'm sure some of you are tired.

I am exhausted and numb.

Those who came before us did not win all their battles, yet they did not lose their sight.

That was the driving force.

So I can't quit, and I'm begging you not to quit either.

We owe future generations a world free of sexual violence.

We believe we can build that world.

you?

thank you.

(applause)

A pod of killer whales lives in the frigid waters off the rugged coast of the Pacific Northwest.

Each family is able to survive here largely thanks to one member, the grandmother, who is the most knowledgeable hunter.

These matriarchs may live to be over 80, but most males die in their 30s.

Killer whales live in every major ocean, but until recently we knew very little about them.

The details of their lives were unknown to scientists until an organization called the Whale Research Center began studying a single population near Washington and British Columbia in 1976.

Their continued research has allowed us to learn a lot about these whales, known as Southerners.

And the more we learn, the more we see the important role of the elders in this population.

Each grandmother begins life as a calf born to her mother's family group, the matriarch.

Families hunt, play, do everything together, and even communicate on their own call sets.

Both sons and daughters spend their entire lives with their mother's family.

That doesn't mean young whales socialize only with relatives.

Her matrilineal family shares a dialect with nearby families in addition to their own special call, and they socialize regularly.

When females are about 15 years old, these encounters give them the opportunity to mate with males from other groups.

This relationship goes beyond mating, with females and calves remaining with the family and males returning to their mothers.

Until about age 40, she gives birth every six years on average.

She then goes through menopause, which is almost unprecedented in the animal kingdom.

In fact, humans, killer whales, and a few other whale species are the only species that survive many years after females stop breeding.

After menopause, grandmothers take the lead in hunting salmon, the main food source for Southerners.

They spend most of the winter foraging offshore, adding other fish to their salmon.

But when the salmon flock to shore to spawn, the killer whales also chase them.

Mothers tell young whales where the most fertile fishing grounds are.

She also shares up to 90% of the salmon she catches.

With each passing year, her contribution becomes more important. Overfishing and habitat destruction have depleted salmon populations, and whales are almost always at risk of starvation.

The expertise of these grandmothers can be the difference between life and death for their families. But why have they stopped having calves?

It is almost always advantageous for the female to continue to reproduce, even if she cares for the children and grandchildren she already has.

Some special circumstances change this equation for killer whales.

The fact that neither sons nor daughters leave the ancestral family is extremely rare, and in almost all animal species one or both sexes disperse.

This means that as female killer whales age, the proportion of children and grandchildren in the family increases, and the proportion of distant relatives who die increases.

Older females are more attached to the herd than younger females, so it's best to invest in the whole family, while younger females need to invest in reproduction.

In the killer whale environment, every newly born calf becomes another mouth to feed on the limited shared resources.

Older females can further develop their genes without straining the family by supporting their adult sons who raise calves that will be raised by other families.

This may be why females evolved to stop reproducing altogether in middle age.

Despite the grandma's contributions, killer whales in the south are endangered, largely due to salmon declines.

We urgently need to invest in restoring salmon populations to save them from extinction.

In the long term, more research, such as the Whale Research Center, will be needed.

What we learn about Southerners may not apply to other groups.

Closer study of other populations may uncover even more surprising adaptations and predict their vulnerability to human interference before their survival is in jeopardy.

Roald Amundsen spent almost two years preparing for his Arctic expedition.

He secured funding from the Norwegian King and carefully selected a reliable crew.

He even had the blessing of the famous explorer Fridtjof Nansen, with the use of his ship Fram, which was specially built to withstand the ice.

Now, as the voyage departed, he made a final announcement to the sailors. They were going in opposite directions.

By the early 20th century, nearly every region on Earth had been visited and mapped. There are only two remaining important locations. The Arctic, deep in the frozen oceans of the Arctic region, and the Antarctic, located within the recently discovered ice continent of the vast Antarctic Ocean.

A veteran of several expeditions, Amundsen had long dreamed of reaching the North Pole.

However, in 1909, in the midst of his preparations, news came that American explorers Frederick Cook and Robert Peary had made claims against this achievement.

Instead of abandoning the planned voyage, Amundsen decided to change course in what he called "the last big problem". But Amundsen's crew wasn't the only one shrouded in darkness.

British naval officer Robert F. Scott had already visited Antarctica and was leading his own Antarctic expedition.

Now, when Scott's ship Terra Nova arrived in Melbourne in 1910, news greeted Scott that Amundsen was also heading south.

Scott reluctantly found himself facing the Norwegian in what the newspaper called "a race to the poles". But if it was racing, it was weird.

The expeditions departed from different places at different times and had very different travel plans.

Amundsen was only focused on reaching the poles.

Informed of the Arctic expedition, he used both Inuit and Norwegian experience and arrived with a small team and over 100 dogs.

His explorers wore seal skins and furs, as well as specially designed skis and boots.

But Scott's adventures were more complicated.

He embarked on a major scientific expedition, traveling with more than three times Amundsen's crew, more than 30 dogs, 19 Siberian ponies, and three state-of-the-art electric sleds.

However, these additional tools and bodies have weighed heavily on ships in combating Southern Sea storms.

And when I finally started loading supplies, I realized that neither the pony nor the motor sled would work in the harsh ice and snow.

In the spring of 1911, after waiting for a long polar night, both parties began their journey south.

Scott's team followed Ernest Shackleton's earlier attempts to reach the pole, crossing the Beardmore Glacier.

However, although the course was documented, it proved to be a time-consuming and laborious task.

Meanwhile, despite initial failures, Amundsen's five-man team set a good time using a previously unmapped route through the same Transantarctic Mountains.

They got ahead of Scott's team and were the first to reach their desolate destination on 14 December.

To avoid the ambiguity surrounding Cook and Peary's North Pole claim, Amundsen's team traversed the area in a grid to ensure coverage of the North Pole's location.

They left a letter to Scott with flags and tent markers, but the letter was not found until over a month later.

But when Scott's party finally hit the apex, losing the "race" wasn't their biggest problem.

Two of the five died of starvation and exhaustion from frostbite on the way to camp.

The remaining explorers hoped for a pre-planned rendezvous with a team dispatched from the base, but a series of accidents, misjudgments and miscommunications prevented rescue from arriving.

Their bodies, along with Scott's diary, were not found until spring.

Scientists from different countries currently live and work at the Antarctic Research Station.

But the journeys of these early explorers have not been forgotten.

Despite their different destinies, they are immortalized in history in the name of the research station that marks the South Pole.

When I was 17 and in high school, valedictorian graduated from high school in Decatur, Georgia, and I was very proud of myself.

I come from a low-income community, grew up in Mississippi, and moved from Mississippi to Georgia so my parents could earn a degree as a minister in the United Methodist Church.

We were poor, but they didn't think we were poor enough, so they were aiming for permanent poverty.

(Laughter) So while they were studying at Emory, I studied at Avondale and became the valedictorian.

Well, one of the joys of being a valedictorian in Georgia is being invited to meet the Governor of Georgia.

I was a little curious to meet him.

It was kind of cool.

I used to watch "General Hospital" and "Dynasty" a lot when I was a kid, so the fact that he lived in a mansion made it all the more intriguing.

(Laughter.) So I got up that morning and got ready to visit the governor.

My father and mother, who were also invited, got up and we went outside.

But we didn't get in the car.

And in the south a car is a necessity.

Not much public transport and not many options.

But if you are lucky enough to live in a car-free area, your only option is public transport.

And that's what we had to take.

So we got on the bus.

And we took the bus all the way from Decatur to Buckhead. There, the Governor's Mansion stood on this truly beautiful piece of land, with a long black gate running all the way across the property.

We arrive at the Governor's Mansion, pull the little lever that signals this is our stop, get off the bus, and my mother, father and I walk across the street.

We walk down the driveway as cars come bringing students from all over Georgia.

So we walk sideways.

Then I approached the security gate, walking side by side with my father and mother sandwiching me so that I wouldn't be run over by the car that was bringing the other valedictorians.

When you reach the security gate, a security guard will come out.

He looks at me, looks at my parents, and says, "You shouldn't be here, this is a private affair."

The father said, "No, this is my daughter, Stacey. She is one of the valedictorians."

But the guards don't even look at the checklist in their hands.

He doesn't ask my mom for an invitation in the bottom of her very bulky purse.

Instead, he stares over our shoulders at the bus. Because, in his mind, the bus is telling him the story of who should be there.

And the fact that we were too poor to have a car of our own was also a story he told himself.

And maybe he saw something in the color of my skin, maybe he saw something in the way I was dressed. I don't know what went through his mind.

But his conclusion was to look at me again and look at me with contempt. "Like I said, this is a private affair. You shouldn't be here."

Well, my parents were studying to be ministers of the United Methodist Church, but they weren't pastors yet.

(Laughter) So they got this gentleman into a very heated discussion about his decision-making skills.

(Laughter) My father might have said that if I hadn't had my name on that checklist, I'd be spending an eternity in a very fiery place.

And indeed, the man finally checked the checklist, found my name, and let us inside.

But I don't remember meeting the Governor of Georgia.

I don't remember ever meeting fellow valedictorians from 180 school districts.

My only vivid memory of that day is a man standing in front of the most powerful place in Georgia looked at me and said I had no place.

Twenty-odd years later, I decided to be the one to open that gate.

(Cheers) (Applause) Unfortunately, you may have read the rest of this story.

It didn't work.

And now I'm thinking: How can we move forward?

Because I didn't just want to open up to young black women who had been underestimated and told they weren't worthy.

I wanted to open that gate to Latinos and Asian Americans.

I wanted to open that gate to both undocumented and documented people.

I wanted to open that gate as an ally of the LGBTQ community.

I wanted to open that gate for families who had to call themselves victims of gun violence.

I wanted to open that gate wide for everyone in Georgia. Because Georgia is our state, our country, and we all belong here.

(Cheers) (Applause) But what I realized was that the first attempt wasn't good enough.

And my question became, "How do I move forward?"

How do you get past the pain, sadness, helplessness, and ice cream and watching an insane amount of TV?

(Laughter) What should I do next?

And I'm going to do what I've been doing.

There is no turning back and standing still is not enough, so I will move forward.

(Applause.) As you know, I started my run for governor by analyzing who I am and what I want to be.

And there are three questions I ask myself about everything I do, whether I'm running for office or starting a business. When I decided to start a New Georgia project to register voters. Or when you start the latest action "Fair Fight Georgia".

Whatever I do, I ask myself three questions. "What do I want?"

why do you want it?

How can I get it?

And in this case I know what I want.

I want change

that's what i want.

But the question is, what kind of change do I want to see?

And I know there are questions I have to ask myself: 1. Am I honest about the extent of my ambitions?

Because once you don't get what you want, it's easy to see that maybe you should have set your goals a little lower. But my point here is to be proactive about your ambitions.

Don't let setbacks set you back.

(Applause.) Second, understand your mistakes.

But understand their mistakes too. Especially because, as women, we're taught that if something goes wrong, it's probably our fault.

And usually we've been told not to investigate too much what the other side could do, even though there are things we can do better.

And this is not partisan, but people.

It is often said that our mistakes are ours alone, but our victories are our common good.

Therefore, what I want to say to you is not only to understand your own mistakes, but also to understand the mistakes of others.

And be cool about it.

And be honest with yourself and be honest with those who support you.

But once you know what you want, understand why you want it.

Revenge is not a valid reason, even if it feels good.

(Laughter) Instead, do what you want. Because there are things you should do, not things you should do.

It should be such that you can't sleep at night unless you dream. Something that excites you when you wake up in the morning. Or, when something really pisses me off, I know I have to do something about it.

But know why you do it.

And know why you should do it.

You've heard women all over the world talk about why things have to happen.

But understand what your “why” is. There's no point in jumping from "what" to "do" if you don't know why.

Because when it's hard, when it's hard, when your friends leave you, when your supporters forget about you, when you don't win the first race, if you don't know why, you can't try again.

So first know what you want.

Second, I know why I want it, but third, I know how to make it happen.

We faced some obstacles in this race.

(Laughter) Just a little bit.

But in that pursuit, I became the first black woman in the history of the United States to run for a major party for governor.

(Cheers) (Applause) But more importantly, in this process, we won 1.2 million African-American voters in Georgia.

That's more voters than voters who voted Democrat in 2014.

(Applause.) Our campaign has tripled the number of Latinos in Georgia who believe their voices matter.

We tripled the number of Asian Americans who stood up for "This is our state, too."

Those successes tell us how we can achieve it.

But they also made me understand that obstacles are not insurmountable.

It's just a little expensive.

But I also understand that there are three things that always hold us hostage.

The first is finance.

Now, as you may know, I have a little debt.

If I hadn't heard that, I wouldn't have gone out.

(Laughter.) And finances often hold us back, and our dreams are limited by how much resources we have.

But we hear again and again about people who have overcome these resource challenges.

But not speaking is insurmountable.

That's why I didn't allow them to humiliate me with debt while I was campaigning.

I didn't let anyone tell me that my lack of opportunity was the reason I was disqualified from running.

And believe me, people were trying to tell me I shouldn't run away.

My friend told me not to run.

Allies told me not to run away.

"USA Today" mentioned that I may not be running.

(Laughter) But whoever it is, I've realized that finances are often the reason we don't give ourselves a dream.

I can't say you can always overcome those obstacles, but I'll tell you that if you don't try, you'll go to hell.

(Applause.) The second is fear.

And fear is real.

I get paralyzed.

Horrifying, isn't it?

But sometimes knowing what you're afraid of can be energizing because you know how to avoid it.

And the third is fatigue.

Sometimes I get tired of trying.

I get tired of reading about processes and politics and what keeps you from reaching your destination.

In some cases, fatigue means accepting a position rather than power.

We let someone give us the title as a consolation prize instead of recognizing that we know what we want and intend to get it, even when we are tired.

That is why God created naps.

(Laughter) But we also learn in that moment that fatigue is an opportunity to assess how much we want it.

Because fatigue can drain your energy when you're beaten down, when you've worked hard, when you've done everything you could and it still doesn't work.

But that's why we go back to the "why".

Because I know we need women who speak for the voiceless.

We know we need people of good conscience who stand up to oppression.

I know we need people who understand that social justice is for all of us.

It wakes me up every morning and makes me fight even harder.

Because I'm moving forward knowing what happened in the past.

I know they are handicapping me.

I know what they're going to do, and I'm pretty sure they're energizing and creating new obstacles now.

But it took me four years to figure it out.

(Laughter) (Applause) Maybe two.

(Cheers) (Applause) But what I'm saying here is that I know what I want and it's the right thing to do.

I know why you want it, because poverty is immoral and a stain on our country.

And we know how to achieve it. It's about moving forward every day.

Thank you very much.

(Cheers) (Applause)

Those who know me know how passionate I am about exploring the frontiers of space.

So when I had the opportunity to give the world's gravity experts a zero-gravity experience, it was incredible.

And that's what I want to talk about.

I first met him through the Archon X PRIZE for Genomics.

This is our competition, the second X PRIZE, for the first team to sequence 100 human genomes in 10 days.

We have something called Genome 100, and as part of that, we're sequencing 100 individuals.

Craig Venter will host the event.

And then I met Dr. Hawking, and he said his dream was to go to space.

And I said, "I can't take you there, but I can take you from weightlessness to zero grams.

Then he said on the spot, "Of course it is."

Now, the only way to experience zero-G on Earth is actually parabolic flight, or zero-gravity flight.

Get in a plane, soar through the air and be weightless for 25 seconds.

Come down, double your weight.

repeat it over and over.

You can get weightlessness for 8 or 10 minutes. That's how NASA has trained astronauts for a long time.

We set out to do this.

It took 11 years to start operation.

And we announced that we would have Dr. Stephen Hawking on board.

I had a government agency and a corporate pilot tell me, "You're crazy, don't do that, you're going to kill a man."

(Laughter.) And he wanted to go.

We worked hard to get all the permits.

And six months later we sat at the Kennedy Space Center.

We held a press conference announcing our intention to do one zero-G parabola and give him 25 seconds of zero-G.

If it works really well, it might draw three parabolas.

Well, we asked him why he wanted to stand up and do this.

And what he said was very moving to me.

"Life on Earth is increasingly in danger of being wiped out by disasters...

I don't think there is a future for mankind without going to space.

Therefore, I would like to promote public interest in space. ”

We took him inside a NASA vehicle at Kennedy Space Center, in the back of a zero-gravity plane.

There were about 20 people who donated and we raised $150,000 for children's charities. They also boarded the plane together.

There are some TEDsters here.

We set up the whole ER.

There were four emergency medical doctors and two nurses on board the plane.

We monitored his blood PO2, heart rate and blood pressure.

We had everything ready for an emergency. God knows I don't want to hurt this world-renowned expert.

We took off from the shuttle landing facility where shuttles take off and land.

And my partner Byron Lichtenberg and I carefully suspended him in zero gravity.

Once he got there, [we] let him experience what weightlessness really is like.

And after the first parabola, the Doctor said everything was fine. He was smiling and we said let's go.

So I created a second parabola.

(Laughter) (Applause) And a third.

(Applause.) In fact, we floated an apple in honor of Sir Isaac Newton. Because Dr. Hawking sits in the same chair as Isaac Newton at Cambridge University.

And then the 4th, 5th, and 6th times.

(Laughter) And number seven and number eight.

And this man doesn't look like a 65 year old man in a wheelchair.

(Laughter) He was very happy.

We live on precious jewels, but we are leaving this earth in our lifetime.

Please join us in this epic adventure.

Thank you very much.

(applause)

So what does it mean to be a woman?

We all have XX chromosomes, right?

Not really.

Some women have mosaics.

They are of mixed X, XY, or XXX chromosome types.

If it's not just about chromosomes, what is it about being female?

being feminine?

get married?

Do you have children?

We don't have to look far to find nice exceptions to these rules, but we all share something that makes us women.

Maybe it's in our brains.

You may have heard the last-century theory that men are better at math than women because they have bigger brains.

These theories have been proven false.

The average human brain is about three times smaller than the average elephant's brain, but that doesn't mean the average human is three times stupider than the elephant...

Or is it?

(Laughter) A new wave of female neuroscientists is coming, discovering important differences between female and male brains in neuronal connectivity, brain structure, and brain activity.

They find that the brain is like a patchwork mosaic, a mixture.

Females have mostly female patches and some male patches.

With all this new data, what does it mean to be a woman?

This is something I've thought about most of my life.

When people find out that I happen to be a transgender woman, people always ask, "How do you know you're a woman?"

As a scientist, I am looking for the biological basis of gender.

I want to understand what makes me who I am.

New discoveries at the cutting edge of science are shedding light on gender-defining biomarkers.

My colleagues in genetics, neuroscience, physiology, and psychology and I are trying to understand exactly how gender works.

These vastly different fields share a common link: epigenetics.

Epigenetics studies how DNA activity actually changes fundamentally and permanently, even when the sequences remain the same.

DNA is a long string-like molecule that wraps around our cells.

There is so much DNA that it is actually entwined in these knots. These are simply called knots.

Thus, external factors change how DNA knots form.

You can think of it this way. Inside our cells are various machines that build things, connect circuits, and do all the other things that keep us alive.

This is like reading DNA to make RNA.

And it carries giant sacs of neurotransmitters from one end of the brain cell to the other.

Is there no hazard pay for this kind of work?

(Laughter) This is a whole molecular factory. Some say this is the secret of life.

called a ribosome.

I have been researching this since 2001.

One of the amazing things about our cells is that the components inside them are actually biodegradable.

They dissolve and are rebuilt every day. It's like a traveling carnival where the rides are taken down daily and then rebuilt.

The big difference between our cell and the traveling carnival is that the carnival has skilled craftsmen who rebuild the rides every day.

In our cells there are no such skilled craftsmen, only stupid construction machinery that builds whatever the plans say, no matter what the plans say.

Their plans are DNA.

Instructions to every nook and cranny in our cells.

For example, if all of our brain cells melt almost every day, how does the brain remember what happened a day ago?

That's where DNA comes in.

DNA is one of those things that doesn't melt.

But in order for the DNA to remember what happened, it has to change in some way.

I know I can't have changes inside a sequence. If it were to always take turns, we might be growing like new ears and new eyeballs every day.

(Laughter) So instead it changes shape and that's where the DNA knot comes into play.

You can think of it like a DNA memory.

When something big happens in our life, like a traumatic childhood event, stress hormones flood our brains.

Stress hormones do not affect the arrangement of DNA, but they change its shape.

They influence that part of the DNA by directing molecular machines that relieve stress.

The pieces of that DNA had intertwined into a knot, and the stupid Builder Machine could no longer read the plans needed to build a stress-reducing machine.

It's just a mouthful, but that's what's happening on the microscale.

When you look at it on a macro scale, you effectively lose your ability to deal with stress, and that's a bad thing.

And that's how DNA remembers what happened in the past.

I think this is what happened to me when I first started transitioning.

I knew I was a woman on the inside and wore women's clothes on the outside, but everyone saw me as a man in a dress.

I felt that no matter how hard I tried, no one could see me as a woman.

In science, your credibility is everything, people were laughing in the hallways, staring at me, disgusting - afraid I was near.

I remember my first big talk after the transition.

It was in Italy.

I've given prestigious talks before, but this time I was terrified.

As I looked into the audience, I began to hear whispers—stares, grins, giggles.

I still have social anxiety centered around my experience eight years ago.

I lost hope.

Don't worry, I'm in therapy so I'm fine, I'm fine now.

(Laughter) (Cheers) (Applause) But I felt like I had had enough. I am a scientist with a PhD in Astrophysics and have published papers in top journals in areas such as wave-particle interactions, astrophysics and nucleic acid biochemistry.

I have actually been trained to get to the bottom of things. So -- (Laughter) I went to the Internet -- (Applause) So I went online and found an interesting research paper.

I learned that these DNA knots are not necessarily bad.

In fact, tying and untying knots is like a complex computer language.

It programs our bodies with exquisite precision.

Therefore, when we become pregnant, the fertilized egg develops into a newborn.

This process requires thousands of DNA decisions to be made.

Should germ cells become blood cells?

heart cells? brain cells?

And that decision is made at various times during pregnancy.

Some occur in the first trimester, some in the second trimester, and some in the third trimester.

To truly understand DNA decision-making, we need to look at the knot-forming process in atomic detail.

Even the most powerful microscope cannot see this.

What would happen if we simulated these on a computer?

You need 1 million computers for that.

That's exactly what we have at our Los Alamos lab. A million computers connected to a giant warehouse.

Here we show the DNA that makes up the entire gene folded into a very peculiar shaped knot.

For the first time, my team simulated an entire gene in DNA. This is the largest biomolecular simulation ever performed.

For the first time, we are beginning to understand the open question of how hormones cause such knot formation.

DNA knot formation can be seen beautifully in calico cats.

The orange-black decision is made early in the womb, so that orange-black speckle is an accurate read of what happened when the cat was just a tiny kitten fetus in its mother's womb.

And speckled patterns actually occur in our brains and in cancer as well.

It is directly related to intellectual disability and breast cancer.

These DNA decisions are also made in other parts of the body.

It is known that the progenitor changes to female or male during early pregnancy.

On the other hand, the progenitor brain changes into female or male during the second trimester of pregnancy.

Thus, the current working model is that the unique mixing in the mother's womb deformed the progenitor genitalia in one direction and the progenitor brain in the opposite direction.

Most of the epigenetics research has focused on the kind of downers, the kind of bad, like stress, anxiety, and depression.

(Laughter.) But these days, people are focusing on relaxation.

Will it have a positive effect on your DNA?

Important data are currently missing from the mouse model.

We know rats relax, but can they meditate like the Dalai Lama?

Do you want to achieve enlightenment?

Can they move stones with their minds like Jedi Master Yoda?

(Yoda's voice): Well, Jedi Mouse must be feeling the force flow, uh.

(Laughter) (Applause) I wonder if the support I've received since that talk in Italy has allowed me to unwrap my DNA.

Being blessed with great friends, supportive parents, and loving relationships has actually given me the strength and hope to help others.

I wear a rainbow bracelet at work.

It can be frowned upon, but it also raises awareness.

Transgender people, especially women of color, can take their own lives with a single demeaning comment.

40 percent of us attempt suicide.

If you're listening and feel like you have no other choice, call a friend, go online, or join a support group.

If you're not trans but a woman who knows the pain of loneliness and sexual assault, reach out.

So what does it mean to be a woman?

Recent research shows that female and male brains develop differently in the womb, and this may give us women an innate sense of being female.

On the one hand, it may be that we have a common sense that makes us feminine.

We have so many different shapes and physiques that asking what it means to be a woman may not be the right question.

It's like asking a calico what it means to be a calico.

Perhaps being a woman means accepting yourself for who you are and acknowledging the same in each other.

i see you

And you just saw me

(applause and cheers)

I love learning foreign languages.

In fact, I love this language so much that I like to learn a new language every two years and am currently learning my eighth language.

When people find out about me, they always ask, "How do you do that? What's your secret?"

To be honest, for years my answer was "I don't know. I just love learning languages."

But people were never satisfied with that answer.

They wanted to know why it took years to become fluent in even one language. And here I am, learning language after language.

They wanted to know the secrets of polyglots, people who speak many languages.

And that made me wonder too, how do other multilingual languages ​​actually do that?

What do we have in common?

And why are we able to learn languages ​​faster than others?

I met people just like me and decided to find out.

The best place to meet many multilinguals is at an event where hundreds of language enthusiasts gather in one place to practice their language.

Since there are several such multilingual events around the world, I decided to go there and ask multilingual people about the techniques they use.

There I met Benny from Ireland. He said it's his way to start talking from day one.

He learns a few phrases from a travel phrasebook, goes to meet a native speaker, and strikes up a conversation in no time.

He doesn't care if he makes 200 mistakes a day. Because it's a way of learning based on feedback.

And best of all, I don't even have to travel often now, because websites allow me to easily converse with native speakers from the comfort of my living room.

I also met Lucas from Brazil, who has a very interesting way of learning Russian.

He added 100 random Russian-speaking friends on Skype, opened a chat window with one of them, and wrote "Hello" in Russian.

The person replied, "Hello, how are you?"

Lucas copied this and typed it into another person's text window, who replied, "I'm fine, thank you, how are you?"

Lucas copied this into the first person and thus let two strangers converse without knowing it.

(Laughter.) And soon he started typing himself. Because he had a lot of these conversations, he understood how Russian conversations usually start.

What an ingenious way!

And I've met multilinguals who always start by imitating the sounds of the language, people who always learn the 500 most frequently used words of the language, and people who always start by reading about grammar.

Ask 100 different multilinguals and you'll find 100 different approaches to language learning.

Everyone seems to learn languages ​​differently, but the result of being fluent in multiple languages ​​is the same for everyone.

And as I listened to multilingual people talk about their methods, I suddenly realized. One thing we all have in common is simply finding ways to enjoy the language learning process.

All the multilingual people were talking as if language learning was a lot of fun.

I'm sure you've seen their faces when they showed me their colorful grammar charts, their carefully handcrafted flashcards, their app-based vocabulary learning stats, and their love of cooking from foreign language recipes.

They all use different methods but always make sure it's something they enjoy doing.

I realized that this is actually my own way of learning languages.

When I was studying Spanish, I was bored with textbook sentences.

Who wants to read about Jose asking for directions to the train station? right?

I wanted to read "Harry Potter" instead. Because it's been my favorite book since I was a kid and I've read it many times.

So I got a copy of Harry Potter in Spanish and started reading it.

The same thing happened when I was studying German.

I decided to watch one of my favorite sitcoms, Friends, in German, and again, it made no sense at first.

I didn't know where one word ended and the next one started, but I kept watching it every day because it was "Friends".

You can watch in any language. I really like that.

And seriously, the conversation started to make sense after season 2 or 3.

I only realized this when I met other polyglots.

We are not geniuses and there are no shortcuts to learning a language.

We just found a way to enjoy the process, a way to turn language learning from a boring school subject into a fun activity you can do every day.

If you don't like writing down words on paper, you can always type them in the app.

If you don't want to listen to boring textbooks, find interesting content in any language on YouTube and podcasts.

If you are more introverted and can't imagine talking to a native speaker right away, you can apply self-talk methods.

You can talk to yourself in the comfort of your room and explain your plans for the weekend, how your day went, or take a random photo from your phone and explain it to your imaginary friend.

This is how multilinguals learn languages, and the best news is that it's available to anyone willing to take learning on their own.

So, meeting other multilingual people helped me understand that finding fun in the process of learning a language is really important, but joy alone is not enough.

If you want to become fluent in a foreign language, you should apply three more principles.

First of all, you need an effective method.

When you try to memorize a list of words for tomorrow's test, the words are stored in your short-term memory and you forget them after a few days.

However, if you want to keep the word long-term, you have to revise it repeatedly for several days using so-called space repetition.

You can use apps based on this system such as Anki or Memrise, or you can write a list of words in your notebook using the Goldlist method, which is very popular among many multilinguals.

If you're not sure which methods work and what's available, check out the polyglots YouTube channel and website for inspiration.

If it works for them, it probably works for you.

A third principle to follow is to create a system of learning.

We are all very busy and nobody really has time to learn a language these days.

But with a little bit of planning ahead, you can create that time.

Can you wake up 15 minutes earlier than usual?

It's the perfect time to review some vocabulary.

Can I listen to podcasts while driving to work?

Well, it's great to have listening experience.

Like listening to podcasts on your commute or doing household chores, there are plenty of things you can do without planning extra time.

The important thing is to have a study plan.

"Every Tuesday and Thursday, I practice speaking with my friends for 20 minutes.

I listen to YouTube videos while having breakfast. ”

Once you build a system for learning, it becomes a part of your daily life, so you don't have to find extra time.

Finally, if you want to learn a language fluently, you also need a little patience.

It's impossible to learn a language in two months, but you can definitely make tangible progress in two months if you have fun learning a little bit each day.

And nothing motivates us more than our own success.

I vividly remember the moment I understood my first joke in German while watching Friends.

I was so happy and motivated that I continued to watch two more episodes that day. The more I watched, the more comprehensible moments and smaller victories I got, and little by little I reached a level where I could use the language freely and fluently to express anything.

This is a wonderful feeling.

I can't get enough of that feeling. So I learn a language every two years.

This is the whole secret of multilingualism.

Find an effective method that you can use systematically over a period of time in a way that you enjoy. This is how multilinguals learn languages ​​within months instead of years.

Some of you may be thinking, "It's all very nice to have fun learning a language, but isn't the real secret that you multilinguals are the only ones who are very talented and most of us aren't?"

Well, there's one thing we haven't talked about Benny and Lucas yet.

Benny studied Irish Gaelic at school for 11 years and German for 5 years.

He couldn't speak at all when he graduated.

By the age of 21, he thought he had no language genes and could not speak another language.

He then started looking for his own way of learning the language by talking to native speakers and getting feedback from them. Now Benny can easily converse in 10 languages.

Lucas tried to learn English in school for ten years.

He was one of the worst students in his class.

His friends made fun of him and even gave him a Russian textbook as a joke.

Lucas then started experimenting with different ways to learn, like talking to strangers over Skype chats.

And just ten years later, Lucas is fluent in 11 languages.

Does it sound like a miracle?

Well, I witness such miracles every day.

As a language mentor, I help people learn languages ​​on their own, and I see it every day.

People struggle with language learning for 5, 10, or even 20 years, and then suddenly they take learning into their own hands, using fun materials, more effective methods, and tracking their learning to assess their progress. Then suddenly, like magic, you find the language talent you've been missing all your life.

So, if you've tried learning a language and gave up because you thought it was too difficult or you didn't have the talent for it, try again.

Maybe you're just picking up a fun way to learn the language fluently.

Maybe you'll be multilingual in just one more step.

thank you.

(applause)

My quest has always been to find ways to record, share and document stories about people, everyday people.

A story that is transformative and leans towards transcendence, but never sentimental and never looks away from our darkest.

Because we truly believe that we are never more beautiful than when we are at our ugliest.

Because it's the moment we really know what we're made of.

As Chris said, I grew up in Nigeria with a generation of students in the 80s who were protesting the military dictatorship that was finally over.

So it wasn't just me, it was our entire generation.

But what I have learned is that the world is never saved by grand messianic acts, but in gentle, soft, almost invisible acts of mercy, the simple accumulation of daily acts of mercy.

South Africa has the word "Ubuntu".

Ubuntu was born out of the philosophy that "the only way I'm human is when you reflect my humanity on me".

But if you're like me, my humanity is more like a window.

I don't really see it, I don't pay attention to it until there is a dead bug on the window.

Then suddenly you see it, and usually it's never a good thing.

It's usually when I'm driving in traffic, drinking coffee and yelling at someone trying to send an email or take notes.

So what Ubuntu is really saying is that you can't be human without other people.

It's really very simple, but it's actually very complicated.

So I thought I'd start with some stories.

I need to tell you some stories about wonderful people, so I thought I'd start with my mother.

(Laughter.) And she was dark too.

my mother was British.

My parents met in Oxford in the 1950s and my mother emigrated to Nigeria and lived there.

She was 5ft 2in tall, very feisty, and very British.

This is my mother's English ability. Or was it, he just died.

She came to California and Los Angeles to visit me, and she went to Malibu, which she thought was very disappointing.

(Laughter) Then I went to a fish restaurant and was served by Chad, the surfer guy. Then he came and my mother said, "Do you have anything special, young man?"

And Chad said, "Well, salmon is wrapped in this, but it's wrapped in a skin that looks like wasabi.

It's totally bad. ”

Then my mother said to me, "What language does he speak?"

(laughter) I said, "Mom, in English."

And she shook her head and said, "Oh, you Americans. We gave them a language, why don't they use it?"

(Laughter.) So this woman, who converted from the Church of England to Catholicism when she married my father, and no one is more enthusiastic than a Catholic convert, decided to teach the Billings Ovulation Method, the only method of contraception approved by the Catholic Church, in rural Nigeria, especially among Igbo women.

But her warts weren't very good.

So she took me to an interpreter.

i was 7 years old.

(Laughter) So here are some women who never discuss periods with their husbands. And I say to them: "So how often do you get your period?"

(Laughter) And then, "Do you have any secretions?"

(Laughter) And, "How swollen is your vulva?"

(Laughter) My mom never thought of herself as a feminist, but she always said, 'Anything a man can do, I can fix.'

(Applause.) When my father complained about this situation of taking a seven-year-old boy and teaching him birth control, he used to say, "Oh, you're changing him. You're teaching him how to be a woman."

My mother said, "Someone has to do it."

(laughter) This woman, during the Biafran war, we also got into the war.

It was my mother with 5 young children.

It takes her a year from refugee camp to refugee camp to reach the runway for us to fly out of the country.

Throughout the refugee camp, she must confront soldiers who want to take her 9-year-old brother, Mark, and turn her into a child soldier.

Can you imagine this 5ft 2in tall woman standing up to the men who want to kill us with guns?

During the whole year, my mother never cried.

However, when we were at the airport in Lisbon, about to catch a flight to England, this woman saw my mother wearing this dress, washed it so many times that it was basically see-through, but came in with five hungry children and asked what had happened.

And she said to this woman:

So this woman emptied her suitcase and gave all her clothes to my mother and us and her toys, which my mother didn't really like, (laughter) and that was the only time she cried.

And years later, when I was writing about my mother, I remember asking her, "Why did you cry then?"

And she said, "You can be strong against any difficulty and any fear.

But a simple act of kindness from a complete stranger can heal your wounds. ”

The old women in my father's village remembered the names of all those who died after this war happened, and sang elegiacs in their names.

A scorchingly melancholic lament.

And they sang this song only when they were planting rice, as if they were planting the heart of the dead.

But when it came time to harvest, they sang joyful songs made up of the names of all the children born in that year.

And in the next rice-planting season, when they sang lamentations, they deleted as many names of the dead as they were born.

In this way they achieved many transformations, beautiful transformations.

Did you know that before the genocide in Rwanda, the word for rape was the same as the word for marriage?

But today women are rebuilding Rwanda.

Did you also know that when the new government entered the Capitol after apartheid, there were no women's toilets in the building?

This seems to suggest that apartheid was entirely the work of men.

The bottom line is that in spite of terror, and in spite of death, women are never counted.

Their humanity doesn't seem very important to us.

When I grew up in Nigeria, I shouldn't call it Nigeria because it's too common, but in Afikpo, the Ibo region where I'm from, there was always a rite of passage for young people.

Men have been taught to be men in the same way that we are not women. That is essentially what it is.

And a lot of the ritual involved killing small animals, killing them, and moving forward, so when I turned 13, I mean, it was a given, but it was a farming community, and someone had to kill the animals. There was no Whole Foods I could go to for kangaroo steak. So when I turned 13, it was my turn to kill the goat.

And I was a weird, sensitive kid who couldn't really do it, but I had to.

And I was supposed to do this alone.

But a friend, much older than me, Emmanuel, who was a child soldier during the Biafra War, decided to come with me.

He's seen so much, and it made me feel better.

Now, when I was a kid, he used to tell me stories about how he used to shoot people with bayonets, and when their intestines fell off, they kept running.

So this guy comes with me.

I don't know if you've heard or seen a goat, but goats sound like humans. That is why we call tragedies "goat songs".

My friend Brad Kessler said that a human wasn't human until he started raising goats.

Anyway, a goat's eyes are similar to a child's eyes.

So when I tried to kill this goat but couldn't, Emmanuel bent down and put his hand over the goat's mouth to cover his eyes so I wouldn't have to look into his eyes while he killed the goat.

It didn't seem like a big deal to this man who had seen so much, and killing a goat seemed like such a routine experience, but he still found a desire to protect me.

I was a wimp.

I cried for a very long time.

And after that he said nothing.

He just sat there and watched me cry for an hour.

And after that he said to me, "It's always hard, but if I cry like this every time, I'll die of heartbreak.

Know that sometimes it's enough to know that it's hard. ”

Of course, talking about goats reminds me of sheep, but not in a good way.

(Laughter) So I was born two days after Christmas.

So growing up, I had cake and whatever, but I didn't get any presents because I was born two days after Christmas.

So, I was about nine years old, my uncle had just returned from Germany, and my mother was serving tea to my uncle, inviting a Catholic priest to our house.

Then my uncle suddenly said, "Where's Chris' present?"

Then my mother said, "Don't talk about that in front of the guests."

But he was desperate to show that he had just returned, so he called me up and said, "Go to the bedroom, go to my bedroom."

Take everything you want out of your suitcase.

It's your birthday present. ”

He must have thought I would take a book or a shirt, but I found an inflatable sheep.

(Laughter) So I blew it up and ran into the living room, put my finger where it shouldn't be, and was brandishing a buzzing sheep. And my mother almost died of shock.

(Laughter.) And Father McGetrick was totally unperturbed, stirred the tea and looked at my mother and said, "All right, Daphne, I'm Scottish."

(Laughter) (Applause) In my last days in prison, the last 18 months, my cellmate was 14 in the last year, the first of the last 18 months.

His name was John James, and at that time, if his family committed a crime, the military would hold him for ransom until his family appeared.

So this was a 14 year old boy on death row.

And not all death row inmates were political prisoners.

There were some really bad people there.

And he was smuggling two Spider-Man and X-Men comics and two comic books.

he was crazy.

And when he got tired of reading, he started using these comics to teach death row inmates how to read.

So every night I remember hearing these guys, really hardy criminals, crowding around John James, chanting, "Take it, Spidey!"

(Laughs) That's amazing.

I was really worried.

He didn't know what the death penalty meant.

I've been there twice and I was very scared I was going to die.

And he always laughed and said, "Well, it'll work out."

Then I say, "How do you know?"

Then he said, "Oh, I heard it on the vine."

they killed him

They handcuffed him to a chair, pinned his penis to a table with a six-inch nail, and then left him there to bleed to death.

That's how I put my feelings on the table, and I became lonely.

There are people like this all around us.

The Igbo people used to say that they created their own gods.

They came together as a community to express their wishes.

Their requests were then delivered to the priests, who found the ritual items, appropriate sacrifices were made, and a temple was built to the god.

But if the god gets out of hand and starts demanding human sacrifices, the Igbo will destroy the god.

They knocked down the shrine and stopped saying the name of God.

Thus they regained their humanity.

All of us here are building rampant gods every day, but now is the time to bring them down and start forgetting their names.

No big deal.

All it takes is for the few of us who can see to realize that we are surrounded by people like the ones I told you about every day.

There are some wonderful people in this room who provide us all with a mirror of our own humanity.

I would like to end with a poem by an American poet named Lucille Clifton.

The poem is called "Libation" and is addressed to my friend Vusi in the audience here somewhere.

"Revation, North Carolina, 1999.

I dedicate this gin to this land.

I imagine an old man here crying out of sight of the director.

He pushes his tongue into the hole where the teeth would be if it were perfect.

It hurts that space where there would be his teeth, his land, his house, his wife, his son, his beautiful daughter.

He wipes the sorrow from his face and puts his dry finger on his dry tongue to taste the salt.

I call him a name that might be.

This is for you, old man.

This gin, this salty earth. ”

thank you.

(applause)

From space, our planet looks more like an ocean than Earth.

Yet more than half of the world's population suffers from extreme water scarcity for at least one month of the year, even though 71% of the earth's surface is covered with water.

And current estimates predict that up to 20 more countries could face water shortages by 2040.

Taken together, these bleak statistics raise the alarming question of whether clean water is in short supply.

Well, yes and no.

On a planetary scale, the Earth can run out of freshwater thanks to the water cycle. The water cycle is a system that continuously generates and recycles water, changing it from vapor to liquid to ice as it circulates around the globe.

So this is not a question of how much water actually exists, but of how much water is accessible to us.

97% of the liquid on Earth is salt water, too rich in minerals for human consumption or agricultural use.

Of the remaining 3% of available freshwater, more than two-thirds is frozen in ice sheets and glaciers.

That means less than 1% can sustain all life on Earth, and it's spread all over the planet, including rivers, lakes, underground aquifers, ground ice, and permafrost.

These water sources are being rapidly depleted by humans, but are slowly replenished by rain and snowfall.

And this limited supply is not evenly distributed around the world.

Diverse climates and geographies provide some areas with high precipitation and natural water sources, while others have geographic features that make water transportation very difficult.

And supplying the infrastructure and energy needed to bring water to these areas is very expensive.

In many of these water-poor regions, and in some areas where water is easily accessible, humans are drinking up the local water supply faster than it can be replenished.

And when more rapidly renewing resources fail to meet demand, we begin to pump it out of our finite underground reserves.

Of the 37 major underground reservoirs on Earth, 21 are slated to irreversibly empty.

So while it's true that the planet isn't actually running out of water, the water sources we depend on are being depleted at an unsustainable rate.

This may come as a surprise, but after all, people only drink about 2 liters of water a day on average.

But water plays a hidden role in our daily lives, and in the same 24-hour period, most people actually consume an estimated 3,000 liters of water.

In fact, the domestic water we use for drinking, cooking and cleaning accounts for only 3.6% of human water consumption.

Another 4.4% goes to the various factories that make the products we buy every day.

But the remaining 92% of our water consumption is all spent in a single industry, agriculture.

Our farms drain the equivalent of 3.3 billion Olympic-sized swimming pools each year, all of which is swallowed up by the crops and livestock that feed the planet's ever-growing population.

Agriculture currently covers 37% of the earth's land area and poses the greatest threat to local water supplies.

Yet it is also a necessity.

So how can we quench the thirst of agriculture while still feeding those who depend on it?

Farmers are already starting to find creative ways to reduce impacts, such as using special irrigation techniques to grow "more crops per drop" or breeding new crops that are less thirsty.

Other industries have followed suit, adopting production processes that reuse and recycle water.

At the individual level, one-third of the food we produce on our farms is currently wasted or thrown away, so reducing food waste is the first step to reducing water use.

You might also consider eating foods that don't consume a lot of water, such as shelled nuts and lean meats.

Adopting a vegetarian lifestyle can reduce your water usage by up to a third.

Our planet may never run out of water, but we don't need to feel thirsty.

Solving this regional problem requires global solutions, and small everyday decisions can affect reservoirs around the world.

Before empires and royalty, before pottery and writing, before metal tools and weapons, there was cheese.

As early as 8000 BC, the earliest Neolithic farmers who lived in the Fertile Crescent began a cheese-making legacy almost as old as civilization itself.

With the rise of agriculture, sheep and goats were domesticated, and ancient farmers harvested them for milk.

But after a few hours in warm conditions, the fresh milk began to turn sour.

That lactic acid coagulates proteins, binding them together to form a soft mass.

Farmers who discovered this strange change drained the remaining liquid (later named whey) and found the yellowish mass to be eaten fresh as a soft, spreadable meal.

These chunks, or curds, become the building blocks of cheese, which are eventually ripened, pressed and aged to become a treasure trove of different dairy products.

The discovery of cheese gave Neolithic people a great survival advantage.

Milk was rich in essential proteins, fats and minerals.

But it also contained large amounts of lactose, a difficult sugar for many ancient and modern stomachs to process.

However, cheese can provide all the benefits of cow's milk with significantly less lactose.

And because these essential nutrients could be stored and stockpiled, they could be eaten during rare famines and long winters.

Some 7th millennium BC pottery fragments found in Turkey still contain evidence of the cheese and butter they held.

By the end of the Bronze Age, cheese had become a standard commodity in maritime trade throughout the Eastern Mediterranean.

In the densely populated city-states of Mesopotamia, cheese became a staple of culinary and religious life.

The earliest known documents include administrative records of cheese quotas, listing different cheeses for different ceremonies and populations throughout Mesopotamia.

Records of neighboring civilizations in Turkey also mention rennet.

This animal by-product is produced in the stomach of certain mammals and can promote and control clotting.

Eventually, this sophisticated cheese-making tool spread around the world and was supplanted by a variety of newer, harder cheeses.

And while some conservative food cultures rejected dairy delicacies, more embraced cheese and quickly added their own local flavors.

The nomadic Mongols used yak milk to make hard, sun-dried beer slag.

The Egyptians enjoyed whey by straining goat's milk cottage cheese through asimat.

In South Asia, paneer bread was made by curdling milk with various food acids such as lemon juice, vinegar, and yogurt, and then hanging it to dry.

This soft, mild cheese can be added to curries and sauces, or simply fried for an easy vegetarian meal.

The Greeks produced bricks of salty cured feta cheese alongside hard varieties similar to today's Pecorino Romano.

This grated cheese was produced in Sicily and used in cuisines throughout the Mediterranean.

Under Roman rule, "dried cheese" or "caseus aridus" became essential food for the roughly half a million soldiers guarding the vast frontiers of the Roman Empire.

And even after the fall of the Western Roman Empire, cheesemaking continued to evolve in the manors that dotted the medieval European countryside.

In hundreds of Benedictine monasteries scattered across Europe, medieval monks endlessly experimented with different types of milk, cheese making methods and aging processes, which led to many of today's popular cheeses.

Parmesan, Roquefort, Münster, and some Swiss types were all refined and perfected by these cheese-making clerics.

Swiss cheesemaking was particularly successful in the Alps, where countless cow's milk cheeses were produced.

By the end of the 14th century, Alpine cheese from the Gruyères region of Switzerland had become so lucrative that neighboring countries invaded the Gruyères Heights to seize control of the growing cheese trade.

Cheese remained popular throughout the Renaissance, but the Industrial Revolution moved production from monasteries to machines.

Today, the world produces approximately 22 billion kilograms of cheese annually, which is shipped and consumed worldwide.

But 10,000 years after its invention, local farms still follow in the footsteps of their Neolithic ancestors by handcrafting one of mankind's oldest favorite foods.

Now, I want you to take a moment and think about the last time you sent or received a fax.

(laughter) Well, for me it was this morning. Because one of my jobs is to make sure that everyone in America has the information they need to make decisions about the candidates on the ballot.

And collecting information from the local government offices that maintain that information requires sending and receiving a large number of faxes.

Voting is one of our most basic rights.

This is one of the most tangible ways each of us can form a community.

And as we enter this 4th Industrial Revolution where technology is changing everything around us, one would think that if there was something as important as the right to vote, we would have the most modern, secure and inclusive system that could exist...

But it's not.

Looking at comparable democracies, the United States has one of the lowest voter turnouts in the world.

In our system, even the most tenacious voters face exhausting barriers.

In this system, 20th-century technologies such as fax machines and outdated practices prevent full and active participation.

Voter turnout in US presidential elections is hovering around 60%.

Even lower for local elections.

That means nearly 40 percent of Americans are not voters.

That's almost 100 million people.

I believe in very simple things. It means that everyone should have the information they need to become a voter, that the voting process should be seamless and secure, and that every voter should have reliable information to make decisions about the candidates on the ballot.

Because the more people vote together, the better decisions we can make for our community.

So I have spent the past eight years on a mission to push democracy into the 21st century.

One of the most popular approaches to modernizing elections today is to advocate for policy change, which is a very important part of the strategy to build a system that will get millions more to vote.

However, I took a different approach.

I focused on a critical but largely underutilized resource for electoral modernization: local election officials.

I work with thousands of local election officials across the country to build out-of-the-box tools and skills to change the way they engage voters today.

People like Kat and Marie.

Kat and Marie have worked together for years in the basement, windowless office of the Mercer County Courthouse in West Virginia.

Together they have a great responsibility.

They are local election officials serving 40,000 registered voters in Mercer County.

A local elections official is a civil servant who performs the day-to-day duties of keeping the electoral system functioning.

Once you complete the voter registration form, voters will process it and add you to their roster.

They're the ones buying the technology we use to vote and tally.

They recruit and train volunteers at local polling stations.

And they are an official, non-partisan source of information for people in their communities on how to vote.

And unlike other countries that have some form of centralized electoral administration, the United States has 7,897 different county and local government offices, such as Cat and Murray, each with an independent role in managing elections.

Yes, there are nearly 8,000 different ways to vote, depending on where you live.

As I spoke with Kat and Marie, they, like many election officials who speak to us in small towns and big cities alike, were genuinely proud to be able to help people in their communities, but they were also apprehensive.

With all the new tools people used to get information, such as the internet and social media, it was difficult to understand how to use them effectively.

And they felt they were not fully meeting the needs of Mercer County voters.

One of the things they really wanted was a website that could create a hub that provided information on how to register for upcoming elections and a place to post election results.

At the time, voters had to call or visit the office if they had any questions, which inevitably resulted in Kat and Marie answering the same questions over and over, which was not only a very efficient use of their time, but also created an entirely unnecessary barrier for voters as the information could exist online.

It wasn't just Mercer County.

At the time, these counties were among 966 U.S. counties with no voting information online.

Let it penetrate.

These counties were among nearly one-third of counties in the United States for which no official information on how to vote could be found online.

For Kat and Marie, not having an election website was unacceptable, but they didn't have many options.

They didn't hire a web developer because they didn't have the budget or the expertise to build their own site.

And 40,000 voters in Mercer County did not vote.

We have an unprecedented opportunity to transform civic participation.

Technology is revolutionizing science and industry.

Already changing the way we connect with each other and understand the world around us, our democratic institutions are being left behind.

The United States is one of the few major democracies in the world that imposes voter registration requirements on individual voters rather than governments.

The rules governing how to vote vary from state to state and sometimes county to county.

And there are many pages of ballot papers.

There are literally over 100 different people on my ballot this November and I have to make the decisions.

We need to use the best tools we have to help voters navigate this complex situation, and right now we are not.

One of the stories I hear a lot in my work is that people don't get involved in civic activism because they're indifferent—indifferent.

But as our good friends at the Civic Design Center say, if there's any indifference it's coming from the system, not the voters.

By connecting local election officials like Kat and Marie with the tools of the 21st century and the training they need to use them to better serve voters, we can change this system today.

Tools and training to use social media to engage with voters, leverage data to staff polling stations to avoid hours-long queues, and train on cybersecurity best practices to help keep voting systems secure.

Investing in this approach will yield meaningful and lasting results.

Kat and Marie are now online.

Inspired by their experience, we built a website template using research-based best practices in civic design and developed training for Kat and Marie to help them maintain the site themselves.

In less than a week, we went from never seeing a website backend to building a resource for Mercer County voters that has been independently kept up to date since 2014.

Today, Mercer County's 40,000 voters, and more than 100,000 voters in counties nationwide, get everything they need to become voters directly from their local election officials on a mobile-friendly, easy-to-use and accessible website.

And that impact can be further amplified by local election officials working not only through their own channels, but also by working with others to expand their reach.

Initiatives such as the Voting Information Project and the Voting Information Project will work with election officials across the country to create a centralized, standardized database of key voting information, such as ballot content and who to vote for.

That information powers tools built by companies like Google and Facebook to get information where people are already, like news feeds and search.

In 2016, the Voting Information Project informed the public more than 200 million times about candidates and referendums, helping between one-third and one-fifth of all those who voted.

And that model is being replicated in elections around the world.

Looking at other areas of government work, we see opportunities in listening to the needs of the people and responding to them with modern tools.

I remember my friends at mRelief. They've helped government agencies move from a 20-page paper food stamp application to a 10-question process within 3 minutes via text message, helping 260,000 families get $42 million in food benefits.

Voting can make such a difference.

It's a work in progress, but there's still a lot to do.

Now, if you have technical bones in your body, I know what you are thinking.

All this is solvable.

We have the technology we need.

We have comprehensive expertise.

You may be thinking of volunteering at your local elections office.

I love your solution-oriented attitude, but let me be clear, the effort required to modernize the election system cannot be accomplished by spending 20% ​​of your time, or doing a hackathon or one-off technology project.

We need large, sustained, long-term investments.

Investing in technology and the skills of local election officials to run elections in the 21st century. Because if you don't invest in the long game, you risk falling behind forever.

So if you're ready to help millions, if you're ready to bridge the gap between the system we have and the system we deserve, we need you.

Organizations that do this year-round need you.

Your local elections office needs you.

Please join us.

thank you.

(applause)

It was in the spring of 1988 that I thought, "I see."

I attended my first roundtable, and for those of you who don't know, a roundtable was a very common phrase on Wall Street to describe the year-end evaluation process for analysts, associates, vice presidents, and managing directors.

It was a process of being discussed behind closed doors around a table, a round table, where everyone was sorted into categories: top bucket, middle bucket, and lower bucket, which translated into bonus ranges assigned to each expert.

I went there for the first time, and while observing, I noticed that there was one person responsible for recording the outcome of the conversation.

There were other people in the room who were responsible for explaining the lawsuits of all the candidates.

And there were other invited guests who were supposed to comment when the candidate's position was announced.

What was interesting to me was that those other people were older than the people being discussed and theoretically had some interaction with those candidates.

Well, I was really excited to attend this roundtable for the first time. Because I knew my own process would be the same and my bonus would be determined the same way. So I wanted to know how it worked, but more importantly, I wanted to understand how every company I spoke to out of business school was marketing the concept of meritocracy.

Every time I spoke to companies, they said, 'Our culture, our process is meritocracy.

The way to get ahead in this organization is if you are smart, keep your head down and work hard, and you will quickly rise to the top.

So I got the chance to see exactly how it works.

So when the process started, I heard the recorder call the first person's name.

"Joe Smith"

The person responsible for filing Joe's lawsuit did just that.

At three-quarters through, someone interrupted and said, "This is a great candidate, outstanding, with great analytical and quantitative skills.

This is a superstar. ”

Then the register keeper said, "Looks like Joe should be in the top bucket."

The second is Mary Smith.

In the middle of the presentation, someone said, "He's a strong candidate.

Nothing special, but a good arm. ”

The note keeper said, "It looks like Mary should be in the middle bucket."

Then someone said, "Arnold Smith."

Before he could describe Arnold's case, someone said, "Disaster, disaster, this kid has no clue.

I can't model. ”

And before the case was filed, the registrar said, "Looks like Arnold should go down the bucket."

At that moment, I clutched the pearl and said, "Who will speak for me?"

Who will speak for me?

It was in that moment that I realized that the meritocracy idea that every organization touts is actually just a myth.

You can't have a 100% meritocracy environment when the human element is involved in the valuation equation. Because, by definition, it's subjective.

In that moment, I knew someone had to argue on my behalf behind closed doors and present what the other decision makers at that table would answer in my best interest.

It was a very interesting lesson. And I said, "So who is he?"

What do you call this person? ”

And while thinking about the business jargon that was popular at the time, I thought, "Wow, this guy can't be a mentor." Because a mentor's job is to give you customized advice that fits you and your career aspirations.

They are the ones who give you the good, the bad, the ugly without limits.

OK. One cannot be either an advocate or an advocate because one does not necessarily have to spend currency to be someone's advocate.

If you are an advocate, you are not necessarily invited to the closed room.

It was almost two years later that I realized what to call this person.

I was speaking to MBA candidates at the University of Michigan about lessons learned after a short three-year stint on Wall Street. Then something came to my mind.

I said, "Oh, this man who has your interest, I mean, this man who is carrying your newspaper to your room, who is spending precious political and social capital on you, who is trying to knock on the table for you, this is a sponsor.

This is a sponsor. ”

Then I said, 'How do you get sponsors?

Frankly, why do you need it? ”

Well, frankly, we need a sponsor. Because, as you can see, there isn't a single evaluation process I can think of, whether in academia, healthcare, or financial services, that doesn't include a human element.

In other words, there is a degree of subjectivity.

There is a degree of subjectivity involved in who makes your claims.

There is a degree of subjectivity involved in what they say and how they interpret the objective data you have.

There is some degree of subjectivity in how they say what they are trying to say to affect the outcome.

So you need to make sure that the person you're talking to, the sponsor, has your best interests at heart and has the power to get it done behind closed doors, whatever it is.

Now, people often ask me, "How do I get one?"

Well, frankly, nirvana is when someone sees you in an environment and decides, "I'm going to make it happen for you."

I will make sure you succeed. ”

But many of us in this room know that it doesn't really happen.

So let's introduce this currency concept and talk about how it affects your ability to get sponsorships.

Every environment has two types of currency: the performance currency and the relationship currency.

And performance currency is currency that is generated by delivering what you ask for, plus a small surcharge.

Performance currency is created every time you exceed people's expectations on a mission.

It works exactly like the stock market.

Every time a company gives 25 cents a share on the street and the company says it gives 40 cents a share, its stock goes up, and so does yours.

Performance currency is valuable for three reasons.

The first is to get noticed.

It will generate your reputation.

Second, you get paid and promoted very early in your career and in any environment very early.

And third, it could attract sponsors.

why? Because, as we said before, a strong performance currency can increase your visibility within the environment and attract sponsors to you.

why? Because everyone loves stars.

But good news if you find yourself in a situation where you don't have a sponsor.

Remember you can use your power to ask for it.

But here other currencies are currently the most important.

That is the relationship currency, and the relationship currency is the currency that is created by the investments you make in the people in your environment, the investments you make in the people in your environment.

You can't have someone you've never interacted with spend your hard-earned and personally influential currency on your behalf.

It won't happen.

Therefore, it's important to invest time in connecting, engaging, and getting to know the people in your environment, and more importantly, giving them the opportunity to get to know you.

Because once they get to know you, they're more likely to actually respond positively if you approach them to sponsor you.

Now, if you are with me and agree that you need a sponsor, let's talk about how to identify a sponsor.

If you are looking for a sponsor, your sponsor should have three main characteristics.

First, they need to take the decision-making seat, they need to be exposed to your work behind closed doors for credibility, and they need the juice too. In other words, they should have some power.

Having all three is very important.

And once you identify the person, how do you ask?

The script looks like this:

“Jim, I am very interested in getting promoted this year.

I've had a great year and I can't show this organization anything more to prove my worth or my readiness for promotion, but I know someone needs to argue and knock on the table on my behalf behind closed doors.

You know me, you know my work, you know my client feedback, so I hope you feel comfortable discussing things on my behalf. ”

If Jim knows you and is in some way involved, he's very likely to say yes, and if he says yes, he'll try to make it happen for you.

But it's also possible that Jim will say no, and if he says no, in my opinion there are only three reasons why he would say no.

The first is that he thinks he hasn't touched your work enough to influence you behind closed doors to be effective.

The second reason he says no to you is that you think he's willing to go through with it, but you know he doesn't have the power to do it, and he won't admit it in a conversation with you.

(Laughter.) And the third reason he says no to you is because he doesn't like you.

he doesn't like you

(Laughter) And it can happen.

But even that can be valuable information for your next conversation with your sponsor, making it a little more impactful.

I can't tell you how important sponsorship is.

It's an important relationship in your career.

Frankly, having a mentor is useful, but you can survive a long career without a mentor, but you can't advance in any organization without a sponsor.

This is so important that you should ask yourself regularly. "Who is carrying my paper to my room?"

And if you can't answer who's carrying your papers to the room, tell them to redirect some of your hardworking energy into investing in sponsor relationships. Because it is very important to your success.

Finally, I would like to say a few words to the potential sponsors in the audience.

If you are invited into a room, know that you are sitting at that table. Also, if you are sitting at a table, know that you have a responsibility to speak.

What will people say, don't waste your strength worrying about whether you'll think you're supporting someone just because you look alike.

If someone is worth your currency, use it.

One thing I've learned after decades on Wall Street is that the way you develop your power is by giving it, and your voice is central.

(Applause.) And your voice is the center of your power.

Use this.

thank you very much.

(applause)

♫ Feminists have no sense of humor. ♫ ♫ Feminists just want to be alone -- boo hoo hoo hoo. ♫ ♫ Feminists spread malicious lies and rumors. ♫ ♫ Their funny bones have tumors. ♫ ♫ They say child abuse is no fun -- ha, ha, ha, ha. ♫ ♫ Rape and degrading is just a crime - take heart guys. ♫ ♫ Sex for money in rampant prostitution -- what's wrong with that? ♫ ♫ These chicks can only whine? ♫ ♫ Dance break! Da, da, da, da, da, da, da, da, da. ♫ ♫ Da, da, da, da, da, da, da, da, da. ♫ ♫ Whoa! ♫ ♫ Da, da, da, da, da, da, da, da -- ♫ ♫ Yes, take it off. ♫ ♫ D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D-D ♫ ♫ Cheap objectification is often said to be witty, but it's hot! ♫ ♫ Equal work and wages are worth fighting for -- ♫ ♫ Sing a new song. ♫ ♫ On-demand abortion in every city -- OK, but no gun control. ♫ ♫ Can't these women come to life? ♫ ♫ Poor Hillary, feminists have no sense of humor. ♫ ♫ Feminists and Vegetarians -- Make mine a Big Mac. ♫ ♫ Feminists spread malicious lies and rumors. ♫ ♫ They're too sensitive to be hams, ♫ ♫ That's why these feminists just need to find men. ♫ ♫ Da-da-da-da-da-da-da-da-da-da. ♫ I'm Dennis Kucinich. Acknowledged this message.

thank you.

(Applause.) Thank you.

(Applause.) Thank you.

Should I say something to my mother to support someone? I asked.

And she said, "Oh no! I hate everyone except Ralph Nader."

(laughs) ♫ I was able to show my smile to the world. ♫ ♫ I was happy the whole time. ♫ ♫ With you, we can turn the gray sky into blue. ♫ ♫ It's okay to forget the old days, ♫ ♫ It's all right to leave your friends. ♫ ♫ With you, I can start a whole new life. ♫ ♫ I could climb snow-capped mountains, ♫ ♫ I could sail vast oceans. ♫ ♫ If only you were by my side, I could cross the burning desert. ♫ ♫ I may be king, dear king, uncrowned king, poor, poor, rich, famous. ♫ ♫ With you there's nothing I can't do. ♫ Thank you. Thank you very much.

As the warrior slept, a snake coiled around his face.

His wife saw no threat, but a harbinger of terrible power that would lead her husband to glory or ruin.

But so far he was just a slave. He was one of millions of slaves taken from the territories conquered by Rome to work in the mines, plow the fields, and fight for the entertainment of the crowds.

A nomadic Thracian from what is now Bulgaria who served in the Roman army but was imprisoned for desertion.

His name was Spartacus.

Spartacus was brought to Capua by the Lanistas, or Batiatus, the gladiator trainer.

And life at Ludus, the Gladiator School, was unforgiving.

Recruits were forced to obey their master's will without question by taking an oath to be "burned, bound, beaten, and killed with the sword."

But even strict discipline could not break Spartacus' spirit.

In 73 B.C.E., Spartacus led 73 other slaves to rob the kitchen of knives and skewers, hijacking a cart of gladiator's tools on the way and trying to escape.

They stopped fighting for others and now fought for their own freedom.

When this news reached Rome, the Senate was too busy with the war between Spain and the Pontic Empire to worry about the unruly slaves.

Praetor Claudius Glover cared nothing and took 3,000 troops to Mount Vesuvius, the refuge of the rebels, and blocked the only passage up the mountain.

Just wait and let them starve, he thought.

At midnight, the rebels descended from the cliffs by vine ropes and flanked Graber's defenseless camp.

Thus began the legend of the rebellious gladiator of Rome.

As news of the rebellion spread, the ranks swelled with runaway slaves, deserters, and starving peasants.

Many were untrained, but Spartacus' clever tactics turned them into effective guerrilla forces.

A second Roman expedition, led by Praetor Varinius, was ambushed while the officers were bathing.

To escape the rest of the Roman army, the rebels used the corpses of their enemies as decoy guards and stole a horse owned by Varinius to aid in their escape.

Thanks to his electrifying victories and policies of equal distribution of spoils, Spartacus continued to attract followers and gained control of villages where new weapons could be forged.

The Romans quickly realized that they were no longer facing a patchwork of fugitives, and in the spring of 72 BC the Senate retaliated with the full force of its two legions.

The rebels left victorious, but many lives were lost in the battle, including Crixus, Spartacus' lieutenant.

To honor him, Spartacus held a funerary game, forcing Roman captives to play the roles once endured by his fellow rebels.

By the end of 72 B.C.E., Spartacus' army was a large force, numbering about 120,000 men.

However, managing these numbers proved difficult.

With the way to the Alps clear, Spartacus marched across the borders of Rome, hoping to free his followers there.

But his army grew arrogant.

Many wanted to continue plundering, but others dreamed of marching on Rome itself.

In the end, the rebels headed south, missing their last chance at freedom.

Meanwhile, Marcus Licinius Crassus was in command of the war.

As Rome's richest citizen, he led eight new legions in pursuit of Spartacus, eventually driving the rebels to the tip of Italy.

After a failed raft construction and a bitter betrayal by local pirates, the rebels ran desperately to break through Crassus' lines, but to no avail.

Roman reinforcements are returning from the Battle of Pontus, and the rebel ranks and spirit are shattered.

In 71 B.C.E. they made their last stand.

Spartacus managed to reach Crassus before being cut down by the centurions.

His army was devastated and 6,000 prisoners crucified on the Appian Way. This was an unforgettable demonstration of Roman authority.

Crassus won the war, but it's not his legacy that resonates for centuries.

Thousands of years later, the name of a slave who shook the world's most powerful empire became synonymous with freedom and the courage to fight for it.

I think some people have heard this story, but there are also people who have never heard this story in public, so I'm a little more nervous than usual.

I was a photographer for many years.

In 1978, I was working for Time magazine and was given a three-day assignment to photograph Amerasian children, children fathered by American GIs across Southeast Asia and then abandoned, 40,000 children across Asia.

I had never heard of the word Amerasian.

I spent several days photographing children in different countries, and like many photographers and journalists, I always hoped that when my photographs were published, I would be able to actually influence the situation, not just document it.

So I was so upset by what I saw and so frustrated with the articles that followed that I decided to take a break for 6 months.

I was 28 years old.

I decided to find six children in different countries and actually spend time with them and try to tell their stories a little better than Time magazine had thought.

In the process of writing this story, I was looking for children who had not been photographed before, and the Pearl Buck Foundation told me they were working with many Americans who were donating money to help these children.

A man who ran the Pearl Buck Foundation in South Korea said an 11-year-old girl was being raised by her grandmother.

Every time a Westerner came to her village, she hid the girl.

Of course, I was immediately intrigued.

I saw her picture and wanted to go.

And the man said to me, "This grandma, I will never allow you to see this girl you are raising."

I went to this village with an interpreter, found an old lady and sat down with her.

And to my surprise, she agreed to let me photograph her granddaughter.

I had paid for the expenses myself, so I asked the interpreter, "Is it okay if I stay for a week?"

I had a sleeping bag.

There was a small hut next to the house, so I said, "Can I sleep in my sleeping bag at night?"

And I was that little girl, her name was Lee Eun Sook, and I told her that if I did something that bothered her—she looked very American, but didn't speak a word of English—you could raise your hand and say 'stop' and I'd stop taking pictures.

Then my interpreter left. I didn't speak a single word of Korean.

It was the night I first met Unsook.

Her grandmother raised her, not her.

And what immediately struck me was how much they loved each other.

Grandmother loved this little girl very much and loved her dearly.

They slept on the floor at night.

The way Korean houses are heated is by laying bricks under the floor and radiating heat from under the floor.

Unsuk was 11 years old.

As I said earlier, I took many pictures of these children.

And almost without exception, all children are truly emotionally damaged by being teased, ridiculed, bullied, or rejected.

And perhaps South Korea was the place I felt was the worst place for these kids.

And what struck me as soon as I met Unsuk was how confident she looked and how happy she was.

Keep this photo in mind as I will show you another one later.

She looks a lot like her grandmother, but looks very Western.

I decided to follow her to school.

This is the first morning I've stayed with her.

I'm on my way to school here.

And then I realized she was kidding.

When the teacher asked a question, she was the first to raise her hand.

Again, there was absolutely nothing shy or withdrawn like the other kids I photographed.

The first person to go to the blackboard and answer the question.

I'm in trouble because I whisper too much in my best friend's ear.

And one more thing I told her through my interpreter, again about "stop", but don't pay attention to me.

So she completely ignored me most of the time.

At recess, I realized that she was the girl who chose other girls for her team.

It was clear from the beginning that she was the leader.

This is the way home. And that's North Korea on the hill.

This is along the DMZ.

The South Korean government had been saying for years that North Korea could invade at any moment, so they actually covered the windows every night to block out the light.

At school, when I was taking pictures, she would often whisper in my girlfriend's ear, then look at me and say, "Stop."

And when I stood there paying attention, all the girls started yelling, which was kind of a joke.

(Laughter) The weekend is here and the interpreters are back. Because I had asked her to come back to officially thank my grandmother and Unsuk.

And while grandma was talking to the interpreter, grandma started crying.

And she talked to Grandma for a little while, and then tears started to fill her eyes.

So I said, "What have I done? Why is everyone crying?"

And the interpreter said, "Grandma says she's afraid she's going to die. She wants to know if she can take Unsuk to America."

And I said, "I'm 28, I live in a hotel, I'm not married."

I mean, I fell in love with this girl, but you know, emotionally I was about 12 years old.

Anyone who knows photographers will joke that this is the greatest form of delayed puberty ever invented.

"Sorry, I have to go on a mission, so I'll be back" -- and you'll never come back.

May I take her to the hospital? Can I pay her to see a doctor?

And she refused any help.

So when I went out, I gave the interpreter the money and said, "Come back and see if we can do something."

And I gave Grandma a business card.

And I said, "If you're serious, I'll try to find her family."

And I immediately wrote to my best friend in Atlanta, Georgia, who has an 11-year-old son.

Then one day my best friend accidentally said something like wishing they had another child.

So I hadn't heard from my friends Gene and Gail for about a year and out of the blue they called me and said 'I was in Korea and met this amazing girl'.

And I said, "I think my grandmother is sick, but I think I might have to bring her too."

And I said, 'I'll pay for it...' So I had this big picture.

So anyway, I left.

In fact, my friends said they were very interested in adopting her.

And I said, 'I think I'll scare grandma to death if you say you're willing to adopt her.

I'd like to go back and talk to her." But I was out on a mission.

I thought I'd come back in a few weeks and talk to Grandma.

And on Christmas Day I was in Bangkok with a group of photographers and got a telegram from Time magazine. I was getting a telegram at the time. It was about someone who died in Korea and left his child to me in his will.

did you know anything about this?

Because I hadn't told them what I was doing and I was so upset with what they were telling me.

So I went back to Korea, back to Unsuk Village, but she was gone.

And the house I lived in was empty.

It was incredibly cold.

No one in the village told him where he was because his grandmother always hid him from Westerners.

And they didn't know about this request she made to me.

So I finally found my best friend, Myung Sung, who I used to hang out with after school every day.

And Ms. Myung Sung, under pressure from me and the interpreter, gave us a speech in the suburbs of Seoul.

And I went to the address, knocked on the door, and a man came out the door.

It's not the nicest part of Seoul and the road outside was muddy.

And when I knocked on the door, Unsuk came out. Her eyes were bloodshot and she looked shocked.

She didn't recognize me. There was no recognition at all.

And this guy came to the door and barked something in Korean.

And she said, "He wants to know who you are."

And I said, "Tell me I'm the photographer."

And she said, "He says he knows who you are, but what do you want?"

I said, "Well, tell her that this girl's grandma asked her to find her family."

And he said, "I'm her uncle, she's fine, she can go home now."

The door slammed in front of me and it was incredibly cold, but I'm trying to think. "If I wrote this as a movie script, what would the main character do in the movie?"

So I said, "It's really cold. I've come a long way. Can I come in? It's cold."

So the man reluctantly let us in and we sat on the floor.

And when we started talking, I saw him yelling something, and Unsuk came and brought us food.

And I had an image of Cinderella in my mind.

I had this image of this incredibly nice, bright and happy little kid who now seemed very shy and enslaved by this family.

And I was really surprised and didn't know what to do.

And the more I tried to talk to him, the less friendly he became.

So at the end I said ``Look''--all this through an interpreter, because I don't speak a word of Korean--and I said, ``Look, I'm so happy to have a family to live with me in Unsuk.

I was very worried about her.

I promised her grandmother, your mother, that I would find a family. I am very happy that you are taking care of her.

But I ended up buying a plane ticket, so I decided to stay here for a week.

I'm staying at a downtown hotel.

Would you like to come over for lunch tomorrow?

And you can also practice your English. ”

Because he said to me – I was going to ask him about myself.

A girl whose mother was a prostitute and a boy who was in and out of prison.

And I said to them, "Look, there's a little girl who has a slim chance of getting out of here and going to America.

I don't know if it's the right decision, but I want you to come to lunch tomorrow and tell your uncle what it's like to walk down the street, what people say, and what you do for a living.

I want him to understand what would happen if she was here.

I may be wrong, I don't know, but I hope you can come tomorrow. ”

So these two came for lunch and we were kicked out of the restaurant.

They were yelling at him, it got really ugly.

We went outside and he was just furious.

And then I found out that I completely blew this one.

Here I was again thinking what to do.

And he started yelling at me, so I said to the interpreter, "Tell him to calm down, what is he saying?"

And she said, "He's saying, 'Who the hell are you to accuse a rich American with a camera hanging around your neck of breaking into my house and enslaving my niece?'"

This is my niece, I love her, she is my sister's daughter.

Who are you to blame me for this? ’ And I said, ‘Look, you are absolutely right.

I don't pretend to understand what is going on here.

All I know is that I have photographed many of these children.

I love your niece, I think she is an incredibly special child. ”

And I said, 'Look, if you want to meet, I'll bring my friends here from the United States to see if you approve of them.

The only thing I can think of, which I know very little about the situation, is that it's very unlikely that she'll have the kind of life you want here. ”

So everyone later told me that inviting my future parents over was once again the dumbest thing I ever did. Because who is worthy of your relatives?

But he invited me to come to the ceremony that was being held for her grandmother that day.

And they actually take clothes and pictures and burn them as part of the ritual.

And you can see how much her look has changed in just 3 months.

I believe it was the beginning of February now.

And the previous photo was taken in September.

Well, there was an American priest from Maryknoll that I met in the course of this story. Seventy-five children lived in his house.

He had three women to help take care of these children.

So I suggested to my uncle that he go see Father Keane to find out how the adoption process went.

Because I wanted him to feel that all of this was done in a very common sense way.

Well, here we are on the way to the orphanage.

This is Father Keene. he's just a wonderful person

He had children from all over Korea living there looking for their families.

This is a social worker interviewing Mr. Unsuk.

Now, I always thought my grandmother wasn't affected by all this stuff. Because to me she seemed like a kind of wise village woman. Throughout the day, I noticed that people kept coming to visit her grandmother.

And even though they were one of the poorest families in the village, I always had the image in my mind that they were one of the most respected families.

And I always felt that my grandmother demanded and insisted that the villagers treat Unsuk with the same respect she did.

Unsuk stayed at Father Keene's house, and her uncle agreed to let her stay there until the adoption was finalized.

He actually consented to the adoption.

And I went on a mission, and when I came back a week later, Father Keen said, "I have something to talk to you about Unsuk."

I said, "Oh God, what are we going to do now?"

And he took me into this room, closed the door, and said, "There are 75 children in this orphanage, and it's a total disaster."

3 adults and 75 children - you can imagine.

And he said, "On the second day she was here, she made a list of the names of all the older and younger children.

Then she assigned the older children one to each of the younger ones.

Then she made a detailed list of who cleaned the orphanage on what day. ”

And he said, "She says I have to clean up my room because it's messy."

And he said, "I don't know who raised her, but she runs an orphanage and she's been here for three days."

(Laughter) This was a movie day she organized and all the kids went to the movies.

Many adopted children wrote letters telling other children what life was like with their new families.

So when the letter arrived, it was really hard.

The woman now works at an orphanage and has adopted a son.

Gene and Gail started learning Korean the moment they received my first letter.

They really wanted to have Unsuk into their family.

And one of the things Father Keane told me when he returned from one of these trips is that Unsuk chose the name Natasha. She knew that from watching the "Rocky and Bullwinkle" cartoons at a US Air Force base.

This may be one of those misleading things, but I have to explain it here right away.

So my friend Gene flew in with his son Tim.

Gail couldn't come.

And they spent a lot of time reading dictionaries.

And this was Gene showing his uncle where Atlanta was on the map and where he lived.

This is my uncle signing the adoption papers.

Well, that night we went out to dinner to celebrate.

My uncle went back to his family and Natasha, Tim, Jean and I went out to dinner.

Gene taught Natasha how to use a knife and fork, and Natasha returned her tool lessons.

We went back to our hotel room and Gene showed Natasha where to find Atlanta as well.

It's the third night since I came to Korea.

I stayed in this room for about 3 months. It was a small Korean hotel with 15 floors.

The second night we slept on the floor with all the orphanage children, so we didn't get a children's room.

And the third night we came back and we had just gone out to dinner so I looked at the pictures but when I went to the front desk the guy said, "There are no other rooms available on your floor tonight. It's okay to put the kids 5 floors below you."

And Gene and I looked at each other and said, "I don't want two 11-year-olds five floors apart."

And I said, "I have too." So Tim and I slept on the floor, Natasha got one bed and Jean got the other. The children fainted. I was very excited for 3 days.

We said, "Well done, you saved this little girl's life."

We were full of ourselves.

And we fall asleep - and I've been in this room for months now.

Korean hotels are always too hot, so I always left the windows open during the day.

and turn off the hotel heating around midnight.

So at 1am, when the whole room is about 20 degrees below zero, I wake up.

I used to do this every night while I was there.

So, sure enough, it was 1 o'clock and the room was freezing so when I went to close the window I could hear people screaming outside. I thought, "Oh, the bar just came out."

I don't speak Korean, but I hear these voices, and what I hear is fear, not anger.

So when I open the window and look outside, flames are rising from the side of the hotel and the hotel is on fire.

So I ran to Jean and woke her up and said, "Don't panic, I think the hotel is on fire."

And now smoke and flames are coming out of the windows. We are on the 11th floor.

So we were both like, 'Oh my God, my God'.

You know what it feels like for a child to sleep for an hour. It's like taking 5 barium pills and sleeping here and there.

and we can't talk to her.

His son had L.L. Bean boot laces and we are about to re-sew his laces.

So we try to get to the door, we run to it, we open it, and it's like walking into a furnace.

People screaming, breaking glass, strange thuds.

And in about two seconds the whole room was filled with smoke.

Then Jean turned around and said, "I can't do this anymore."

And when I closed the door, the whole room was filled with smoke.

We are all suffocating and smoke is pouring in from the vent under the door.

There are people screaming.

I remember sitting near my bed and feeling two overwhelming emotions.

One was absolute terror. "Oh God, please, I just want to wake up.

This must be a nightmare, it can't be.

Please, I just want to wake up. ”

And the other is an incredible sense of guilt.

Here I have played God in a friend's life, a friend's son, Natasha's life. And what happens when you try to play God is that you hurt people.

I just remember being so scared and scared.

Then Jean, lying on the floor, said, "I have to soak the towel." I said, "What?"

"You have to wet your towel. The smoke will kill you."

So we got towels and put them on our faces and on the children's faces.

Then he said, "Do you have the criminal's tape?"

"What?" "Do you have a tape of the culprit?"

I said, "Somewhere in Halliburton."

He said, "We have to stop smoking. That's all we can do."

I mean, Gene, thank God for Gene.

So I put the room service menu on the wall vent, put a blanket under the door, and put the kids on the windowsill to get some air.

And there was a new building under construction right across the street from our hotel.

And inside the building, photographers were waiting for people to jump off.

Five people jumped to their deaths and others died from the smoke.

After about 45 minutes of this situation, there was a loud banging on the door and people were shouting in Korean.

And I remember--Natasha didn't want us to open the door--I'm sorry, we spent so much time barricading the room that I was trying not to open it.

We didn't know who they were or what they wanted, but Natasha knew they were firefighters trying to rescue us.

I remember trying to open the door and there was something like a fight at the door.

In any case, 12 hours later, that is, they let us into the lobby.

Gene ended up using the coat to pry open the cupboard using his fist inside the coat.

It was just one of the scariest nights.

After 12 hours, we rented a car and returned to Natasha's village as planned.

And we kept saying, "Are you aware that we were dying in a hotel fire like eight hours ago?"

Natasha wanted to introduce her brother and father to all the villagers, but the day we showed up was the 60th birthday of a man.

This person is 60 years old.

It was a double celebration because Natasha was the first person from this village to go to America.

Well, these are greenhouse tents.

We drank a lot of sake.

We were both so drunk it was hard to believe.

This is the last picture before Gene and Tim leave.

Adoption officials said it would take a year for the adoption to go through.

For example, what can you do in a year?

So I looked up the names of all the officials on both the Korean and American sides, took pictures, and told them how famous they would be once the book was finished.

And four months later, the adoption papers arrived.

Goodbye to everyone at the orphanage.

This is Father Keene and Natasha at the bus stop.

her great aunt at the airport.

I have had a great deal with Cathay Pacific for many years and they gave me a free pass on all airlines in exchange for a photo shoot.

It was like the ultimate perk.

And the pilots, I actually knew - because how long ago they put me in the jumpseat.

And pilot Jeff Cowley actually went back to the orphanage after meeting Natasha to adopt one of the other children.

This is Atlanta 28 hours later.

To make matters worse, Natasha's new mother, Gail, was three days away from giving birth to her daughter.

If you were writing this, you would say, "No, I have to write the screenplay differently."

This is the first night that Natasha sees her new cousins, uncles and aunts.

Gene and Gail know everyone in Atlanta - they're the most social couple imaginable.

So at this point, Natasha doesn't speak a word of English other than what Father Keane taught her.

This is my sister Kylie on the right, who is now a doctor.

This is the deal I made with Natasha that she would shave me off when I got to Atlanta.

She didn't like it very much.

She learned English in 3 months.

She is now in 7th grade at her age level.

First pledge of allegiance.

This is her cooking teacher.

According to Natasha, many children thought she was stuck because she wouldn't answer when they spoke to her, and they didn't realize she didn't speak English very well.

But again what I noticed as an observer was that she was choosing who to put on her team and very quickly seemed very popular.

Now remember the photo at the beginning. how she resembled her grandmother

People always said how much Natasha looked like her mother Gail.

(Laughter) I think this is the tense moment of your first football game.

And Kylie, it was like Kylie was her child.

she is baptized

Many parents today actually want to erase their child's history when adopting.

And Gail and Jean did the exact opposite.

Gene also did a little tiling in the kitchen. It said, "Once upon a time there was a beautiful girl who came from the hills of Korea to live happily in Atlanta."

She hates this photo. This was her first job.

She used the money she earned from working at Burger King to buy a bright red Karmann Ghia.

Captain of the cheerleader club.

beauty contest.

I used to make Christmas cards every year.

Gene has been restoring this car for a million years.

Kodak hired Natasha as an interpreter for the Korean Olympics.

Her future husband, Jeff, works at a Canon camera and met Natasha at the Olympic Village.

This is her first trip to South Korea. So there's her uncle.

This is her half-sister.

she returned to the village.

And I always thought it was a very Annie Hall-ish outfit.

(Laughter) I just watched it because it was so funny. Her mother is in the background.

Today is Natasha's wedding day.

Jean looks a little older.

Sydney will be 3 years old in a few days.

And then there's Evan.

And Natasha, could you come and say hello to everyone for a moment?

(Applause.) Natasha never actually listened to me.

You know, we've seen pictures together.

Natasha: I've seen the pictures a million times, but today was the first time I actually saw him do the whole presentation.

I started crying.

Rick Smolan: There are like 40 things she says to me, "It never happened." Natasha: I'll tell you later.

RS: Anyway, Mike and Richard, thank you so much for letting me talk about this.

Thank you all.

(applause)

A few years ago I visited Paris and was walking along the Seine on a beautiful summer afternoon.

I saw huge bubbles like this floating on the river bank.

The next moment, it burst and disappeared.

It was two buskers surrounded by a crowd who made them.

They can be seen making a living by soliciting donations and selling sticks tied with two strings.

When I went there, I was surprised to see a man buying a stick for 10 euros.

I'm a scientist with a passion for bubbles.

We know that the right trick to creating giant bubbles is the right mixture of soapy water itself. Easy to make at home, not sticks you might need.

Focusing on the stick, we do not realize that the real tool is the bubble itself.

Soap bubbles might seem like something a child would play with, but sometimes they can be really amazing.

But there's a more fascinating science behind bubbles, such as problem-solving tools.

So I'd like to talk a few words about the science of making bubbles and the science of removing microscopic bubbles.

Since it's on the screen, let's start with the soap bubbles.

It is made from a proper mix of very common substances such as air, water and soap.

You can see how the color of the soap bubbles changes from moment to moment.

This is due to its interaction with light in different directions and changes in its thickness.

A water molecule, one of the common substances, is formed by two hydrogen atoms and one oxygen atom, namely H2O.

On most surfaces, water droplets tend to bend inward and form a hemispherical shape.

This is because the surface of the water droplet is like an elastic sheet.

Surface water molecules are constantly being pulled inward by the central molecules.

And the quality of that elasticity is called "surface tension".

When soap is added here, the soap molecules lower the surface tension of the water and increase the elasticity of the water, making it easier to create foam.

Bubbles can be thought of as solving mathematical problems.

You can see the relentless striving for perfect geometry.

For example, a sphere is the shape with the smallest surface area for a given volume.

This is why a bubble is always spherical.

let me show off check it out.

This is a single bubble.

When two bubbles touch each other, sharing a common wall saves material.

As more bubbles are added, their shape changes.

These four bubbles are added together.

They meet at a central point.

Match 6 bubbles to reveal a magic cube in the center.

(Applause) This is the work of surface tension trying to find the most efficient geometry.

Now let's take another example.

This is a very simple prop.

It is made of two layers of plastic with four pins connected to each other.

These four pins represent four equidistant cities, and we want to create roads connecting these four cities.

My question is, what is the shortest length connecting these four cities?

Soak yourself in soapy water and find out the answer.

Remember that soap bubbles always try to minimize surface area with perfect geometry.

So the solution may not be what you expected.

The shortest length connecting these four cities is 2.73 times the distance between these two cities.

(Applause.) Now you have the idea.

Soap bubble shapes always try to minimize surface area with perfect geometry.

Now, let's look at bubbles from a different perspective.

My daughter Zoe loves going to the zoo.

Her favorite spot was Penguin Cove at Marwell Zoo in the South of England, where she could watch penguins swim at breakneck speed through the water.

One day, she noticed that penguins leave foam marks on their bodies when they swim, and asked why.

Animals and birds like penguins that spend a lot of time in water have evolved ingenious ways of harnessing the ability of air bubbles to reduce water density.

The emperor penguin is believed to be able to dive hundreds of meters below sea level.

They are thought to store air under their feathers before diving and gradually release it as a cloud of bubbles.

This reduces the density of the water around you, making it easier to swim, and allows you to swim at least 40% faster.

This feature was noticed by ship builders.

I'm talking here about the large ships used to transport thousands of containers across the ocean.

Recently, I got a hint from the penguin and developed a system called "air lubrication system".

The system creates and redistributes large amounts of air bubbles throughout the ship, much like an air carpet that reduces water resistance when the ship is in motion.

This feature reduces the ship's energy consumption by up to 15%.

Foam can also be used in pharmaceuticals.

It can also play a role in pharmaceuticals, for example, as a system method for non-invasive delivery of drugs or genes to specific parts of the body.

Imagine microbubbles filled with a mixture of drugs and magnetic substances being injected into your bloodstream.

The bubble will move to the target area.

But how do they know where to go?

Because I put a magnet there.

For example, this part of the hand.

When the microbubbles move to this part of my hand, I can use ultrasound to burst the bubbles and release the drug exactly where I need it.

Well, we talked about the science of making bubbles.

However, sometimes it is necessary to remove them.

It's actually part of my job.

My exact title is "Ink Formulation Researcher".

However, I have not researched the inks you use in your writing instruments.

I work on great applications like organic photovoltaics, OPVs, organic light emitting diodes, OLEDs.

Part of my job is figuring out how and why air bubbles are removed from the inks the company makes.

The formulation mixing or preparation process mixes the active ingredients, solvents and additives to achieve a formulation with the desired properties when the ink is used.

However, just like when making a drink or baking a cake, air bubbles are inevitable in the ink.

Here we are talking about a different space than the bubble we saw in Paris.

The air bubbles trapped within these inks vary in size between millimeters, microns, and even nanometers.

And what we're worried about is the oxygen and moisture trapped inside.

At this scale, getting rid of them is not easy.

But it is important for organic light-emitting diode inks, which can be used, for example, to manufacture smartphone displays.

It should last for many years, but if the ink you use absorbs oxygen and moisture and is not removed, you will soon see black spots appearing in the pixels.

Now, one of the challenges we face in removing microbubbles is that they are not very cooperative.

They prefer to sit there and bathe in ink without moving much.

But how do we kick them out?

One of the techniques we use is to force the ink through a long, thin tube with porous walls that can be placed inside a vacuum chamber to squeeze air bubbles out of the ink and remove them.

Once you've managed to get the air bubbles out of your manufactured ink, it's time to celebrate.

Open the bubbly champagne.

Ooh, this looks like fun!

(laughs) Wow!

(Applause.) I saw a lot of bubbles bursting out of the champagne bottle.

These are bubbles filled with carbon dioxide, a gas produced during the wine fermentation process.

I'll pour some.

I can't pass up the chance.

I think enough.

(Laughter) Here you can see a lot of microbubbles moving from the bottom of the glass to the top of the champagne.

Before it bursts, it sprays tiny droplets of aroma molecules, enhancing the champagne flavor and allowing you to enjoy the champagne flavor more.

As a scientist with a passion for bubbles, I love watching them, I love playing with them, and I love studying them.

And I love drinking them.

thank you.

(applause)

On summer nights, a male firefly glows above the fields, releasing a series of mesmerizing flashes.

He hopes that nearby females will respond with their own light show and mate with him.

Sadly for this man, it won't turn out exactly as he planned.

A female of another species mimics his pulsation pattern. Trick the male with promises of partnership to lure him in and turn him into easy bait.

he was deceived

Behavioral biologists have identified three hallmarks of deception by non-human animals. It must mislead the recipient, the deceiver must profit, and it cannot be a mere coincidence.

In this case, we find that the predatory firefly signal is not accidental. This is because fireflies flexibly adjust their blinking patterns to suit males of different species.

Based on this definition, where is animal deception found in nature?

Camouflage is a good starting point and one of the best-known examples of animal trickery.

Great geckos and octopuses trick the viewer by blending into the surface on which they are placed.

Other animals use mimicry to protect themselves.

The harmless Scarlet King Snake has evolved red, yellow, and black markings that resemble those of the poisonous Eastern Coral Snake to benefit from the protective warnings these markings convey.

Some plants use mimicry, and some orchids have a similar appearance and smell to female wasps to attract unlucky males and eventually pollinate the plant.

Some of these animals benefit from having fixed traits that are evolutionarily suited to their environment.

However, in other cases, imposters seem to anticipate the reactions of other animals and adjust their behavior accordingly.

Upon sensing threat, octopuses rapidly change color to match their surroundings.

Dwarf chameleons match the colors of their environment more accurately when they see bird predators than snakes. After all, birds have better color vision.

One of the most fascinating examples of animal deception comes from the Forktailed Scutellaria.

This bird sits on a tall tree in the Kalahari Desert, watching its surroundings for predators and vocalizing when threatened.

Therefore, meerkat and white clover will hide themselves with a fierce dash.

However, the scutellaria can also set off false alarms when other species catch prey.

Drongo swoops in and steals its prey while the meerkat and babbling escape.

This tactic works about half the time and provides Drongo with a lot of food.

There are few reliable cases of animals using signals to trick conspecifics, but they do happen.

Consider the mantis shrimp.

Like other crustaceans, it molts as it grows, making its soft body vulnerable to attack.

However, the feeling of trying to protect their country from rivals still does not change.

In other words, it was a splendid bluff.

Despite being fragile, freshly molted shrimp are actually more likely to intimidate intruders, usually spreading large limbs that they use to attack or sting enemies.

and it works. People who use bluffing are more likely to hold their ground than those who don't.

Mantis shrimp cannot withstand battle in a softened state. That's why I can be sure that the mantis shrimp's behavior is a bluff.

Biologists have even noticed that mantis shrimp bluffs are tactical. Freshly molted mantis shrimp are more likely to bluff, especially against smaller rivals who are more likely to be chased away.

Mantis shrimp doesn't just reflexively intimidate, it seems to judge the situation quickly, predict the actions of others, and try to derive the best result.

So we know animals can cheat, but are they doing it on purpose?

That is a difficult question, and many scientists think we will never be able to answer it.

We cannot observe the inner state of an animal.

But you don't need to know what the animal is thinking to spot the deception.

Observation of behavior and its consequences reveals the amazing complexity of animals' manipulation of predators, prey and rivals, and their ability to deceive.

For the past 24 years, I have worked as a firefighter in Huntington, West Virginia.

As firefighters, my team and I are tasked with saving lives and property from disasters such as car accidents, house fires, and even life-threatening medical emergencies.

I am a woman leading a male-dominated profession.

Then, ten years ago, I decided to pursue my medical knowledge and completed my nursing degree.

Because it became clear that the next big threat facing not just my city, but other cities across the country, would not be a one-time disaster where you can ride in like firefighters like cavalry, put out fires and walk away, make a difference and feel like all is well.

The next major disaster in my city was, and continues to be, the long-lasting, debilitating and fatal disaster known as opioid addiction.

We now call this the health epidemic, replacing the name "addiction" with "substance use disorder."

To give you some perspective on how serious this epidemic is getting, my county of 95,000 people had 1,831 overdoses in 2017, and 183 people died from overdoses.

It is the job of firefighters and other agencies to respond.

(coughing) I'm sorry.

So after watching this epidemic unfold for several years, I gained some insight.

This disaster requires us to redefine our job as first responders.

We need to be more than just cavalrymen.

We need to do more than just save lives.

We have to find a way to rebuild that life.

And it takes a lot of people to make it happen.

And that's exactly what we're trying to do in Huntington, West Virginia.

Now let me tell you a little bit about what we do.

First, this happens when someone overdoses.

Imagine that you are a person suffering from brain damage due to addiction.

you are fragile

Embarrassed, embarrassed.

And you overdose.

Friends and family may call 911.

And suddenly you are awakened by five or six strangers in uniform.

And they rub your sternum and say, "Get up, get up!"

I could have died from an overdose. ”

Now, aren't you defensive and angry?

Because I know I will too.

On top of that, strangers administered naloxone to you, causing you to experience withdrawal symptoms, or what is commonly known as "dope sickness."

Dope sickness can be really scary.

Some say it's like 10 times the flu.

Nausea, vomiting, diarrhea, body aches.

So not only did we wake you up as strangers, but we made you feel really bad.

In other words, you, the patient, will be less kind to us.

And you will refuse further treatment.

OK, well, that would make us very frustrated and angry because you are ungrateful that we just saved your life.

This is not good dynamics.

We are dealing with brain disorders that alter thinking.

It convinces you that everything is fine.

So this wasn't the first time you overdosed, maybe it was the 3rd, 4th, or 5th time we personally resuscitated you.

This is not a good situation.

Second, first responders are less educated about what substance use disorders are.

So is the medical world.

We are not trained how to deal with people who suffer from substance use disorders.

I am trained in putting out different types of fires.

I am training to save lives in this moment.

But I am not trained to deal with the complex interactions between first responders, the medical community, social services, and the wider community necessary to save lives in the long term.

Third, this is shocking.

As a first responder, I consider myself a cavalryman.

We are knights in shining armor.

We want to rush to the scene, do our job, and leave with the satisfaction of having made a difference in someone's life.

But that doesn't happen when you're dealing with someone with a substance use disorder.

We leave feeling frustrated and useless.

We interact with the same people over and over again with no good results.

And what do you know?

At some point, we realized that it was up to us as first responders and as a community to find a better way to solve this problem and deal with those who were suffering.

So what I did was start looking more at overdose.

I listened to the patient and started talking.

I wanted to know what led them here.

What are they going through?

What is making their situation worse?

What would improve their situation?

I began experimenting with my words and paying attention to my actions and how they affected my patients.

The education I have had and will continue to have at street level in Huntington has been eye-opening and life-changing for me.

So in Huntington, West Virginia, we are united as a community to change the way people who suffer from this terrible disease are treated.

We have started many programs and are making a difference.

I will tell you about just a few of them.

Last year we launched the Quick Response Team, or QRT for short.

The team is made up of paramedics, police officers, someone from the recovery community, and someone from the faith community.

As a team, they visit people who have overdosed within 72 hours of resuscitation.

they talk

they hear

They build rapport with the patient and offer treatment options.

At this time, about 30 percent, or up to 30 percent, of those contacted by the Quick Response team accept some form of help.

And the great thing about this is that the first responders on this team feel like they can really make a difference.

A positive change where there was nothing.

This Year -- (Applause) This year, we opened an independent specialty clinic called PROACT for people who suffer from substance use disorders.

It's a one-stop shop, so to speak.

When patients arrive, they are immediately seen by an addiction specialist.

They work with them to provide treatment options based on their own, individual needs.

This has several effects.

This gives paramedics a place to take or refer patients who are no longer in danger or refuse to go to the hospital.

And it also eliminates the hospital emergency room congestion we have.

The third thing I want to tell you is very important to me and very important to my team.

We recently launched a first responder self-care program.

gradually ...

First responders experience compassion fatigue and PTSD.

It's not uncommon for the average Huntington firefighter to deal with or witness up to five juvenile fatalities each month.

They are their friends and classmates.

So this much-anticipated program will not only recognize their efforts, but give them a voice.

We will provide them with training to deal with the stress they are under.

And they will have even more mental health options they desperately need.

A yoga class is currently being held at the fire station.

(Laughter) (Applause) We also offer on-site massages, which is great.

(Laughter) And there are some off-duty programs that we've started, like cooking classes and pottery classes for first responders and their loved ones.

So a few months ago, I was on the equipment floor with the firefighters.

And half of them were getting massages and the other half were getting ready to get massages.

And then I saw 10 firefighters who were joking around with a very positive and relaxed demeanor.

And I haven't seen it in years.

And that relaxed state spills over into the community and the nation.

So a few weeks ago I overdosed my neighbor.

22 years old.

So of course I rushed down to help the firefighters and neighbors.

And what I witnessed was that the firefighters were cooperative.

Speak in a non-judgmental way.

I was watching one of the firefighters teach his father and another family how to provide life-saving breaths in case it happened again.

And left him with a bag valve mask.

positive change.

positive change.

Did we happen to mention the two things firefighters hate the most?

status quo and change.

(Laughter.) You know, I recognize that there has been a drug epidemic before.

And I've seen what crack can do for the community.

Many of our critics believe that this new compassionate response we have at Huntington is because of race.

That's because overdoses happen so often in the white community.

We have screwed up as a country, so I understand the criticism.

And we treated black people badly during the crack epidemic.

can't forget it.

And we have to do better.

But what I do know now is that people are dying.

And here at Huntington, we face substance use disorder sufferers of all colors and backgrounds on the streets every day.

The job of first responders is to prevent unnecessary deaths.

period.

So...

Obviously, I'm a die-hard firefighter and nurse.

And I do not believe there is no way around every barrier.

One of the barriers we face in dealing with the opioid epidemic is stigma.

So...

We at Huntington, West Virginia are showing other nations that change can happen.

That there is hope to deal with this plague.

Current overdose is down by 40%.

(Applause.) Overdose deaths are now down by 50 percent.

(Applause.) This epidemic isn't over yet.

But each of us has a role to play in this epidemic.

You can make a difference in someone's life simply by listening and being kind to them.

Thank you and God bless you.

(applause)

♫ Imagine yourself in a world where there's no one else, ♫ ♫ Nowhere. ♫ ♫ Until now there were voices and faces to be seen, but ♫ ♫ they are nowhere to be seen. ♫ ♫ There's nothing more to say ♫ ♫ And anyway, nobody said it. ♫ ♫ Oh, listen to me. ♫ ♫ Anyone can be ♫ ♫ And everyone is free to make a difference. ♫ ♫ Anyone can be anything. ♫ ♫ Everyone has the freedom to make a difference in this world. ♫ ♫ Now imagine a world where everyone feels valued. ♫ ♫ Children are everywhere. ♫ ♫ Everyone has a reason to be on Earth right now. ♫ ♫ You wonder why you should care, yes. ♫ ♫ Nothing more to say ♫ ♫ And only love can see us through anyway. ♫ ♫ Oh, listen to me, it is. ♫ ♫ Anyone can be ♫ ♫ And everyone is free to make a difference. ♫ ♫ Anyone can be anything. ♫ ♫ Everyone is free to make a difference. ♫ ♫ You don't have to be a big celebrity ♫ ♫ To feel the power, the power in your soul, no. ♫ ♫ You don't have to be a big MTV star to realize there's a view in your eyes that only you can see ♫ ♫ ♫ ♫ Anyone can be anything. ♫ ♫ Everyone has the freedom to make a difference in this world. ♫ ♫ You can make a little difference in this world. ♫ ♫ I can make a little difference in this world. ♫ ♫ She can make a little difference in this world. ♫ ♫ He can make a little difference in this world. ♫ ♫ You can do it, I can do it, she can do it, he can do it, ♫ ♫ We can make a little difference in this world. ♫ ♫ Let's all change little by little ♫ ♫ A little difference, yes. ♫ ♫ If everyone talks about it, it should change a little. ♫ ♫ Everyone is going to make a little difference in this world, ♫ ♫ Oh yeah. ♫ (Applause) Thank you very much.

(Applause) This song came about because I think it's hard not to know what's going on in this world, wars and stuff like that.

This song was born from that kind of place.

And I wrote a lot of happy songs on my first record, and I still cherish them, but there's something else about this.

It is called "Peace on Earth".

♫ There is no hope. ♫ ♫ There is no future. ♫ ♫ There is no faith in a God who can save you from trouble. ♫ ♫ No reason, no understanding ♫ ♫ No sacred place to hide. ♫ ♫ No serious conversations. ♫ ♫ There are no words of wisdom from the wise. ♫ ♫ There will be no reconciliation ♫ ♫ And there will be no collective compromise. ♫ ♫ Peace on Earth, ♫ ♫ That's what we want. ♫ ♫ Peace on Earth, ♫ ♫ That's what we all say. ♫ ♫ Peace on Earth. ♫ ♫ Yet the hallways ♫ ♫ have the ghosts of war lurking. ♫ ♫ He wants more, more, more, more, more, more, more, more, more, more, more, more, more. ♫ ♫ No darkness, no sunshine. ♫ ♫ There is no such thing as a great society. ♫ ♫ Without faith there is no freedom. ♫ ♫ There is no freedom to be free. ♫ ♫ No heaven, no fire, no brimstone. ♫ ♫ Humans have no brotherhood. ♫ ♫ No country, no religion. ♫ ♫ There is no universal plan. ♫ ♫ Peace on Earth, ♫ ♫ That's what we want. ♫ ♫ Peace on Earth, ♫ ♫ That's what we all say. ♫ ♫ Peace on Earth. ♫ ♫ Yet the hallways ♫ ♫ have the ghosts of war lurking. ♫ ♫ He wants more, more, more, more, more, more, more, more, more, more, more, more, more, more, more. ♫ ♫ The answer is ♫ ♫ Mutually Assured Destruction, ♫ ♫ Balance of Power, ♫ ♫ Weapons for Everyone. ♫ ♫ Mutually Assured Destruction ♫ ♫ Bringing peace to all. ♫ (Trumpet sounds) (Trumpet sounds) ♫ Peace on Earth, ♫ ♫ That's what we want. ♫ ♫ Peace on Earth, ♫ ♫ That's what we all say. ♫ ♫ Peace on Earth. ♫ ♫ In the hallway there, ♫ ♫ Peace on Earth. ♫ ♫ Peace on Earth. ♫ ♫ Peace on Earth. ♫ (applause)

i don't speak english.

I have been speaking and learning English for about a year now.

I speak French and grew up with French, so my English is Franglais.

I was born in this area of ​​western Congo and went to university in Kisangani.

And after finishing, I went to this area, Ituri Forest.

But what I've done is, when I was about 14, I grew up in my uncle's house.

And my father was a soldier and my uncle was a fisherman and a poacher.

What I was doing from 14:00 to 17:00 was helping them with the ivory, the meat, whatever they killed, poaching, hunting, etc., and bringing it into the major cities to go to the market.

But in the end I decided to participate myself.

After about 17 to 20 years, I myself became a poacher.

And I believed I could continue my studies, so I wanted to do it.

I wanted to go to college, but my father and uncle were poor.

So we did.

I went to college for 3-4 years.

I applied for biomedicine to become a doctor.

did not succeed.

I had an inscription granting admission to biology.

And I said, 'No, I didn't do it.

My family is poor and my area does not have better healthcare.

I want to be a doctor who can contribute to them. ”

Three times means three years, and I start to age.

I said, "Oh no, let's continue."

So I studied tropical ecology and botany.

After that, I went to Ituri Forest for an internship.

It's here that I'm really passionate about what I'm doing right now, the botany and wildlife conservation work that's in front of you.

At that time, the Ituri forest was created as a forest reserve for animals and plants.

And a training center there was built around a Congolese scientific staff and some American scientists.

In other words, I believe that the number of elephants protected by the Okapi Game Reserve is the largest number of elephants currently kept in the Congo reserve.

There are also chimpanzees.

And because of this beautiful creature, it was named the Okapi Game Reserve.

It's a forest giraffe.

I'm sure you all are familiar with it.

We have savannah giraffes here, but as a result of evolution, we have forest giraffes that live only in the Congo.

There are also beautiful primates.

13 Species - The highest diversity found in one region of Africa.

And then there is the Ituri Forest itself, with about 1,300 plant species known so far.

I joined the Wildlife Conservation Society in 1995 and worked there, but I started working with them as a student in 1991.

Due to my distinguished achievements, I was appointed as a teaching assistant at the university.

But I didn't like the way it was done. The instruction I received was very poor.

And I wanted to set up a training center and a research center.

As you all know, the end of Mobutu Sese Seko's dictatorship has made life very difficult.

And the work we've done so far has been quite difficult to do and to accomplish.

As Kabila launched a campaign to liberate the Congo, Mobutu's soldiers began to move and retreat.

So they began to flee from east to west.

And the Okapi Game Reserve is there, so there was a way to come from Goma somewhere here.

So they may pass through the Okapi Game Reserve.

The Congo is home to five of the world's richest protected areas, including the Okapi Game Reserve.

So the soldier was on the run at the Okapi Game Reserve.

On the way they looted everything.

Torture, war, oh my god, you won't believe it.

Everyone was looking for their own way - I don't know where to go.

And it was the first time for us young people to actually hear words about war and guns.

And even those who faced the post-independence 1963 rebellion did not believe what was happening.

they were killing people. They had the power to do whatever they wanted.

Who was doing that?

infant. boy soldier.

You can't ask him how old he is because he has a gun.

But I'm from the west and worked in the east.

At the time, I didn't speak Swahili.

And when they came, they looted everything.

I cannot speak Lingala. Because the Lingala people are from Mobutu and everyone who speaks the Lingala language is a soldier.

And I was from the same area as him.

All my friends said, 'We're being targeted, so we're leaving.'

But I don't understand Swahili, so I don't go east.

I will remain I will kill you if you go.

I can't go back to the area where I live. Over 1,000 kilometers away.

I remained after they looted everything.

We do botanical research and have a small herbarium with 4,500 plants.

I cut it, dried it, packed it, and stuck it in a folder.

Purpose: To initiate them for agricultural, medical and other purposes, and for the study of science, flora and forest changes.

It's people moving around, even pygmies.

And this is a bright man, a hard worker and a pygmy.

I have been working with him for about 10 years.

Then he and his soldiers went to the forest to poach elephants.

He's a pygmy, so he knows how to track elephants in the forest.

He was attacked by a leopard and left in the forest.

They came to tell me that I must save him.

And what I did was give him only the antibiotics he needed to treat his tuberculosis.

And luckily I saved his life.

And that was the language of war.

Everywhere there was constant mining of minerals, killing of animals, logging, etc.

And what's important -- I'm assuming everyone here has a cell phone.

This mineral has killed many people. Five million Congolese people died because of this Colombo tantalite (they call it coltan). They use it in the manufacture of mobile phones and this stone is present in that area all over Congo. Good, big business of extraction, and war.

And what I did in the first war, after losing everything, I have to save something: myself, my life, even the lives of my staff.

I buried and saved part of the engine of a new vehicle.

And some of the equipment was carried with them on the canopy to preserve it.

He's not collecting plants, he's going to store our gear in the canopy.

And the leftover material, I packed it up because they wanted to destroy it, they wanted to burn it, they didn't understand it, they didn't go to school.

that's me They are rushing to Uganda and trying to save the 4,000 items by people putting them on motorbikes and bicycles.

And then we succeeded.

I kept the 4,000 items in the herbarium at Makerere University.

And after the war we were able to bring it home and we continue our research.

The Second War came unexpectedly.

When it started, I think we were sitting with friends watching a soccer game and listening to good music on WorldSpace radio.

It was so bad.

I have heard that the war has now begun again from the east and is progressing rapidly.

I think Kabila will go in his place this time, as he did with Mobutu.

The reservists then became targets for the rebels.

Three different movements and two militia groups operate in the same area, competing for natural resources.

And there was no way to work.

they destroy everything.

Poaching - oh no.

And it is in power. we have to meet and talk to them.

What are reserve regulations and park regulations?

And they can't do what they do.

So we went to see them.

That is coltan mining, gold mining.

So we started talking to them and convinced them that we were in a reserve.

Specifically, there are regulations that prohibit logging, mining, and poaching.

But they said, "You, the dying soldiers, are not important, but the animals you protect are the most important.

we don't think so.

In order to move our movement forward, we must. ”

"No way, I wouldn't do it here," I say.

We started talking to them and I started negotiating.

We tried to protect our facilities, we tried to protect our staff and our village of about 1,500 people.

and we continued.

But I negotiated with them and was doing it.

Sometimes we have meetings and they are talking with Jean-Pierre Bemba, Mbusa Nyamwisi, Kabila and I am there too.

Sometimes they speak in my language, which is Lingala.

I listen to them and hear what their strategies are and what they plan to do.

Helicopters are sometimes dispatched to replenish ammunition and other supplies.

They used me to carry it, where it came from, where it came from, and I was counting.

The only equipment I had was a satellite phone, a computer, and plastic solar panels, which I hid in the woods.

And every time, every day, after the meeting, write and send a short email, whatever the compromise is.

I don't know how many people were registered at my address.

I sent a message: how is the war going, what are they going to do.

They began to suspect that what we do in the morning and afternoon will be picked up by the news, the BBC, the RFI.

(Laughter) Something might be going on.

And then one day we went to a meeting.

(Applause) Sorry.

One day we went to see the Commander-in-Chief.

He had the same Iridium phone as mine.

And he asked me, "Do you know how to use this?"

I said, 'I've never seen it.

(laughs) I don't know. ”

And I had mine in my pocket.

So it just so happened that they trusted me so much.

They didn't - they didn't see me.

That's why I was scared.

And when the meeting was over, I went back to the forest.

And I was sending the news, doing whatever, reporting daily what was happening to the United Nations, UNESCO, our institutions in New York.

As a result, they have come under tremendous pressure to evict and liberate the area.

Because whatever they do will be known at the same time.

In the first two rebellions they killed all the animals in the zoo.

We have 14 okapis in our zoo and one of them was pregnant.

And during the war, after a week of heavy fighting, fighting in this area, we succeeded and gave birth to the first okapi.

The only trousers and shirt that reminds me of this.

This is not the local population, but the rebels.

They are now happy to send the news that they have protected Okapi in war. Because we sent the news about okapi killing and poaching everywhere.

A week later we celebrated the okapi's birthday. They killed the elephant just 50 meters from the zoo area where the okapi was born.

And I was angry

I am against it. From the time I made my report until I met with the Commander-in-Chief, they're going to dissect it now.

And I succeeded.

The elephant just decayed and grew tusks.

What we do after that - that was the situation of the war - we have to rebuild.

I had some money. Paid $150.

We didn't have enough infrastructure to plant plants, so we spent half of it rebuilding the herbarium.

The Wildlife Conservation Society deals more with plants.

I started this with $70 and started fundraising where I'm going.

I had the opportunity to go around a place that had a herbarium exhibiting African materials.

And they supported me a little and I made this.

He is currently working to train Congolese youth.

Also, one of our areas of expertise, my design, is to track the impact of global warming on biodiversity and how the Ituri forest is affecting carbon uptake.

This is one of the studies we're doing on a 40-hectare site, tracking and tagging trees and vines from a centimeter.

We now have about 15 years of data to see how the forest contributes to carbon reduction.

That's - I think it's difficult for me.

This is a very embarrassing story.

I don't know where to start and where to end.

I came here thinking what would be the best title to give my talk and I couldn't find it.

But now, I think I would have titled it "The Language of Guns."

where are you all?

Now we are talking about rebuilding, rebuilding Africa.

But is the firearms industry a tool for rebuilding, or a game?

I think we see war like a game, like soccer or football.

Everyone is happy, but look what's happening in Darfur.

Now we say, oh my god.

Let's see how the war in Rwanda turned out.

That's because of gun language.

Even if people like Al Qaeda use Google to connect them, I don't think anyone can blame Google because they are doing the right thing.

But it serves millions of people the best.

But what about the firearms industry?

thank you.

(Applause) Chris Anderson: Thank you, thank you.

Please wait over there.

That's a great story.

I think many people here have the same question as me.

may I assist you?

Corneille Ewango: That's a really embarrassing question.

I think I'm nervous now.

And help us, I think people sometimes act out of ignorance.

i did it myself.

If I knew when I was younger that killing elephants was destroying biodiversity, I wouldn't have done it.

Many people have seen African talent, but very few have gone to school.

Many people are dying because of pandemics, HIV, malaria, poverty and being unable to go to school.

What you can do to help us is increase our capacity.

How many people have the opportunity to go to the US and get a master's degree like I did?

And let's go - now I'm in Holland for my PhD.

But many of them are just here because they have no money.

And I can't go to college.

They can't even get a bachelor's degree.

Empowering young people will create a better generation and a better tomorrow for Africa.

CA: Thank you, thank you.

(applause)

In 1982, a young nurse was suffering from severe, incurable depression.

She couldn't work, couldn't socialize, couldn't even concentrate enough to read a newspaper.

One treatment changed everything.

After two courses of electroconvulsive therapy (ECT), her symptoms improved.

She went back to work and then went on to graduate school, where she achieved high grades.

First, she spoke candidly about her life-changing treatment.

However, she stopped sharing her experience after realizing that many people had a very negative impression of ECT.

ECT had a deep stigma as a remnant of history that bears little resemblance to modern surgery.

This therapy was first used medically in 1938.

In the early days, doctors would send powerful electrical currents through the brain, causing generalized seizures that caused patients to bite and fracture their tongues.

Modern ECT is very different.

While the patient is under general anesthesia, electrodes send a series of weak electrical pulses to the brain.

This causes a huge number of neurons to fire in unison, causing brief, controlled seizures.

Muscle relaxants prevent the spasm from spreading to other parts of the body.

The only physical indication that the brain is flooded with electricity is leg cramps.

Treatment lasts about 1 minute and most patients can return to normal activity about 1 hour after each session.

ECT is commonly used to treat severe cases of major depression and bipolar disorder in patients who have failed other treatments or who have side effects from medications.

More than half of people who receive treatment experience improvement in symptoms.

Most patients treated with ECT have two to three sessions per week for several weeks.

Some people start noticing improvement in symptoms after just one session, while others take longer to respond.

Patients often continue on infrequent treatment for months to a year, and some require occasional maintenance sessions for the rest of their lives.

Although modern ECT is much safer than before, patients may still experience side effects.

You may feel pain, fatigue, and nausea immediately after treatment.

Some people can't remember what happened just before the session, like what they had for dinner the night before.

Rarely, you may have trouble remembering things that happened weeks or months ago.

In most patients, this memory loss improves over time.

Interestingly, despite ECT's proven track record, we still don't know exactly why ECT works.

Neurons in the brain communicate via electrical signals, which affect brain chemistry and contribute to mood and behavior.

The flood of electrical activity caused by ECT alters its chemistry.

For example, ECT causes the release of certain neurotransmitters. This neurotransmitter is a molecule that helps transmit signals between neurons and affects mental health.

ECT also stimulates the flow of hormones that may reduce symptoms of depression.

Interestingly, ECT maintenance is more effective when combined with drugs, even in previously drug-resistant patients.

As we learn more about the brain, we will be able to use ECT more effectively.

In 1995, more than ten years after her first ECT course, the nurse decided to publish her experience.

Due to the stigma surrounding the treatment, she worried that it would negatively impact her personal and professional life, but knew that ECT could make a difference for patients, even when all else had gone wrong.

Misconceptions about ECT persist, but explanations like hers have helped make both doctors and patients aware of the potential for life-changing treatments.

As Dewey noted long ago, the masses are constructed through discussion and debate.

If we want to question the tyranny of assumptions and avoid the unquestioned realm of doxa, we must actively subject our assumptions to debate and debate.

In this spirit, I enter into the discussion of one of the great questions of our time: how to mobilize the various forms of capital in the project of nation-building.

To clarify the prerequisites, capitalism has become acceptable after 150 years, and democracy has become acceptable.

If you look at the world in 1945 and look at the map of capitalist economy and democratic politics, they were the rare exception, not the norm.

But what is at issue now is both the form of capitalism and the form of democratic participation.

But we must recognize that this moment brought a rare coincidence of prerequisites.

And that is the basis for certain actions. Because the agreement of each moment enables our actions.

And we need to be able to move forward, no matter how fragile our agreements are, no matter how tentative.

But the majority of the world's people have benefited neither from capitalism nor from democratic institutions.

Most people on earth feel that the state is oppressive, an organization concerned with denying justice rather than denying rights or providing justice.

And in terms of the experience of capitalism, there are two aspects that the rest of the planet is experiencing.

The first is the mining industry.

Blood diamonds, smuggled emeralds, lumber cut from the poorest.

The second is technical assistance.

Technical assistance may shock you, but it is today the worst form of showing the ugly face of the developed world to the developing world.

Tens of billions of dollars are probably spent building the capacity of people who are paid up to $1,500 a day who are unable to think creatively or organically.

The next assumption, and of course the events of July 7th, and the event before that of September 11th, is a reminder that we do not live in three different worlds.

we live in one world.

But it's easy to say.

But we are not dealing with the effects of the single world we live in.

That is, if we want to have one world, this one world must not be based on massive exclusion and inclusion of some people.

We must now think of the premise of a truly global world in the context of a system of rights, responsibilities and accountabilities with a truly global reach.

Otherwise, we will miss this opening moment in history, when agreement can be reached on both the form of politics and the form of the economy.

Which of these organizations should you choose?

There are three key terms: economy, civil society and state.

We will not cover the first two. Suffice it to say that uncritically moving a premise from one context to another can only lead to disastrous results.

The economics taught at most elite universities is of little use in my context.

My country is ruled by the drug economy and the mafia.

Textbook economics doesn't work in my situation. Also, very little advice from anyone on how to frame the legal economy.

Our poverty of knowledge should be the first basis for moving forward, not impose a framework that works based on mathematical modeling. I respect that very much.

My colleague at Johns Hopkins University was one of my best friends.

Second, rather than endlessly debating what the structure of the state is, why not consider a simplified set of functions that a 21st-century state must perform?

Claire Lockhart and I are writing a book on this. We want to share it widely. And three, we can actually build metrics to comparatively measure how well these features we agree are performing in different places.

So what are these features?

Suggest 10.

And these are the legal monopoly of the means of violence, administrative control, financial control, investment in human capital, provision of citizenship, provision of infrastructure, regulatory control of the state's tangible and intangible assets, the creation of markets, international agreements, including public borrowing, and, most importantly, the rule of law.

I won't go into details.

I hope the question gives me the opportunity.

This is a achievable goal. Basically, contrary to popular assumptions, I would argue that we know how to make this happen.

If you looked at Germany from Oxford's perspective in 1943, who would have thought that today's Germany would be unified or democratized?

But the people of Oxford were preparing and working on plans for a democratic Germany.

There are many other examples.

Now, to do this, and what this brings to this group, we need to rethink the concept of capital.

The least important form of capital in this project is financial capital, namely money.

Money is not capital in most developing countries.

it's just cash.

Because it lacks the institutional, organizational and administrative forms to turn it into capital.

And what you need is a combination of physical, organizational and human capital. Security is important, of course, but so is information.

Now, the question that concerns us here, and that is the challenge that I would like to pose to this group, is that, again, it takes 16 years to produce a bachelor's degree in your country. degree.

It takes 20 years to produce a doctoral degree.

The first task is to fundamentally rethink the problems of the times.

Should we repeat our inherited ways?

Our education system is inherited from the 19th century.

What fundamentally needs to be done to get back to work on the project, what is rapid capital formation?

The absolute majority of the world's population is under the age of 20, and that population is growing rapidly.

They need different approaches, different ways to get their rights, different ways to acquire skills.

That's number one.

Second, you are a problem solver, but you are not fulfilling your global responsibility.

You are staying away from corruption issues.

All it needs is a clean environment to function.

But if you don't think through the issue of corruption, who will?

Stay away from design for development.

You are a great designer, but your designs are selfish.

It is ready for you to use yourself.

In the world I work in, roads, dams and power supplies are being designed that haven't been reviewed in 60 years.

This is incorrect. It is necessary to think.

But what we especially need this group for more than anything is your imagination to address issues in ways that memes are supposed to work.

As the work of Thomas Kuhn on old paradigms showed, it is at the crossroads of ideas that new developments, true breakthroughs, occur.

And I hope that this group will be able to address national and development issues and the empowerment of the majority of the world's poor through this vehicle.

thank you.

(Applause.) Chris Anderson: So, Ashraf, you were, until recently, Afghanistan's Finance Minister in the middle of many of the world's agendas.

Will the country do it?

Will democracy flourish? What are you most afraid of?

Ashraf Ghani: My biggest fear is that you are not involved.

(laughter) You asked me. You know I always give unconventional answers.

No, but seriously, the problem of Afghanistan needs to be looked at at least 10 to 20 years into the future.

Today, the globalization of the world is accelerating.

time was compressed.

And space doesn't exist for most people.

But in my world, you know, when I returned to Afghanistan after 23 years, the universe was expanding.

Every conceivable form of infrastructure has been destroyed.

A trip between two cities that used to take me 3 hours now takes 12 hours.

The first is that at that scale, we only need to look at the simple things: infrastructure. It takes six years to deliver the infrastructure.

in our world.

anything that makes sense.

But the mode of attention: what is happening today, what is happening tomorrow.

The second is when a country is subjected to one of the most enormous and brutal forms of the exercise of power. For ten years in a row, our country had 110,000 Red Army soldiers, which literally terrified us.

Sky: All Afghans see the sky as a source of fear.

We were bombed and practically wiped out.

Since then, tens of thousands of people from all quarters have been trained in terrorism.

For example, the United States and Britain joined the Egyptian Intelligence Service and trained thousands of people to participate in resistance movements and urban terrorism.

How to turn your bike into a tool of terror.

How to spin a donkey, a cart horse, or whatever.

And so do Russians.

So it is because of that legacy that violence erupts in countries like Afghanistan.

But we must understand that we were incredibly lucky.

I mean, I can't believe how lucky I am to be standing here and speaking to all of you.

When I joined as Finance Minister, I thought I had less than a 5% chance of surviving more than three years.

Those were the risks. It was worth it.

I think we can do it, and it's because of people that we can do it.

Well, I mean, let me give you one statistic.

91 percent of Afghan men and 86 percent of women listen to at least three radio stations a day.

In terms of their discourse, in terms of the sophistication of their knowledge of the world, I dare say they are far more sophisticated than the rural Americans with college degrees and most Europeans. Because the world matters to them.

And what are their main concerns?

give up.

Afghans have become very international.

As you know, when I returned home in December 2001, having lived as a nationalist, I had no desire to cooperate with the Afghan government.

And I told them, my people, and the Americans here, to leave.

Yes, I am an advisor to the United Nations.

I traveled through 10 provinces of Afghanistan in no time.

And everyone told me it was another world.

You know, they get involved.

They believe that engagement, global engagement, is absolutely necessary for the future of ordinary people.

And what worries most ordinary Afghans is that Claire Lockhart is here, so let me quote the argument she had with an illiterate woman in northern Afghanistan.

And the lady said she didn't care if there was food on the table.

What she worried about was whether there were plans for the future that would allow her children to live a different life.

It gives me hope.

CA: How is Afghanistan going to provide alternative income for the many people who make their living from the drug trade?

AG: Certainly. First of all, instead of sending $1 billion to fight drugs and paying it to some security companies, we should ask them to give this $100 billion to the 50 most important innovative companies in the world and create 1 million jobs.

Employment is the key to combating drugs.

A little known fact. Countries with an average legal per capita income of $1,000 do not produce drugs.

The second is textiles.

Trade, not aid, is the key.

The US and Europe should reduce tariffs to 0%.

The textile industry is incredibly fluid.

If we want to compete with China and attract investment, zero tariffs could probably very easily attract $4 billion to $6 billion in the textile sector and create jobs like that.

Cotton does not compete with opium. That's what T-shirts do.

And you have to understand that it's a value chain.

You see, ordinary Afghans are tired of talking about microcredit.

That's important, but what ordinary women and men working in micro-manufacturing want is global access.

They don't want to sell the same bloody embroidered shirt over and over again to a charity bazaar intended only for foreigners.

What we want is a partnership with an Italian design company.

Yes, we have the best embroiderers in the world.

Why can't we do what was done in northern Italy?

in the output system?

So, economically, I think the really important issue is to think through now.

My point here is that the aid does not work.

The aid system is broken.

The aid system has no knowledge, no vision, no ability.

I agree. After all, I grew up with it a lot.

Well, to be precise, I had to convince the world to donate $27.5 billion to my country.

They didn't want to give us money.

CA: Did that still not work?

AG: No, it didn't work.

That is, in my judgment, $1 of private investment is at least equal to $20 of aid in terms of the dynamics it creates.

Second, one dollar of aid can be 10 cents. 20 cents maybe. Or maybe $4.

It depends on what form it comes in and what conditions are attached to it.

As you know, the aid system was originally designed to benefit entrepreneurs in developed countries, not to bring growth to poor countries.

And this, too, is one of those assumptions. It's the same assumption that car seats have been passed down to governments and doors.

You might think the U.S. government doesn't think U.S. companies need subsidies to operate and advise in developing countries, but they do.

With regard to aid, there is a weight of history that now needs to be revisited.

If the goal is to build a trustworthy and self-sufficient nation, I equate that proposition. You know that I am very strict with the other party, but aid must be completed in each country within the set period.

And every year there must be progress in mobilizing domestic revenues and creating economies.

Without such an agreement, it would be impossible to maintain consensus.

Once upon a time there was a terrible disease that afflicted children.

And indeed, of all the diseases that exist in this land, it was the worst. It killed the most children.

And then came a brilliant inventor, a scientist, who came up with a partial cure for the disease.

And it wasn't perfect. Many children still died, but it is definitely better than before.

And one of the good things about this remedy was that it was practically free and very easy to use.

But the worst thing about it was that it can't be used for the youngest children, toddlers and 1 year olds.

As a result, a few years later, another scientist devised a second treatment, based on the first scientist's invention, although perhaps this scientist was not as brilliant as his predecessor.

And the advantage of the second treatment for this disease is that it can also be used in infants and one-year-olds.

The problem with this treatment was that it was very expensive and very complicated to use.

And although parents tried very hard to use it correctly, almost all of them ended up using it incorrectly.

But what they did, of course, was so complicated and expensive that it was only used for 0- and 1-year-olds.

And they continued to use the existing treatments they had for children over the age of two.

And this went on for quite some time. people were happy.

They had two treatments. Until a mother of a two-year-old child died of the disease.

And she thought, ``My child has just turned two, and until he was two, I was always on this complicated and expensive treatment, this treatment.

Then my child turned 2 and I started using cheap and easy remedies. And I wondered"--as every parent who loses a child wonders, she wondered--"Is there anything I could do but continue with that complicated and expensive treatment?"

And she said to everyone else, "How can something cheap and simple work as well as something complex and expensive?"

And people thought,

Switching to a cheap and simple solution is probably the wrong thing to do. ”

And the government, too, listened to her and others and said, "Yes, yes, we should make laws."

We should outlaw this cheap and easy treatment and stop anyone from doing it to their children. ”

And people were happy. they were satisfied.

For years this went on and all was well.

But then a junior economist who also had children of his own appeared, and he took advantage of expensive and complicated treatments.

But he knew about the cheap and easy stuff.

And he thought about it, but expensive things didn't seem so great to him. So he thought: "I don't know anything about science, but I do know something about data. So let's go and look at the data and see if this expensive, complex treatment actually works better than the cheap, simple treatment."

And, heck, when he looked at the data, he found that expensive and complex solutions didn't seem to be better than cheaper solutions, at least for children over the age of two. Cheaper solutions didn't work for younger children.

So he went out before the people and said, "I made this amazing discovery. It's as if a cheap and easy solution could save us $300 million a year, and spend that money elsewhere on our children."

Then my parents became very dissatisfied and said: "This is terrible because cheap and easy things can't be as good as hard things." And the government was very upset.

And especially the people who created this expensive solution were very upset thinking, "How can it compete with something that is essentially free?"

We will lose all our markets. ”

And the people became very angry and called him a terrible curse.

So he decided to leave the country for a few days to find a more intelligent and open-minded person in a place called Oxford, and to come there and tell the story.

So anyway, here I am. Not a fairy tale.

This is a true story about America today, and the illness I am referring to is actually a child car accident.

And the free cure is seat belts for adults, and the expensive cure ($300 million a year cure) is child seats.

And what I want to tell you today is part of the reason I believe this to be true. Despite the incredible amount of energy that has been expended to expand the law and make it socially unacceptable to have children wear seatbelts, the fact is that for children over the age of two, there are no real or proven benefits of child restraints. And we'll talk about why. What makes it true?

And then finally, a little bit about the third method, another technique. It's probably better than what we have, but there hasn't been any enthusiasm for adoption because people are so enamored with current car seat solutions. OK.

As such, when we attempt to explore the data, it often records a complex story that is difficult to find within the data.

If you compare seat belts to car seats, you'll see that's not the case.

As such, the United States maintains a dataset of all fatalities since 1975.

This means that every time there is a traffic accident in which at least one person is killed, we have information about everyone.

So if you look at that data, it's on the U.S. Highway Traffic Safety Administration website. Just looking at the raw data, we see limited evidence in favor of car seats for children 2 years and older.

So here is the data. This cannot be compared because basically no child aged 2 to 6 uses a child seat over the age of 6, but 29.3% of unrestrained children in accidents where at least one person has died also die themselves.

18.2% of children die when they sit in a car seat.

With this raw data, 19.4 percent die when wearing a shoulder belt. And interestingly, wearing knee-only seat belts kills 16.7 percent. And indeed, according to theory, knee-only seat belts should be worse than knee and shoulder belts. Remember, when working with raw data, there are hundreds of confounding variables that can get in the way.

So what we do in our study is just presenting the same information, but transformed into a diagram for clarity.

So the yellow bar represents the car seat, the orange bar the shawl, and the red bar the knee-only seat belt.

And this is all relative to unlimited, the higher the bar the better. have understood.

This is the data I showed earlier.

So you are striving to overcome the highest hurdles.

So you can control basic things like the strength of the crash, what seat the child was in, how old the child is, etc.

That's the set of bars in the middle.

Then you'll find that wrap-only seat belts look bad.

And finally, the last set of bars. It really controls everything you can imagine about crashes: 50, 75, 100 different characteristics of crashes.

And it turns out that car seats and shoulder belts look exactly the same in fatalities when it comes to saving lives.

Also, the standard error bands around these estimates are relatively small.

And it's not just holistic. Very robust for what you want to see.

One interesting point. If you watch a frontal crash (when the car crashes, the front hits something), you can certainly see that the car seats are getting a little better.

And I think this is no mere coincidence.

To be approved for a child restraint, it must pass certain federal standards, all of which involve head-on vehicle collisions.

But if you look at other types of collisions, such as rear-end collisions, the car seats certainly don't perform as well.

And I think that's because, as people always expect it to be, the vehicle is optimized to optimize against clear rules about how it's affected.

And another thing you might argue is, "Car seats have gotten a lot better over time.

So if you look at recent crashes, the entire dataset is almost 30 years worth of data. I don't see it in recent crashes. New car seats are much better. ”

However, in recent crashes, knee and shoulder seat belts have actually outperformed car seats.

They say, "Well, it's not possible, it's not possible."

And when I ask parents, the crux of the argument is, "But car seats are so expensive and complicated, with big tangles of latches, how can they not work better than expensive and complicated seat belts?"

I think this is some kind of interesting logic that people use. And another logic says, "The government wouldn't have told us to use it if it hadn't been better."

But what's interesting is that the government telling us to use them doesn't really have much basis.

The bill was actually based on the impassioned pleas of parents whose children died when they were two, which led to the passage of all these laws - not very data-driven.

So I think there is a limit to telling stories using these abstract statistics.

So I invited some friends over for dinner and had a dinner party and asked them if they had any advice to prove my point. They said, "Why don't we do a crash test?"

And I said, "That's a great idea."

So we actually commissioned some crash tests.

And when we called independent crash test companies around the country, it turned out that none of them wanted to do our crash test. Because they say, either explicitly or not so explicitly, "All our business comes from manufacturers of car seats.

You can't risk putting them away by testing your seat belt against your car seat. ”

Well, finally, one did. They said they would be happy to do this test for us under the condition of anonymity. Anonymous, we paid $1,500 for each crashed seat.

So we went to Buffalo, NY and this is the first of its kind.

These are crash test dummies waiting to be featured.

And this is how crash testing works.

We're not actually crashing the whole car here. It's not worth ruining the whole car for that.

So they have a bench seat to which the car seat and seat belt are fixed.

So I wanted you to see this.

Now you can see why parents think car seats are great. Look at the child sitting in the car seat.

Doesn't he look content, ready and ready to survive anything? And if you look at the kid in the back, it looks like he's already choking before the crash happens.

Seeing this, I can't believe how well the kid in the back would do when I was in an accident.

So this is going to be a crash where let's hit a wall at 30 mph and see what happens. OK?

Now let me explain what happens.

By the way, this is a dummy for a 3-year-old child.

So here is the car seat. Observe two things here. Observe how your head goes forward and basically hits your knees. This is in the car seat. Another observes how the car seat bounces and flies through the air.

Car seats are moving all over the place.

Note that there are two points to this.

This is a car seat installed by someone who has installed 1,000 car seats and knows exactly how to do it.

We also found this bench seat to be a great way to attach a car seat.

The flat back makes installation very easy.

So this is a test rigged in favor of car seats, you know?

Federal standards require a score of less than 1,000 in non-critical units to qualify as a child restraint in this accident.

And this crash would have been around 450.

So this car seat is really an above average car seat for Consumer Reports and it did very well.

Next. Now, this is a child in the same accident, wearing a seatbelt. In fact, he moves very little against other children. The funny thing is that the cam works terrible. Because they only have cameras set up to set up car seats, and in fact they don't even have a way to move them to see a rebounding child.

Anyway, it turns out that the 3-year-old actually did a little worse in those two crashes. So in this range he gets about 500 compared to 400 or so.

But even so, he took the data from that accident to the federal government and said, "I invented a new child seat.

I would like you to approve the sale," and they say, "This is a great new car seat and works great.

I could only get 500 points, but it was possible to go up to 1,000 points. ”

And this seat belt would have been admirably approved as a car seat.

So, in a way, what this suggests is that it's not just people misconfiguring child seats, it's putting kids at risk. But basically, the car seat is not very useful.

So here's the crash. They are timed at the same time, so you'll find that using a car seat takes much longer. It takes longer when rebounding, but the seat belted child moves much less.

So, I will also introduce Crash, a 6-year-old.

The 6-year-old was in the car seat and turned out to be in terrible condition, which is great. It's like 400, right?

That's why he'll be fine even in an accident.

The child never had a problem with that.

And here is a 6-year-old child wearing a seatbelt. In fact, they are within a point or two of exactly the same. So for a 6-year-old child, the car seat was absolutely useless.

This is further evidence and, in a way, has been criticized by one scientist. "A study with n equal to 4 can never be published", meaning 4 crashes.

So I wrote him back and said, "What if n is 45,004?"

Because there were 45,000 other real-world crashes.

And I just think that the idea of ​​using real-world crashes is something that economists think is the right thing to do, but scientists don't really think about it, and usually don't think about it. Scientists would rather have the very imperfect science of observing dummies, the laboratory, than the 30 years of data we've observed on children and car seats.

And I think the answer to this puzzle is that there are better solutions. No one is thrilled because everyone is so happy with the way the car seat supposedly works.

And from a design standpoint, I would go back to the drawing board and say, "I just want to protect the kids in the back seat."

No one in this room would say, "Let's make great seatbelts for adults, that would be the right place to start."

Then make this really big contraption that needs to be daisy chained. ”

Or rather, let's start - who else is sitting in the back seat besides a child?

But essentially it does something like this. I don't know exactly how much this will cost, but I don't understand why this is so much more expensive than a regular car seat.

Actually, it folds up and sits behind the seat.

If you fold a regular adult seat and put a child on it, it becomes one.

It seems to me that this is not a very expensive solution and should work better than the existing ones.

So the question is, is there any hope of adopting something like this that will probably save many lives?

And maybe the answer lies in the story.

The answer to both why child restraints have become so successful, and why they might one day be adopted, is in a story my father told me when he was a doctor in the United States Air Force in England. And this was a long time ago. In the past, we were allowed to do things that we cannot do now.

So my father used to bring in patients who weren't really sick.

And he had a big jar full of placebo pills that he gave me and said, "If you're still not feeling well, come back in a week."

Most of them don't come back, but some of them do.

And when they came back he was still convinced they weren't sick and had a bottle with another medicine. Inside this bottle was a huge potion.

It was almost impossible to swallow.

To me, these are like car seats.

People will look at these and say, ``Hey, this is so big it's hard to swallow.

And it turned out that most people wouldn't come back because it worked. But sometimes there were still patients who were convinced that they were sick and that they would come back. And my father had a third bottle of medicine.

And the jar of pills he had, he said, were the tiniest pills he could find, so small they could barely be seen.

And he said, listen, I know I gave you that giant pill before, that complicated, hard to swallow pill, but now I got a very powerful pill, it's really tiny, tiny, almost invisible.

Here it's kind of like the invisible. ”

And it turns out that while my father was prescribing this drug, a really small one, no one came back complaining of illness.

So my dad always saw this as proof that this tiny little potency had the ultimate placebo effect. And in some ways, if it's the right story, I think the integrated car seat will soon be everyone's thing. Another possible conclusion is that I went to find another doctor, probably because I was sick after three visits to my father, where he was given a placebo and sent home.

And it's totally possible. If so, I think we'll be stuck with traditional car seats for a long time to come.

thank you very much.

(Applause) (Audience: Let me ask you this: when we wear seatbelts, we don't necessarily wear them just to prevent loss of life, but we also do to prevent many serious injuries.

The data are looking at the number of deaths. I don't see any major injuries.

Do you have data to show that child restraints are actually less effective, or as effective as seat belts, for serious injuries? Because that would prove your point. ) Stephen Levitt: Well, that's a great question. I found very small differences in injuries between my data and another data set that I looked at for accidents in New Jersey.

Therefore, there is no statistically significant difference in injuries between car seats and knee and shoulder belts in this data.

Data for New Jersey are different. This is not just a fatality, but all reported crashes in New Jersey, so it turned out there was a 10 percent difference in injuries, but they were generally minor.

Now, the interesting thing, and I must say this as a disclaimer, is that there is a very difficult medical literature to resolve with this other data that suggests that car seats are dramatically better.

And they use a completely different methodology. That is, after an accident occurs, get the names of the people involved in the accident from the insurance company and call them and ask them what happened.

I haven't really figured it out yet. I would like to work with medical researchers to understand how such completely contradictory differences can exist.

But it's clearly an important question.

The question is, even if there are enough injuries to make these cost-effective. It's a little difficult, isn't it?

Even if it were correct, it's not clear if it would be that cost effective.

We talk about the technology we are currently developing at Oxford. This technology is believed to change the way computer games and Hollywood movies are made.

The technology simulates humans.

It is a simulated human with a simulated body and a simulated nervous system that controls that body.

Now, before we get too deep into that technology, let's take a quick look at what a human character looks like in a computer game at the moment.

This is a clip from the game "Grand Theft Auto 3".

Already saw it briefly yesterday.

And what you can see is that it's actually a very good game.

This is one of the most successful games of all time.

But you can see that all the animations in this game are very repetitive.

They look almost identical.

I've had him hit the wall over and over here.

And it turns out that he always looks the same.

The reason is that these characters are not actually real characters.

These are graphical visualizations of the characters.

To produce these animations, studio animators have to predict what will happen in the actual game and animate that particular sequence.

So he or she sits down and creates an animation and tries to predict what will happen. These specific animations are then simply played at the appropriate times within the computer game.

As a result, no real interactivity can be achieved.

All you need is an animation that plays at more or less the right time.

It also means that the game isn't as amazing as it should be because all you get out of it is what you actually put in, at least in terms of characters.

There is no real appearance there.

Third, as I mentioned earlier, most animations are therefore very repetitive.

Now, the only way around this is to actually simulate the human body and simulate the nervous system part of the brain that controls that body.

A simple demonstration would be appreciated to show what the difference is. Because it's a very, very small thing.

For example, if you push Chris a bit like this, he will react to it.

He reacts differently when pushed from different angles because he has a body and he has the athletic ability to control that body.

It's very trivial.

That's something you can't get in a computer game at the moment.

thank you very much. Chris Anderson: Is that all?

Torsten Leil: Yes, that's right.

So that's what we're trying to simulate -- not Chris specifically, but humans in general.

Well, we started working on this some time ago at Oxford University, but we tried to start very simply.

What we tried to do was teach a stickman how to walk.

The stickman is physically stimulated. You can see it on the screen here.

That is, it may be affected by gravity, joints, etc.

However, when I run the simulation, it collapses like this.

The hard part here is getting the AI ​​controller to actually work.

For that we use neural networks. It is based on the part of the nervous system in the spine that controls human walking.

It's called the central pattern generator.

So we simulated that too. And the really hard part is teaching that network how to walk.

For that, we used artificial evolution, or genetic algorithms.

We already heard about them yesterday, and I think most of you are already familiar with them.

But briefly, the concept is to create a large number of different individuals (neural networks in this case), all random at first.

Connect these to virtual muscles, in this case a two-legged creature, and expect it to do something interesting.

Everything will be very boring at first.

Most do not move at all, but some may take small steps.

They are then selected by algorithms and replicated by mutation and recombination, also introducing gender.

And we repeat that process over and over until the walking thing, in this case a straight line like this.

That was the idea behind this.

I set up a simulation one evening when I started this.

It took about 3-4 hours to run the simulation.

I woke up the next morning, headed to my computer, and checked the results. As I indicated earlier, I was hoping for a straight forward result. And this is what I got instead.

(Laughter) So we went back to the drawing board.

After a few tweaks here and there, it finally worked.

This is an example of successful evolution.

So what we see immediately is a very simple biped that is learning how to walk using artificial evolution.

At first, I couldn't walk at all, but it got better and better as time went on.

And this is the guy who can't walk at all.

(Laughter) After five generations of applying the evolutionary process, the genetic algorithm is getting better little by little.

(Laughter) Gen 10 needs a few more steps, but we're not there yet.

But now, 20 generations later, I can actually walk straight without falling.

It was a real breakthrough for us.

This was a very challenging project academically, and once I got to that stage, I was convinced that I could also use this approach to do other things, namely simulate the body and actually simulate the parts of the nervous system that control it.

Now, at this stage, it also became clear that this could be very exciting for computer games, online worlds, and so on.

What you see here is a character standing there with an obstacle placed in front of it.

And what you see is it trying to climb over an obstacle.

Now, what's interesting is that if you move the obstacle slightly to the right (which I'm doing right now), the obstacle climbs over the obstacle in a completely different way.

Also, if you move the obstacle a little, it will fall in a different way.

(Laughter) Now, by the way, at the top is some of the neural activation that feeds the virtual muscle.

have understood. That's the video. thank you.

Now, this may seem like a trivial thing, but it's actually very important because this is something you don't get in interactive or virtual worlds at the moment.

Now, at this stage, I decided to take this further by forming a company. Because this is obviously just a very simple blocky biped.

What we really wanted was a full human body.

So we started a company.

We hired a team of physicists, software engineers and biologists to work on this. And the first thing we had to tackle was basically creating the human body.

It needs to be relatively fast, so it can be run on a normal machine, but it needs to be accurate enough, so it basically looks good enough.

So we put a lot of biomechanical knowledge into this and tried to make it as realistic as possible.

What you see on the screen now is a very simple visualization of that body.

I should add that it's very easy to add things like hair and clothes, but I'm using a very simple visualization here so you can focus on the movement.

Well, what I'm going to do right now is push this character just a little bit more and see what happens.

Basically nothing really interesting.

It will fall, but in short, it will fall like a rag doll.

The reason is that there is no intelligence there.

If you put artificial intelligence in there, it will be interesting.

So this character has athleticism in his upper body, but in this particular character, his legs still have none.

But what it does -- I'm going to push it again.

It autonomously recognizes that it is being pressed.

I stick my hand out.

It will turn to autumn and try to grasp autumn.

That is what is displayed here.

Now, if we add AI to the lower body as well, it gets really interesting.

We have the same characters here.

I'm going to push even harder and a little harder now than when I pushed Chris.

But what you will see is that you will now receive a push from the left.

What you're seeing is it backing off, trying to counterbalance, trying to see where it's supposed to land.

I will show you this again.

And finally hit the floor.

Now, pushing that character in another direction again, like I did, makes this really exciting.

You can't do that now.

At the moment the game only has blank computer graphics.

Here is the actual simulation. That's what I want to show you now.

Here, the same character with the same movement shown earlier is pushed from a different direction.

Start by pushing from the right.

By the way, this is all in slow motion, so you can see what's going on.

You can see that the reaction is different as the angle changes slightly.

Push again, this time from the front.

And you can see that it falls differently.

And this time from the left - and it falls differently.

It was really exciting for us to see it.

we saw it for the first time.

We were in stealth mode, so this is the first time the public has seen this.

I haven't shown this to anyone yet.

Well, here's something interesting. What would happen if we put that character down? This is the wooden version, but with the same AI built in. But what if you put that character on a slippery surface like ice?

We just did it for the laughs, just to see what would happen.

(Laughter.) And this happens.

(Laughter.) (Applause.) There was nothing we had to do about this.

If you put this character I just talked about on a slippery surface, you'll get a result like this.

And that's what makes this approach so interesting.

Well, when we visited movie studios and game developers and showed them the technology, they responded very well.

And they said the first thing they needed was a virtual stuntman.

There are a lot of stunt scenes that can't be done because the stunts are obviously very dangerous, very expensive, and obviously you can't seriously injure the stuntman.

So they wanted a digital version of the stuntman. That's what we've been working on for the past few months.

This is the first product we plan to release in the next few weeks.

So here are some very simple scenes where a guy is just getting kicked.

That's what people want. That's what we're giving them.

(Laughter) As you can see, it's always responsive.

This is not a corpse. It's basically the body feeling the power and trying to protect the head in this particular case.

But I think it's also a pretty big blow.

You're a little sorry about that, and we've seen it so many times that it doesn't really matter anymore.

(Laughter) By the way, I pulled out a worse video than this...

Well, let me introduce you to another one.

What people wanted as a movement was to have an explosion, a strong force on the character, and the character reacting to it in the air.

So instead of characters that look limp, you should actually have characters that look like they're alive in the air, ready for an action movie.

So this character is hit with a force, finds himself in the air, and tries to stick his arm out in the direction he's going to land.

That's one angle. Here is another angle.

I now think that the realism that we were able to achieve is good enough to be used in a movie.

And let's look at a slightly different visualization.

We received this last night from an animation studio in London and are currently experimenting with our software.

So this is exactly the same behavior you saw earlier, just a slightly better rendered version.

So if you look closely at your character, you'll see that there's a lot of body movement going on that doesn't need to be animated like it used to.

An animator had to actually create the animation.

All this happens automatically within the simulation.

Here's a slightly different angle, again a slow motion version.

This is incredibly fast. This is happening in real time.

You can run this simulation in real time in front of you, modify it as needed, and get animations directly from it.

At the moment, doing something like this by hand would probably take a couple of days.

This is also the behavior they requested.

I don't really know why, but I did it anyway.

This is a very simple behavior that shows the power of this approach.

In this case, the character's hand is fixed at a specific point in space, and the only thing the character is told to do is struggle.

And it looks organic. It looks real.

I feel like you kind of sympathize with the guy.

Here's another video I just got last night, but rendering this a little more realistic makes it even worse.

Now, I'm showing this only to show how organic it actually feels and how realistic it looks.

This is all a physical simulation of the body using AI to drive virtual muscles of that body.

Well, one of the things we did for the laughs was creating a slightly more complicated stunt scene. One of the most famous stunts is when James Bond jumps off a dam in Switzerland and gets caught in a bungee.

Here is a very short clip.

Yes, you can almost see it here.

In this case they were using real stuntmen. It was a very dangerous stunt.

I think it had just been voted one of the most impressive stunts by the Sunday Times.

Well we tried. We looked at our characters and asked ourselves, "Can we do that?"

Can you use a physical simulation of a character, use artificial intelligence, and put that artificial intelligence into a character, exercise virtual muscles, simulate jumping off a dam, then skydive, then bungee catch?

we did it. In total, creating the simulation took just over two hours.

It seems to be here.

Now, this just needs a little more work. This is still very early days and we just did this for a laugh and to see what we could get.

But what we've discovered over the past few months is that this approach we've pretty much standardized is incredibly powerful.

We ourselves are amazed at what we can actually get out of the simulation.

I frequently encounter surprising behavior that I hadn't expected before.

There's a lot you can do with it now.

As I said earlier, the first thing you do is a virtual stuntman.

Several studios are currently using the software to produce virtual stuntmen, and indeed will soon be hitting the screens in several major productions.

The second is video games.

Using this technology will dramatically change the look and feel of video games.

For the first time, we have actors with real bodies that feel truly interactive and actually respond.

I think it will be incredibly exciting.

Perhaps it will start with sports games becoming more interactive.

But I'm especially excited to use this technology in the online world that Tom Melcher has shown us.

I think the degree of interactivity you get is completely different than what you're getting now.

The third thing that we are looking at and are very interested in is simulation.

We have been approached by several simulation companies, but one of the projects we are particularly excited about, starting next month, is using our technology, especially walking technology, to help surgeons treating children with cerebral palsy and help predict the outcome of surgery for these children.

As you know, it is very difficult to predict the outcome of surgery when trying to correct gait.

I think the classic quote is that it's unpredictable at best and what people are thinking now is the result.

Now, what we want to do with the software is make the tools available to the surgeon.

By simulating the gait of a particular child, the surgeon can work on the simulation and try different ways to improve the gait before embarking on the actual surgery.

This is one of the projects we're most excited about, and it's due to start next month.

Finally, this is just the beginning.

Only a few actions can be performed at this time.

AI is not good enough to simulate a full human body.

Physically yes, but athletic ability isn't everything.

And I think that we are there only when something like ballet dance is created.

We can't do that at the moment, but I'm sure at some stage we'll be able to.

Actually, there is one unintentional dancer that I will show you at the end.

This was basically an evolved or half-evolved AI contour that was generated to create balance.

So when you kick the guy, the guy is supposed to counterbalance.

That's what we thought was going to happen.

But this is what eventually came out of it.

(music) Oddly enough, this one has no head. I don't quite understand why.

So this is not what we actually put in.

He has just started to create the dance himself.

In fact, I have to say that he is a better dancer than I am.

And after a while, I think he finally reaches a climax.

And I think so - that would be fine.

(Laughter.) I mean, it all happened automatically. we didn't put it in there.

It's basically just a simulation that creates itself.

So -- (Applause) Thank you.

We're not quite John Travolta yet, but we're working on that too, so thank you for your time.

thank you.

(Applause) CA: Incredible. It was truly incredible.

TR: Thank you.

I would like to say a few words about what I want to write.

And I like to immerse myself in my topic.

I just like to jump in there and be kind of like a human guinea pig.

And I see my life as a series of experiments.

So, I work for Esquire magazine and wrote an article a few years ago called "My Outsourcing Life". There I hired a team of people who have spent my life in Bangalore, India.

So they replied to my email.

They answered my call.

They argued with my wife and read my son bedtime stories for me.

It was the best month of my life because I just sat there reading and watching movies.

It was a great experience.

Recently, I wrote an article for Esquire about radical honesty.

This is a movement started by psychologists in Virginia. He says never lie, except when playing poker and golf. The only exception.

And more than that, whatever is in your head should come out of your mouth.

So I decided to give it a try for a month.

This was the worst month of my life.

(laughs) I would not recommend this at all.

To give you a sense of the experience, the article was titled "I Think You're Fat".

(Laughs) So it was difficult.

My Latest Book -- My previous book was called "The Know-It-All." It was a year of reading Encyclopaedia Britannica from cover to cover trying to learn about everything in the world, or more precisely, from the arc to the zwiec, a form of East Asian music. Well, I don't want to spoil the ending.

(Laughter) It's a very exciting twist ending, like an O. Henry novel, so I'm not going to spoil it.

But I love this experiment. Because it was an experiment on how much information the human brain can absorb.

However, listening to Kevin Kelly doesn't have to remind you of anything.

Try looking it up on Google.

So I wasted my time there.

I love these experiments, but I think the most profound and life-changing experiment I've ever done was a recent experiment called The Year of Biblical Living, where I spent a year following all the rules of the Bible.

And I did this for two reasons.

First, I grew up completely ignorant of religion.

As I say in my book, I am Jewish in the same way Olive Garden is Italian.

(Laughter) So not really.

But I became more and more interested in religion.

I think it's one of the defining issues, or major issues, of our time.

And i have a son. I want to know what I should teach him.

So I made up my mind to think first and then live according to the Bible.

The second reason I'm embarking on this is because I'm concerned about the rise of fundamentalism, religious fundamentalism, and those who say they take the Bible literally (according to one poll, 45-50% of all Americans).

So I wondered what would happen if we took the Bible literally.

I accepted the logical conclusion and accepted everything in the Bible literally.

The first thing I did was get a stack of Bibles.

I had a Christian Bible.

I had a Jewish Bible.

A friend of mine sent me something called the Hip-Hop Bible, where Psalm 23 was translated as "The Lord is all" instead of "The Lord is my shepherd" as I knew it.

Then I went down and read some versions and wrote down all the laws I found.

It was a very long list, with over 700 rules.

And they range from the famous ones I've heard. The Ten Commandments, love your neighbor, be fruitful, multiply.

So I wanted to follow them.

And in fact I take my projects very seriously. Because I had twins this year.

But I also wanted to obey the hundreds of arcane and obscure laws in the Bible.

There is a law in Leviticus that says, "Don't shave the corners of your beard."

I didn't know where my horn was, so I decided to grow the whole. This is what it ended up being.

As you can imagine, I spent a lot of time at airport security.

(Laughter) My wife hasn't kissed me in the last two months.

So there were certainly challenges.

The Bible says you shouldn't wear blended clothes, so I thought, 'This is weird, but let's try.'

You won't know until you try.

I got rid of all my polycotton t-shirts.

The Bible says that if two men fight and the wife of one of them grabs the testicles of the other man, that hand will be cut off.

So I wanted to follow the rules.

(Laughter.) In that case, I defaulted to not getting into a fight with a man my wife was standing close to and who seemed to have a strong grip.

(Laughter) So -- oh, here's another shot of my beard.

I can say that it has been an amazing year as it has been truly life changing and incredibly challenging.

And there were two kinds of laws that were particularly difficult.

The first was to avoid the little sins we all commit every day.

You can go a year without killing, but you can also have a year without gossiping, greed and lying. I live in New York and work as a journalist. So I had to do this 75% or 80% of the day.

But it was very interesting because I was able to move forward a little because my actions were incredibly able to change my mind.

This was one of the big lessons of the year. It's that I almost pretended to be a better person, and a little better.

So I've always thought, 'When you change your mind, you change your behavior', but a lot of the time it's the other way around.

Change your actions, change your thoughts.

So, if you want to be more compassionate, visit sick people in the hospital and you will be more compassionate.

When you donate money to a cause, you become emotionally involved in that cause.

So what I was experiencing was exactly cognitive psychology, or cognitive dissonance.

In fact, the Bible talks about cognitive psychology, a very primitive cognitive psychology.

The saying goes that laughter makes you happier, and as we know this is actually true.

The second hard rule to follow is one that can get you into a bit of trouble in 21st century America.

And perhaps the most obvious example of this is the stoning of adulterers.

(Laughter.) But this is an important part of the Bible, so I thought I should bring it up.

So I was able to stone one adulterer.

It happened - I was in the park and I was wearing biblical clothes, i.e. sandals and a kind of white robe, because again the outside influences the inside.

I wanted to know how clothing biblically affects my mind.

Then the man came up to me and said, "Why are you dressed like that?"

And when I explained my project, he said, "I am an adulterer. Are you going to throw stones at me?"

And I said, "That would be great!"

(Laughter.) And indeed, I took out of my pocket a few stones that I had been carrying around for weeks in anticipation of this exchange—and they were, you know, pebbles—and he grabbed them out of my hand.

As you know, he was actually an elderly man in his mid-seventies.

However, he is still an adulterer and is still quite angry.

He grabbed it out of my hand and threw it in my face. And I felt I could retaliate eye for eye and throw it back at him.

This was my stoning experience, and it allowed me to talk more seriously about these big issues.

How can the Bible be so barbaric in some places and incredibly wise in others?

How Should We View the Bible?

Should it be viewed as something like a Scalia version of the Bible as originally intended?

How was the Bible written?

And really, since this is a tech collective, I'm talking in this book about how reading the Bible actually reminds me of Wikipedia. Because Wikipedia has all these authors and editors over the hundreds of years.

And it's evolved in a way.

This is not a book written by falling from a height.

So I just wanted to finish by sharing some of the big lessons I've learned over the past year.

The first is that the Bible should not be taken literally.

This became very clear early on.

For if you do, you will act like a madman and throw stones at the adulterer. Alternatively, here's another example.

Well, that's another. I spent some time with Shepherds.

(Laughter) It's a very relaxing profession. i recommend it.

But this is so. The Bible tells us not to touch a woman at certain times of the month, and even more so, not to sit in a seat where a menstruating woman used to sit.

And my wife thought this was so uncomfortable that I sat in every seat in the apartment and had to spend most of the year standing until I bought my own seat and carried it with me.

That's how I met the creationists.

I went to the Creationist Museum.

And they are the ultimate literalists.

And it was fascinating because they weren't stupid people at all.

I bet their IQ is exactly the same as your average evolutionist.

It's just that their faith in this literal interpretation of the Bible is so strong that they distort all the data to fit their model.

And they go through these amazing brain teasers to achieve this.

That said, I think museums are great.

they really did a great job.

If you've ever been to Kentucky, you can watch the Flood movie. Sprinklers are installed on the ceiling and splash in the flood scene.

So whatever you think about creationism - and I think it's crazy - they did a great job.

(Laughter) Another lesson is that we must be grateful.

And this was a big lesson. Because I was praying and giving thanksgiving, which is strange for an agnostic.

But every day, I kept saying thank you always, and my perspective started to change.

And instead of focusing on the three or four things that didn't work, I started noticing the hundreds of small things that I didn't realize and took for granted that worked every day.

So this is actually the key to happiness for me. I remember when I came here the car didn't roll over and I didn't trip on the stairs.

That's amazing.

Third, you should be respectful.

This was unexpected because I started the year as an agnostic and by the end of the year I was what my friends called a devout agnostic. i love it

And I'm trying to start it as an exercise.

So, if anyone wants to get involved, the basic idea is that whether there is a god or not, there is something important and beautiful about the concept of holiness, and our rituals can be sacred too.

The Sabbath can be sacred.

I'm a workaholic, so having the Sabbath was one of the great things about my year. So this one day without work really changed my life.

That is, this idea of ​​holiness, whether God exists or not.

Don't be stereotyped.

This happened because I spent a lot of time with different religious communities across America. Because I wanted it to be more than just my journey.

I wanted to talk about American religion.

There I spent time with Evangelical Christians, Hasidic Jews and Amish.

I am very proud because I think I am the only Jehovah's Witness in America to give a Bible talk.

(Laughter) Three and a half hours later, he looked at his watch and was like, "I have to go."

(laughs) Oh, thank you.

thank you. bless me, bless me

But it was interesting. Because I had some very preconceived notions about Evangelical Christianity, for example. And I've found that it's such a broad and diverse exercise that it's hard to generalize about it.

There is a group I met called "Red Letter Christians" and they focus on the red letters in the Bible, the words spoken by Jesus.

That's how they printed it in the old Bibles.

And their contention is that Jesus never spoke of homosexuality.

There is a pamphlet that says, "This is what Jesus said about homosexuality."

So they say that Jesus often spoke of helping the outcasts, helping the poor.

So this was very exciting for me.

I recommend Jim Wallis and Tony Campolo.

I disagree with a lot of what they say, but they are very inspirational leaders.

Also, do not ignore the unreasonable.

This was very unexpected. Because I grew up with a scientific worldview, I was shocked to find that so much of my life was ruled by irrational forces.

And the problem is that even if they aren't harmful, they shouldn't be completely ignored.

I learned that, and I was separating wool from linen and doing all the biblical rituals, and I asked religious people, "Why does the Bible tell us to do this? Why does God care?"

And they said, "I don't know, it's just a ritual that gives us meaning."

And I say: "But it's funny."

And they said, "So what about you?

Blow out the candles on the birthday cake.

If a man from Mars came and saw a man blowing fire on a cake and a man without mixed clothes, would the Martian say, 'Well, that man makes sense, but that man is crazy'? ’ So no, I think the ritual is inherently irrational.

The key, therefore, is to choose the right ritual that is not harmful, but the ritual itself should not be neglected.

And finally I learned that you are the one to choose.

And this is what I learned because I tried to follow all of the Bible.

And I failed miserably.

Because you can't.

You have to choose and choose. And anyone who follows the Bible will have a choice.

The key is to pick and choose the right parts.

There is the term cafeteria religion, but fundamentalists use it in a slanderous sense, saying, "Oh, it's just cafeteria religion.

you are just choosing. ”

But my point is, "What's wrong with the diner?"

I had a delicious meal in the cafeteria.

I've had meals that made me want to eat dry.

This means choosing parts of the Bible about homosexuality, tolerance and love of neighbors, as opposed to parts of the Bible that say homosexuality is a sin, intolerance or violence.

So if we are to find any meaning in this book, we have to take it seriously and wrestle with it.

And I thought I'd finish with just a few more.

There is me reading the bible.

So I called a taxi.

(Laughter) Seriously, it worked. Yes it was actually a rented sheep so I had to return it in the morning but it was fine for a day.

Anyway, thank you very much for letting me talk to you.

i really love the colors.

You see it everywhere and in everything.

My family makes fun of me because I like to use colors with elusive names, like celadon.

(laughs) Ecru ...

Carmine.

Now, if you're unaware, I'm black, thank you -- (Laughter) And like me, growing up in an isolated city like Chicago has been conditioned to believe that color and race are inseparable.

There is hardly a day that someone doesn't remember your color.

Racism is a bright shade in my city.

Now, while we can all agree that race is a socially constructed phenomenon, it is often difficult to make sense of it in our everyday lives.

Its prevalence is everywhere.

The area I grew up in was filled with a certain kind of culturally coded beauty.

The main commercial aisles were lined with brightly painted storefronts vying for money from black consumers.

Visual mashups of street corner stores, beauty stores, currency exchanges, and more, I actually inadvertently learned the basic principles of what would later be called color theory.

I remember being quite intimidated by this term, color theory, in college.

Grumpy white old men with papers and vague jargon.

I have mastered each color palette and the principles associated with it.

Color theory essentially boils down to the art and science of using color to form structures and spaces.

It's not that complicated.

This was my bible in college.

Joseph Albers put forward a theory about the color red that has always stuck with me.

He argues that the iconic color of a Coke can is red, and while we can all agree that it is indeed red, the types of red we imagine are as diverse as the number of people in this room.

So imagine.

The colors that we have all been taught since kindergarten—red, yellow, and blue—are not primary colors, they are not irreducible, they are not objective, they are highly subjective.

what?

(Laughter) Mr. Albers called this "relationship."

Relating.

So, for the first time, I was able to see my neighborhood as a relational context.

Each color is influenced by neighboring colors.

Each is influenced by their neighbors.

In the 1930s, the U.S. government established the Federal Housing Administration and created a series of maps that used a color-coding system to determine which neighborhoods should and should not receive federal mortgages.

Their residential security map had a unique color palette, and in fact had more impact than all the color palettes I studied in college combined.

Banks don't lend to neighbors like me.

That's me on the D86.

Their cartographers were literally coloring these maps and labeling the colors as "dangerous."

Red was the new black, and black neighborhoods were colored.

This problem continues, and was recently seen in the foreclosure crisis.

In Chicago, this is best symbolized by the Xs painted on the facades of vacant homes on the South and West Sides.

In reality, someone else's color palette was determining my physical and artistic existence.

Ridiculous.

I decided to create my own color palette, talk to people who live where I live, and change the way color is defined for us.

It was a palette I already knew and didn't have to search far or look for in papers.

What kind of painter will emerge from this reality?

What are your urban colors?

What color is the ghetto?

What color are privileges?

What colors are gang-related colors?

What color is gentrification?

What color is Freddie Gray?

What color is Mike Brown?

Finally, I found a way to connect my racist understanding of color with my theoretical understanding of color.

And I gave birth to my third baby, Color(ed) Theory.

(Laughter) "Color(ed) Theory" was a two-year art project where I applied my own color palette to my neighborhood in my own way.

Now, if I were walking down 79th Street right now and asked 50 people for the name of a little green cyan, they would give me a sideways glance.

(Laughs) But when I said, "What color is ultrascene?" -- Oh, I got a smile on my face, and then the story about my grandmother's bathroom continued.

I mean, who has an ultra scene and needs turquoise?

Who needs Teal when they have Ultra Sheen?

No one needs ultramarine...

(audience) Ultra scene.

(Laughter) That's exactly how I came up with the palette.

I asked friends, family, and people with similar backgrounds to share their stories and memories.

The stories weren't always happy, but the color always resonated more than the product itself.

I took those theories to the streets.

"Ultra Scene".

"Pink Oil Moisturizer".

In Chicago, Harold's Chicken Shack.

(Laughter) "Exchange + safe passage."

"Flamin' Red Hot"

"Loose rectangle"...

And "Crown Royal Bag".

I have painted soon-to-be-demolished houses in a much-devilified area called Inglewood.

We collected as much paint as we could fit in our trunk, called in our most trusted art buddies, and with our wonderful husband by our side, painted every inch of the exterior in black and white.

I wanted to understand scale in a way never before possible.

I wanted to apply the color to the largest canvas imaginable...

So I drove obsessively up and down the streets I'd known since childhood, cross-referencing these houses with the city's data portal to make sure they were tagged for demolition. In other words, it was irretrievable and left dead.

I really wanted to understand what it meant to let colors rule, trust your instincts, stop asking for permission.

No meetings with city officials, no community buy-in. Just let the colors dictate my desire to paint different pictures of the South Side.

These houses are built in stark contrast to fully built houses.

Paint to stand out like your Monopoly creations in these environments.

And we continued until early Sunday morning when we ran out of paint, or until someone complained.

"Hey, did you draw that?"

One day the driver asked me while I was taking this photo.

I nervously said, "Yes?"

his face changed.

"Oh, I thought Prince was coming."

(Laughter) He grew up on this block, so when he drove past and saw one of the last remaining homes mysteriously change color overnight, I can imagine it was a secret beacon from Prince, apparently not involving a Crown Royale bag.

(Laughs) And that block was pretty much erased, but the idea was that Prince could show up in an unexpected place and give a free concert in a field that the music industry and society decided was no longer worth it.

For him, the idea that the image of this house alone was enough to bring Prince there meant it was possible.

In that moment, that little plot of Eggleston became synonymous with royalty.

And Eric Bennett's neighborhood regained its value, albeit briefly.

So, even though we were strangers, we exchanged stories about when we were kids on the South Side, where we went to high school, where we grew up, and about Mrs. Nana's candy store.

And when I made it clear that the project had nothing to do with Prince in fact, Eric nodded in agreement and said as we parted ways and drove off, "But it might still come!"

(Laughter) He took full ownership of this project and wasn't going to let it go, not even to me, the author.

For me it was a success.

I would like to say that this project has changed the region and all the indicators we count on, resulting in more jobs, less crime, and no more alcoholism, but it's more gray than that.

"Color(ed) Theory" sparked a new debate about the value of blackness.

"Color(ed) Theory" unmistakably visualized the uncomfortable questions we have to ask ourselves about why organizations and governments do the things they do.

They ask me and my neighbors equally difficult questions about our values ​​and what the path to collective agency should be.

Color has given me freedom without waiting for permission, affirmation, or inclusion.

Color was now something I had control over.

A neighbor and one of the paint workers best put it: "This hasn't changed the neighborhood. It's changed people's perceptions of what's possible in their neighborhood, more or less."

A passerby asked me, "Why paint that house when you know the city will come and tear it down?"

I didn't know anything at the time, I just knew that something had to be done.

I am willing to give anything for a deeper understanding of color as a medium and an inevitable way of identifying oneself in society.

If there is any hope of making the world a better place, then I need to love and utilize both of these ways of being understood, and that is where the value and color resides.

thank you.

(applause and cheers)

Chris Anderson: Christiane, nice to have you here.

You have this wonderful perspective and it's safe to say that the last few years have seen some amazing developments.

What are you most worried about?

Christiane Amanpour: Well, just listening to the previous speakers, you can frame what they were saying. For example, threats to climate change, cities, the environment and our way of life.

It basically also leads to being able to get to the truth of what we are talking about in order to understand the truth and actually be able to solve the problem.

So if 99.9 percent of climate science is empirical, scientific evidence, and it's competing almost equally with a few naysayers, it's not true. It's the epitome of fake news.

And for me, the last few years, certainly last year, have brought the concept of fake news to a truly alarming shape, not just a slogan to be thrown.

Because the inability to distinguish between true and fake news makes it very difficult to solve some of the big problems we face.

CA: Well, you have long been concerned with what is balance, what is truth, what is fairness.

Twenty-five years ago, you were on the front lines reporting on the Balkan wars.

At the time, you famously shouted about human rights violations and said, "Look, there are some situations where you can't be neutral, because if you're neutral, you're an accomplice."

So do you feel that today's journalists aren't heeding advice on balance?

CA: Well, I think objectivity is the golden rule for journalists.

But I think sometimes we don't understand the meaning of objectivity.

And I actually learned this very early in my career during the Balkan Wars.

I was young then.

About 25 years ago.

And what we have faced is massive violations, not just of human rights, but of ethnic cleansing and genocide, which have been judged by the best war crimes courts in the world.

So we know what we saw.

Attempting to tell the world what we see has brought accusations of being biased, siding with one side, not seeing the whole, and trying to tell just one story.

I was specifically and personally accused of, for example, siding with the citizens of Sarajevo, that is, 'siding with Muslims'. They were a minority attacked by Serbian Christians in the region.

And it worried me.

I was afraid that I was being accused of this.

I thought maybe I was wrong or forgot what objectivity is.

But then I started to understand that what people really want is not to do anything, not to intervene, to change the situation, to find a solution.

So their fake news at the time, their lie at the time – including our government, a democratically elected government with human rights values ​​and principles – their lie was that all sides are equally guilty, this is centuries of ethnic hatred, while we know it's not true and one decided to kill, genocide and ethnic cleansing the other.

So I understood objectivity to mean listening to and speaking to all sides equally, but not treating them all equally and not creating forced moral or de facto equivalence.

And when faced with a crisis of grave violations of international and humanitarian law, if you don't understand what you're seeing, if you don't understand the truth, if you're trapped in the fake news paradigm, then you're an accomplice.

And I refuse to be an accomplice to genocide.

(Applause.) CH: So, in the face of this propaganda warfare, you've had the courage to take a stand at the time.

But today, it seems that news is being faked in a whole new way.

How would you characterize it?

CA: Well, look -- I'm really worried.

And everywhere we look we are devastated by it.

Clearly, when the leader of the free world and the most powerful person in the whole world, namely the President of the United States, this country is economically, militarily, politically in every way the most important and most powerful nation in the whole world, and clearly seeks to spread its values ​​and power throughout the world.

So for us journalists who only want the truth, that is our mission. We travel the globe searching for the truth, traveling to different parts of the world to be the eyes and ears of those who are unaware of what is happening in matters of vital importance to the health and safety of all.

So when a major world leader accuses you of fake news, it has an exponential ripple effect.

And what it does is it starts chipping not only at our credibility, but at people's minds as well. Looking at us, they're probably thinking, 'If the President of the United States says so, there might be some truth there.

CH: The president was always critical of the media -- CA: I don't mean it that way.

CH: So to what extent -- (laughter) (applause) CH: I mean, a few years ago, someone might have looked at the avalanche of information pouring in through Twitter, Facebook, etc. and said, "Look, our democracy is healthier than it's ever been.

We have more news than ever before.

Of course the president will say what he says, but everyone else can say what they say.

what don't you like? Why the extra risk? ”

CA: So I wish it was true.

I hope the proliferation of platforms from which we obtain information means a proliferation of truth and transparency, depth and accuracy.

But I think the opposite happened.

As you know, I'm a bit of a Luddite, I confess.

Even when we started talking about the information superhighway, which was long before social media, Twitter, and everything else, I was actually very afraid that it would get people stuck in certain lanes and tunnels, focusing only on their areas of interest instead of looking at the big picture.

And I'm afraid to say that whatever the "-ithms" that lure us into all these particular channels of information, like algorithms or logarithms, that seems to be happening now.

That is, people write about this phenomenon.

People say, yes, the Internet came along, and its promise was to explode access to more democracy, more information, less prejudice, more diverse information.

And in fact, the opposite is happening.

And it's incredibly dangerous for me.

And also that you are the president of this country and you say something, you also give the leaders of other undemocratic nations a cover to insult us even worse and really beat us and their own journalists with this fake news stick.

CH: What happened, partly just as an unintended consequence, was that the traditional media you worked in had a curatorial, intermediary role where certain norms were adhered to and certain articles were rejected because they were unreliable, but now the criteria for publication and amplification are simply interest, attention, excitement, clicks, "Did you click?"

"Send me there!"

Is that part of the cause of the problem?

CA: I think this is a big problem. We saw this in the 2016 election as well. The idea of ​​'clickbait' was very attractive and very attractive there. So it's not like all these fake news sites and fake news items just happened to pop up at random. In some parts of Eastern Europe, entire industries are involved in creating fake news. Wherever it is planted in physical and cyberspace, you know.

Therefore, I believe that our technology's ability to multiply this matter at the speed of sound or light is also unlike anything we've experienced before.

And never before have we been faced with such a mass of information that has not been curated by people who are dedicated to truth-abiding, fact-checking, and upholding codes of conduct and professional ethics.

CH: A lot of people here may know people who work at Facebook, Twitter, Google, etc.

They all seem like great people with good intentions - let's assume.

If you could talk to the leaders of those companies, what would you say?

CA: Well, you know, I'm sure they're incredibly well-intentioned. We have certainly developed an incredible and revolutionary system to connect everyone with something called Facebook.

And they built themselves a large economy and an amazing amount of income.

I just said, "You know guys, let's get up in the morning and smell the coffee and see what's going on with us now."

Mark Zuckerberg wants to create a global community.

What I want to know is what that global community will be like.

I would like to know where the code of conduct actually is.

Mark Zuckerberg said it's crazy to think that the Russians or anyone else could be messing with or tinkering with this road. I don't blame him, but he probably believed this.

What have we learned in the last few weeks?

Actually, there is a big problem in that regard, and now they need to investigate and figure it out.

Yes, they are trying to do what they can now to prevent the rise of fake news, but you know, it's been done pretty unrestrictedly for a long time.

So I would say, you guys are good with technology. Consider another algorithm.

can't you?

CH: Algorithms that include journalism research -- CA: I'm not sure how they do it, but somehow -- they filter out the crap.

(Laughter.) And not just unintentionally, but a deliberate lie planted by people who have been doing this as a matter of war for decades.

Soviet Union, Russia – they are masters of war by other means, hybrid warfare.

And this is what they decided to do.

It worked in America, it didn't work in France, it didn't work in Germany.

During the French elections, they have tried to intervene, but the current French president, Emmanuel Macron, has taken a very tough stance, and Angela Merkel has faced them head-on as well.

CH: There are some hopeful parts in this.

what the world learns.

We are deceived once, we may be deceived again, and we may not be deceived the third time.

TRUE?

CA: I mean, let's hope.

But in this regard, a lot of it is also about technology, and I think technology needs to be given some kind of moral compass.

I know I'm talking nonsense, but you know what I mean.

CH: We need a crap-filtering algorithm with a moral compass -- CA: See.

Chi: I think that's good.

CA: No, "moral technology."

We all have a moral compass, a moral technology.

CH: I think it's a great challenge. CA: You know what I mean.

CH: Tell us a little bit about leadership.

You have had the opportunity to speak with so many people around the world.

I know that some of us, speaking for myself, have this disappointment of "where are the leaders?", though I don't know if others feel that way.

Many of us are disappointed. Dear Aung San Suu Kyi, what happened recently is like 'No! Another person chewing garbage'.

You know, it's heartbreaking.

(Laughter.) Who have you met that impressed or inspired you?

CA: Well, you're talking about the world being in crisis, and you're right about it, and we're all on the brink of a nervous breakdown, as we're living in this crisis all our lives.

So now I am very stressed.

And you're right. There is a real leadership void that is perceived. That's not what I'm saying, I'm asking all this. No matter who I am talking to, I ask about leadership.

I was speaking today with the outgoing President of Liberia [Ellen Johnson Sirleaf] and he -- (applause) in three weeks will be one of the very rare heads of state in Africa who actually abide by the Constitution and relinquish power at the end of their term.

She said she wanted to do it as a lesson.

But when I asked her about her leadership, and when she gave me a few names in rapid succession, I gave her the name of France's new president, Emmanuel Macron.

And she said - I said, 'So what do you think when I say his name?

And she said, "I'm ready to be the leader that fills the current leadership void."

I thought it was really interesting.

I happened to have an interview with him yesterday.

I am very proud to have had my first international interview with him. good. It was yesterday.

And I was really impressed.

I don't know if I can say this in public, but I was really moved.

(Laughter.) And maybe because it was his first interview, but I asked, and you know what?

he answered them!

(Laughter) (Applause) No spins, no wiggles, no five minutes to get back to the point.

I didn't have to keep going out of my way because I want people to answer their questions, but it's made me pretty famous for doing so.

And he answered me, which was very interesting.

And he said -- CH: Tell me what he said.

CA: No, no, please.

CH: You are the interrupter, I am the listener.

CA: No, no, please.

Chi: What did he say?

CA: Okay. You spoke here today about nationalism and tribalism.

i asked him “How did you have the courage to face the prevailing winds of anti-globalization, nationalism and populism when you could understand what happened with Brexit, what happened in the United States, and what happened with the many European elections in early 2017?”

“For me, nationalism means war.

We have seen it before, we have experienced it before on my continent, and we know it very well. ”

Therefore, he did not intend to adopt some kind of least common multiple adopted in other political elections, just for political convenience.

And he confronted Marine Le Pen, a very dangerous woman.

CH: Last question, Christiane.

TED is about ideas worth spreading.

If you could plant one idea in everyone's minds here, what would it be?

CA: Be really careful where you get your information from. Take real responsibility for what you read, hear, and see. Make sure you go to trusted brands for key information. Regardless of whether you are consuming broad and eclectic information, be sure to stick to the brand names you know. Because in this world, right now, at this moment, our crises, challenges and problems are so serious that unless we all recognize the truth and engage as global citizens who understand science, empirical evidence and facts, we will simply wander towards potential catastrophe.

So I tell the truth, and then I go back to Emmanuel Macron and talk about love.

You can say that love is not enough.

And I asked him to teach me about love.

I said, ``You know, your marriage is a worldwide concern.''

(laughs) “Can you tell me about love?”

what does that mean to you? ”

I never asked a president or elected leader about love.

I thought I'd give it a try.

And he said - you know, he actually answered that.

And he said, "I love my wife. She's a part of me. We've been together for decades."

But this is the really important point, and it really stuck with me.

"It's very important to me to have someone at home who will tell the truth," he said.

Look, I took it home. It's all true.

(laughs) CH: Okay, go ahead. truth and love. An idea worth spreading.

Thank you very much, Christiane Amanpour. That was great.

(Applause) CA: Thank you. Chi: It was really nice.

(Applause) CA: Thank you.

Naughty Loki writhed in disgust at Thor's iron grip.

The night before, while the rest of the gods were asleep, he stalked Thor's wife Shifu and cut off her beautiful hair.

It seemed like a funny prank at the time, but now Thor was on the verge of breaking his whole bone.

Loki had to think of some way to correct his deed.

But who could replace Sif's matchless hair that's as golden as a field of summer wheat?

Dwarves! – Their legendary blacksmith could craft anything.

So Loki hastened to their realm deep in the mountains of the Earth.

Even before his arrival, cunning Loki had already planned how to force the dwarves to do his bidding.

He decides the best bet is to pit the two families against each other.

He first visited Ivaldi's outstanding sons.

He said that their rival brothers Brock and Eitori claim themselves to be the best craftsmen in the world and are determined to prove it in the competition.

The rule was that each family had to make three gifts to the gods, including a golden hair for the Ivaldi family.

Loki then visits Brock and Eitri and says the same thing, this time claiming that Ivaldi's sons issued the challenge.

However, Brock and Eitri were not so easily fooled and only agreed to participate if Loki would strangle himself.

Literally - if Brock and Eitri win, Loki will give them his head.

Loki had no choice but to agree, and to save himself he had to find a way to ensure that Ivaldi's sons would win.

Both dwarves set to work.

Eitori appointed a bellows attendant on the block and told him not to stop for any reason or the treasure would be ruined.

Immediately, a strange black fly flew into the room.

A fly stung Mr. Brock's hand as he placed the pig skin in the forge, but he didn't flinch.

Then, while Eitori was processing gold nuggets, a fly bit into the block's neck.

The dwarf continued.

Finally, Eitori placed the piece of iron in the furnace.

This time the fly landed on Mr. Brock's eyelid and bit as hard as it could.

And for a split second, Brock's hand left the bellows.

That's all you need. Their last treasure didn't stay in the fire long enough.

Loki reappeared in his normal form, overjoyed at their failure, and accompanied the dwarves to offer their treasure to the gods.

First, Loki presented treasures from Ivaldi's sons.

Their golden hair wrapped around Sif's head and continued to grow, making her shine even brighter than before.

Secondly, for his father Odin, a great spear that pierces everything.

And finally, the little cloth unfolded into a mighty ship built for Frey, the god of fertility.

Brock then presented the treasure he and his brother had made.

They trained for Frey a golden-haired boar that would pull Frey's chariot into the air faster than any horse.

For Odin, a golden arm ring that makes eight more identical rings every nine nights.

And Thor has a hammer called Mjolnir.

The hilt was too short and Loki laughed at the obvious flaw.

But then Brock revealed the ability.

Mjolnir never shatters, never misses its target, and always returns to Thor when thrown.

Despite the short stem, the gods agreed that this was the best gift.

Remembering what was in danger, Loki tried to escape, but Thor got to him first.

But before the dwarves get their due, wise Loki points out that they have won rights to his head but not his neck, so they have no right to cut it off.

All reluctantly admitted the truth, but Brock had the last laugh.

He took his brother's awl, stuck it into Loki's lips, and sewed his mouth shut so the Trickster God could no longer spread his malicious deception.

But the irony was no less than the gods.

Because it was Loki's deception that brought these great treasures to them and gave them the hammer that Thor is still known to this day.

You have discovered a door to another realm. And now you and your brother are beginning to explore the wonderful world of Paradoxica.

Fantastic paradoxical creatures crawl, run and fly around you.

And you can see the trolls.

It catches all living things with its huge net.

You bravely come forward and demand they go.

The troll laughs.

It reads, "If you're such a fan of Paradox, I have an offer for you."

If you tell the truth, I will set all these creatures free. ”

You tried to say, "You are a troll," but before you can say so, the troll catches your brother.

"If you lie to me, I will release my brother," he continued.

A statement can only be one sentence.

And you see, I hate paradoxes more than anything else.

If you try to cover me up with paradoxical things like 'this statement is wrong', I will eat your brother and the living creatures. ”

What statement, true or false, can you say to get the troll to free your brother and his paradoxical creature?

[Pause the video now if you want to figure it out yourself!] Answers: 3 Answers: 2 Answers: 1 This seems like an impossible situation, but incredibly, it is possible to make a statement that will force a troll to release all its captives.

This is an example of coercive logic invented by the great logician and creator of puzzles, Raymond Smullyan.

The trick Smallyan came up with is to make statements that are true or false depending on what you want the trolls to do.

Your statement still needs to be crafted carefully.

For example, if you say, "You are going to free the creatures and my brothers," the troll might reply, "That's a lie... I'm just going to free your brothers." Similarly, if you say, "You will release the paradox," the troll may say, "You are right," and release the paradox.

But look what happens when I say, "You will set my brother free." This statement cannot be false. Because if you lie, the trolls will have to release your brother according to their own rules.

Then the statement is paradoxically both true and false.

But trolls hate paradoxes and never willingly create them.

So his only option is for the statement to be true.

If "you will free my brother" is true, the troll must free your brother.

And now that you've spoken the truth, the trolls must also release the creatures according to their own rules.

By wielding just five words like a logical scalpel, you can make a troll free all its captives.

As the trolls stamp their feet in anger, Paradox cheers you on your freedom and promises to take you to the treasure at the top of the stairs.

if you can get there.

It's 4am and you've been up for 40 hours to unlock a puzzle that includes a video of a chicken and roller-skating beaver dancing off.

(Laughter) The confusion and joy you're experiencing is typical of MIT Mystery Hunt moments. Basically, it's like the Olympics meets Burning Man for certain types of geeks.

(Laughter) Today, I'm going to take you into this strange, intellectually masochistic, and incredibly fun world.

But before that, I need to explain what I mean by "puzzle".

PuzzleHunt-style puzzles are data sets.

It can be a grid of letters, sudoku, video, audio, or anything that contains hidden information that ultimately resolves to a word or phrase answer.

So, for example, this is a puzzle called "Masterpiece".

It consists of 10 images of Lego people looking at piles of Lego.

To save you time, I'll explain what's going on here.

Each pile of Lego is a work of art dismantled in the style of a famous artist.

So does anyone know the artist on the left?

A lot of red was used.

I heard "Roscoe".

Second?

(audience) Mondrian.

Alex Rosenthal: Oh, well done.

And the third? This is the hardest -- yes, Klimt, I've heard of it.

Well, color is the biggest clue.

That is, the puzzle contains various clues that indicate that it is the artist rather than the specific work of art that is important here.

And all you have to do is look at the ones you haven't used yet: the number of Lego people in each picture.

And you can also count them and count the artist's surname with the same number of letters.

There are three people in front of Rothko on the left. That is, it takes the third letter, which is T.

Take the first letter M because there is only one before Mondrian.

There are 3 more letters before Klimt, so take the 3rd letter 'I'.

If you do this for all 10 original artists and put them in order, you get the answer "illuminate".

(Laughter) Puzzles like this are meant to convey ideas.

But what I'm trying to be as clear as I can right now is that puzzles need to navigate the line between abstraction and clarity.

They need to be obtuse enough to get the job done, but elegant enough to get you to that 'aha' moment when everything clicks into place.

Puzzle solvers are obsessed with this "aha" moment. It's like a moment of euphoria and a moment of pure clarity.

And there's also a deeper sense of fulfillment at work here: humans have an innate problem-solving ability.

That's why we love crosswords, escape games, and finding ways to explore the bottom of the ocean.

Solving very difficult puzzles also opens our minds in new directions and helps us approach problems from different perspectives.

These puzzles have different puzzle hunts in different shapes and sizes.

There's a one-hour one designed for beginners, a 24-hour road rally, and the MIT Mystery Hunt, a puzzle hunt within a puzzle hunt.

It's an annual event that draws about 2,000 people to the MIT campus to solve puzzles in teams of one to over 100 people.

With 60 people on my team, including a national crossword puzzle tournament champion, a particle physicist, a composer, a real-life deep-sea explorer, and myself, it feels like Mr. Bean going to Bletchley Park.

(Laughter) This is actually an apt comparison. Because a year involved a puzzle where you had to build a working Enigma machine out of pieces of cardboard.

(laughs) Each mystery hunt has a theme.

In the past there were "The Matrix" and "Alice in Wonderland".

Many of the themes are based on pop culture and literature.

And the goal is to find a coin hidden somewhere on the MIT campus.

And to get there, you'll need to solve around 150 puzzles and complete various events and challenges.

Until January 2016, I continued this activity for about 10 years without even dreaming of winning. It's been 53 hours since I started my Inception-themed hunt, and I haven't slept in days, so everything was hilarious...

(laughter) The table is covered with piles of paper, notes and completed puzzles.

There is an incomprehensible chaos on the whiteboard with 3 days worth of insights.

And we're stuck with two puzzles.

If you can crack them, you'll be in the final game, but after hours of work, in a magical moment, both of them fall under 10 seconds and immediately enter the final runaround. A series of clues that lead to coins await. We run through the halls of MIT, trying not to fall or frighten the tour group. Realizing we're not alone, there's another team in the runaround and we don't know who's ahead.

Well, amidst the confusion of anxiety, anticipation, elation and lack of sleep, we arrive at the sculpture of the Alchemist...

this coin.

(Cheers) Right.

(Applause.) And by claiming it, we won the MIT Mystery Hunt by just five minutes.

What I didn't mention before is that as a reward for winning, you can build up an entire hunt for the following year.

(Laughter) The punishment for winning is having to build the entire hunt for the next year.

At the beginning of 2016, I had never assembled a puzzle before. I solved a lot of puzzles, but building them and solving them are two different things.

But again, I was lucky to be part of a team full of great mentors and collaborators.

So, from a builder's point of view, the puzzle is where I came up with the idea, and instead of explaining what it is, I leave a trail of breadcrumbs so you can figure it out for yourself and get that "aha" moment of joy and experience.

This is another take on the "I see" moment.

And what's incredible to me is that the experience is very emotional, almost physical, but one that can be carefully designed.

So to explain what I mean, this is a puzzle I co-constructed with my friend Matt Glaskin.

It's a text adventure, a classic adventure game format where you explore north, east, south, and west, picking up and using items.

You can reach the end of the game part, but the puzzle is not solved.

For that, we need to recognize hidden information layers. The easiest way to check it is to map the game.

It's like this.

Anyone know what this is?

Yes, that's right.

This text adventure takes place within Settlers of Catan.

Does anyone know what a "settler" is here?

Geek.

(Laughter) For those of you who don't know, Settlers is a board game where you compete with other people to collect resources and build buildings.

And inside the text adventure, we hid the information in various ways so that we could reconstruct the entire game.

Keep track of roads, cities, towns, resources, tile numbers and even dice rolls.

Putting all the information together leads to answers in ways that are too complex to explain right now.

(Laughter) But if you really want to know, find me later.

(Laughter) But what this puzzle emphasized for me was the value of a change of perspective that evokes the feeling of "aha."

So, in this puzzle, you go from experiencing the world as a character on the ground to looking down on it from above as if you were playing a board game, and in the process completely reconstructing all the information you were given.

The hardest part of construction for me is coming up with great ideas for aha.

Fortunately, the world is full of ideas and information.

I've seen amazing puzzles made from waggle-dancing bees, and the amazing coincidence that the 88 keys on a piano correspond perfectly to the 88 constellations in the sky.

Once you know that, you can't help but put the puzzle together. The important thing is that the untangler makes that connection in his or her head.

You can somehow get them there by giving them stars on your keyboard or playing some celestial music from the universe.

Eventually you find yourself staring at the turtle and asking yourself, "Is this a puzzle?"

(Laughter) He also said, looking at the turtle, "I never realized how much this turtle's shell alone contains."

If you've ever seen a TED Talk and asked yourself, "Is this a puzzle?" this might be a familiar experience.

(laughs) I didn't.

But what I mean is that puzzles can be found in unexpected places.

So back to one of my favorite puzzles, the puzzle created by Trip Payne.

This time we're going to play with the sound on, so be prepared to name the song.

(slow clanking sound) (slow clanking sound) (slow clanking sound) (laughter) Who knows what it is.

So, "You make me feel like a natural woman."

(Laughter) So we can identify that song and seven other songs and clips and look at the video itself for clues. The way the video was filmed and edited together, plus the cutout of a panel of five sitting at a table reminiscent of a jury, all of this could suggest a "reality competition show."

And if you research the internet or just recognize this, you'll know that these clips are shot-by-shot reenactments of RuPaul's Drag Race lip-sync battles.

(Laughter.) So why do we do this?

(Laughter) (Applause) Tell me, I don't know.

So, first of all, it's really fun.

But I think it also improves our lives in many ways.

Being able to solve puzzles allowed me to explore a challenge from multiple perspectives before I fixed my approach.

Also, the resolution process is great training for working in teams, knowing when to listen, when to share, and how to recognize and celebrate insights, and being able to build ahas is a very powerful tool.

Think about how powerful, inspiring, and compelling the ideas that come out of your head are and make all the connections yourself.

So, after tens of thousands of hours of work, in January 2017, I finally did a mystery hunt.

And it's a different kind of satisfaction than the instant euphoria of the "ahh" moment.

Instead, it's the slow combustion of saying something through complex abstractions and still being understood.

And when it was all over, exhausted, we looked at each other and the world and said, "I will never do this again. Too much work.

It's really fun, but I can't win anymore. ”

A year later, in January 2018, we won the MIT Mystery Hunt again.

(Laughter) So, I don't know how many tens of thousands of hours we've worked on right now, but we're two months away from the 2019 Hunt.

So, thanks for listening, I have to write a puzzle.

(laughter) (applause)

Let's play games.

Imagine you are in a Las Vegas casino and decide to play a game on one of the casino's computers, just like you would play solitaire or chess.

Computers can move their hands in the game just like human players.

This is a coin game.

It starts with the face of the coin and the computer plays first.

You can choose to flip a coin or not, but you cannot see the result.

Now it's your turn.

You can also choose to flip a coin or not, and your hand is never exposed to your opponent's computer.

Finally, the computer plays again and decides whether to toss a coin. After these three rounds, the coin is revealed and the computer wins for heads and you win for tails.

So this is a very simple game and if everyone plays honestly and the coins are fair, you have a 50% chance of winning this game.

To confirm this, I asked my students to play this game on their computers. After many tries, as expected, the students had a 50% or near 50% win rate.

Sounds like a boring game, right?

But what if this game could be played on a quantum computer?

Currently, as far as I know, there are no quantum computers in Las Vegas casinos, but IBM has built a working quantum computer.

here it is.

But what is a quantum computer?

Well, quantum physics describes the behavior of elementary particles like atoms, electrons and photons.

Quantum computers therefore work by controlling the behavior of these particles, but in a completely different way than ordinary computers.

So, in the same way that a light bulb is not a more powerful candle, a quantum computer is not just a more powerful version of our current computer.

You can't make a light bulb by making a better candle.

A light bulb is a different technology based on a deeper scientific understanding.

Similarly, quantum computers are a new kind of device based on quantum physics, and just as the light bulb changed society, quantum computers could impact so many aspects of our lives, including security needs, healthcare, and even the internet.

Therefore, companies around the world are working on developing these devices. To see what the excitement is like, let's play a game on a quantum computer.

So I can log into IBM's quantum computer from here. So I can play games remotely and you can too.

To make this happen, you may remember getting an email from TED beforehand asking if you would flip a coin if you played the game.

Well, actually, I was asked to choose either a circle or a square.

You didn't know it, but choosing a circle meant "toss a coin" and choosing a square meant "no tossing a coin."

We received 372 responses.

thank you.

This means you can use your choice to play 372 games with quantum computers.

It's a very quick game to play, so here are the results.

Unfortunately, your grades were not very good.

(Laughter) Quantum computers won almost every game.

We lost a few people just because of computer errors.

(Laughter) So how did you achieve this incredible winning streak?

It sounds like magic or cheating, but it's really just quantum physics at work.

Here's how it works:

A typical computer simulates the heads or tails of a coin as bits, 0s or 1s, or currents turning on and off inside a computer chip.

Quantum computers are completely different.

Qubits have a more fluid, non-binary identity.

It can exist in a superposition, or a combination of zeros and ones, which can be zero with some probability and one with some probability.

In other words, its identity is on the spectrum.

For example, 70% of the time it could be 0, and 30% of the time it could be 1, 80-20, or 60-40.

The possibilities are endless.

The key idea here is that we should give up exact values ​​for 0 and 1 and allow some uncertainty.

So during the game, the quantum computer creates a fluid combination of fronts and backs, 0s and 1s, so that whatever the player does, the superposition remains intact, flipped or not.

It's like mixing two liquids together.

The fluid remains in the mixture whether you stir it or not, but the quantum computer separates the zeros and ones on the last move, recovering its head so perfectly that it loses every time.

(Laughter) You might think this is a bit strange, but it's absolutely true.

Ordinary coins do not have obverse and reverse combinations.

We never experience this fluid quantum reality in our daily lives.

So if you're confused about quanta, don't worry.

(Laughter) But even though we haven't experienced quantum wonder, we can actually see its very real effects.

I've seen the data myself.

Quantum computers won because they exploited superposition and uncertainty, and these quantum properties are powerful not only for winning coin games, but also for building future quantum technologies.

So here are three examples of applications that can change our lives.

First of all, quantum uncertainty can be used to create private keys to encrypt messages sent from one place to another, making it impossible for hackers to copy keys completely secretly due to quantum uncertainty.

To hack the key, you have to break the laws of quantum physics.

Therefore, this kind of unbreakable encryption has already been tested by banks and other institutions around the world.

Today, we use over 17 billion connected devices worldwide.

Imagine what impact quantum cryptography will have in the future.

Second, quantum technology could also transform healthcare and medicine.

For example, the design and analysis of molecules for drug development is a difficult problem today. That's because accurately describing and calculating all quantum properties of all atoms in a molecule is a computationally difficult task, even on supercomputers.

Quantum computers, however, operate using the same quantum properties as the molecules they are trying to simulate, so they can potentially perform even better.

So, in the future, large-scale quantum simulations for drug development could lead to treatments for diseases like Alzheimer's that affect thousands of lives.

And third, my favorite quantum application is teleporting information from one place to another without physically transmitting it.

It sounds sci-fi, but it's possible. Because the fluid identities of quantum particles can become entangled across time and space, changing something about one particle can affect the other, which can create channels for teleportation.

This has already been demonstrated in research laboratories and could be part of the future quantum internet.

No such network exists yet, but my team is working on these possibilities by simulating quantum networks on a quantum computer.

So we designed and implemented some interesting new protocols such as teleporting between different users in the network, efficient data transmission and even secure voting.

So it's a lot of fun for me, a quantum physicist.

Highly recommended.

(Laughter) We will be explorers in a quantum wonderland.

Who knows what applications will be discovered next.

We must act cautiously and responsibly as we build our quantum future.

And I personally don't see quantum physics as just a tool for building quantum computers.

I see quantum computers as a way to explore the mysteries of nature and reveal more about this world that is hidden outside our experience.

How amazing that we humans, with relatively limited access to space, can see beyond the horizon using only our imagination and ingenuity.

And the universe rewards us by showing us how incredibly funny and amazing it can be.

The future is fundamentally uncertain, but for me it's certainly exciting.

thank you.

(applause)

From the smallest single-celled organisms to the largest organisms on Earth, every organism is defined by its genes.

The DNA in our genes acts like a cell's instruction manual.

Four building blocks called bases, strung together in precise order, tell cells how to behave and form the basis of all our traits.

However, recent advances in gene-editing tools have enabled scientists to change fundamental characteristics of living organisms in record time.

They can genetically engineer drought-tolerant crops to produce apples that never brown.

We might even be able to prevent the spread of infectious diseases and develop treatments for genetic diseases.

CRISPR is the fastest, easiest, and cheapest of the gene-editing tools in this new wave of science.

But where did this medical wonder come from?

How does it work?

And what can you do?

Surprisingly, CRISPR is actually a natural process that has long functioned as a bacterial immune system.

Originally found to protect single-celled bacteria and archaea from invading viruses, naturally occurring CRISPR uses two major components.

The first is short segments of repetitive DNA sequences called "clustered regularly spaced short palindromic repeats", or simply CRISPRs.

The second is Cas, a “CRISPR-associated” protein that chops up DNA like molecular scissors.

When a virus invades a bacterium, the Cas protein clips a piece of viral DNA and threads it into the bacterium's CRISPR region, giving it a chemical snapshot of the infection.

These viral codes are copied into short pieces of RNA.

This molecule has many roles in our cells, but in CRISPR the RNA binds to a special protein called Cas9.

The resulting complex acts like a scout, trapped in free-floating genetic material, looking for matches to the virus.

When the virus re-enters, the scouting complex immediately recognizes it and Cas9 rapidly destroys the viral DNA.

Many bacteria have this type of defense mechanism.

But in 2012, scientists discovered how to hijack CRISPR and target not just viral DNA, but any DNA in nearly any organism.

With the right tools, this viral immune system can become a precise gene-editing tool, making it almost as easy to alter DNA or alter specific genes as it is to fix typos.

Here's how it works in the lab. Scientists design a "guide" RNA that matches the gene they want to edit and bind it to Cas9.

Similar to the viral RNA of the CRISPR immune system, the guide RNA directs Cas9 to the target gene, and the protein's molecular scissors cut the DNA.

This is the key to the power of CRISPR. By simply injecting Cas9 bound to a short custom guide RNA, scientists can edit nearly any gene in the genome.

When DNA is cut, cells try to repair it.

Normally, proteins called nucleases clip off the cut ends and join them together.

However, this type of repair process, called non-homologous end joining, is error-prone and can lead to extra or missing bases.

The resulting genes are often unusable and turned off.

However, when scientists add another template DNA sequence to the CRISPR cocktail, cellular proteins are enabled to carry out a different DNA repair process called homology-directed repair.

This template DNA is used as a blueprint to guide the reconstruction process to repair defective genes or insert entirely new genes.

The ability to correct DNA errors means that CRISPR has the potential to yield new treatments for diseases associated with specific genetic errors, such as cystic fibrosis and sickle cell anemia.

And because it's not limited to humans, its applications are nearly limitless.

CRISPR could potentially reprogram larger-fruited plants, malaria-defying mosquitoes, and even drug-resistant cancer cells.

It is also a powerful tool for studying genomes, allowing scientists to observe what happens when genes are turned off or changed within an organism.

CRISPR isn't perfect yet.

The technology raises major ethical questions, as changes don't always go as intended and the long-term impact of CRISPR editing is hard to predict.

As CRISPR leaves single-celled organisms behind and heads to labs, farms, hospitals, and organisms around the world, it's up to us to decide the best way forward.

On May 27, 1941, the German battleship Bismarck was sunk by heavy artillery fire, leaving only 118 of her 2,200 crew alive.

But when British destroyers came to retrieve the prisoners, they found an unexpected survivor - a black and white cat clinging to a floating plank.

In the months that followed, the cat hunted mice and boosted British morale, but a sudden torpedo attack shattered the hull and sank the ship.

But miraculously the cat was not.

Affectionately known as 'Unsinkable Sam', he made his way to Gibraltar with the rescued crew and worked as a sailing cat on three more ships, one of which also sank, and retired to the seafarers' home in Belfast.

Many people may not think of cats as helpful sailors or supportive companions of any kind.

But cats have worked alongside humans for thousands of years, helping us as often as we help cats.

So how did this solitary creature grow from wild predator to naval officer to couch buddy?

The domestication of modern domestic cats can be traced back over 10,000 years ago to the early Neolithic period, the Fertile Crescent.

People had learned to bend nature to their will, producing far more food than the peasants could eat at once.

These Neolithic farmers stored surplus grain in large pits and short clay silos.

But these hoarders attracted large hordes of rodents and their predators, the wildcat Felis sylvestris rivica, found throughout North Africa and Southwest Asia.

These wildcats were swift, ferocious, carnivorous hunters.

And they were strikingly similar in size and appearance to today's domestic cats.

The main difference is that ancient wildcats were more muscular, had striped fur, and were less social with other cats and humans.

The abundance of prey in rodent-infested granaries attracted these typically solitary animals.

And just as leopard cats learned to tolerate the presence of humans and other cats during their diet, it is likely that farmers similarly tolerated cats in exchange for free pest control.

This relationship was so profitable that cats migrated with Neolithic farmers from Anatolia to Europe and the Mediterranean.

Vermin was the great plague of the seven seas.

Cats have long been indispensable companions on the voyage because they eat food and nibble on rope threads.

Around the same time that these globe-trotting cats of Anatolia set sail, the Egyptians domesticated the local felines.

House cats were revered for their ability to ward off poisonous snakes, catch birds, and kill rats, and became important to Egyptian religious culture.

They acquired immortality by being mummified along with their owners in frescoes, hieroglyphs, statues and even tombs.

Egyptian boat cats sailed the Nile River keeping venomous river snakes at bay.

And after they too graduated to large ships, they began to move from port to port.

During the Roman Empire, ships sailing between India and Egypt carried strains of the Central Asian wildcat F. s. Ornata.

Centuries later, in the Middle Ages, Egyptian cats sailed to the Baltic Sea aboard Viking sailors' ships.

And wildcats of both the Near East and North Africa (presumably domesticated by this point) continued to travel throughout Europe, eventually setting sail for Australia and the Americas.

Most domestic cats today are descended from the Near Eastern or Egyptian strains of F.s.lybica.

However, a closer analysis of the genome and fur patterns of modern cats found that, unlike dogs that have undergone centuries of breeding, modern cats are genetically very similar to ancient cats.

And other than making them more social and docile, we do little to change their natural behavior.

In other words, today's cats are wild animals, more or less as they have always been.

ferocious hunters. Creatures who don't think of us as their guardians.

Given our long history, they may not be wrong.

Paula Stone-Williams: So, while I was the CEO of a large religious nonprofit, spoke at some of America's largest churches, and appeared on television in 70 different markets, I wanted to be a better parent than anything else.

I told all three of my children, "When things get tough, you have to take the less crowded, narrower road."

I had no idea how difficult it would be.

I knew I was transgender since I was 3 or 4 years old.

I knew that if I went outside, I would lose everything.

But the call to truth is sacred, for the greater good, and asks you to believe that the truth will not only set you free, but will set everyone free.

I decided to stake my life on it.

So it came out.

For someone who has spent most of his life working in conservative religious circles, it turns out that coming out as transgender isn't so good for his career.

(Laughter.) Who would have known?

(Laughter) Within seven days, I lost one job at a time.

My family was supportive, but it was hard.

Most of my friends and colleagues have rejected me. The rest was a mess.

One friend said, "You really screwed me up."

I said, "Okay, let's get in line."

They said, "You were the only example of a gentle alpha male to me."

And I thought, "Oh, that's right."

I was an alpha male.

And she was kind.

And if it was hard for him, how hard was it for my son?

Jonathan Williams: Estranging was not an option.

It was Father's Day, so my daughters brought me a bottle of craft beer and homemade pickles. I think this is the perfect Father's Day gift.

(Laughter.) But the question remained: do I call my father?

When I call him, I continue this spiral of denial while pretending that my father was still there, yes, my father.

Not calling was acknowledging that everything had changed.

It meant I was in pain and grief and grief for years, but eventually with hope of reconciliation.

There is no strategy for fathers over the age of 30 when they decide to transition to female.

But my father taught me one thing.

The road to salvation, he said, always begins by choosing the narrow path.

So I decided not to call her that day, and a few months later Paula flew off to meet my wife and I at a hotel in New York.

I knocked on the door and this lady came out.

It definitely wasn't my father.

"Nice to meet you," she said.

He didn't look like his father either.

We went for lunch and a waiter came to take our order.

"Let's start with the women," he said. However, there was only one woman at the table and that was my wife. And, wow, there are two women at the table.

And my dad ordered something like lettuce so I thought 'there are fries on the plate'.

Did my father like French fries? i don't remember.

I think he liked them.

But she didn't eat them.

This woman knew all about me, but I knew nothing about her.

I don't even remember saying goodbye.

PSW: All I could think about that day was that it was late September in New York and I was wearing white jeans.

(Laughter) In New York, we don't wear white after Labor Day.

There was a knock on the door and all I thought was I was standing here in the wrong pair of jeans.

And then I saw those big blue eyes that I love so much. They were looking at me in disbelief.

And I thought, 'Oh, this won't be easy.

When one family member migrates, the whole family migrates whether they want to or not.

Well, for those on the fringes, it was easy.

Liberals say, "Oh, that's great!"

What a joy she has found her truth! ”

The conservative then said, "That's outrageous, I'm getting out of here."

(Laughter) But neither extreme worked for my family.

Their anger, hurt, love and loyalty, all had to be brought to the test.

JW: Was it all a lie?

Every time I played catch in the front yard, I got a Mets season ticket—was it about my dad, or was it about her?

I remember my dad taking me on a bike ride through Heckscher Park one time to teach me about sex.

He described a body part he now knew he wished hadn't been hers.

Did my father ever exist?

Well, grief, but grief has no rules.

Sadness rents a car without notice and wrecks it, and doesn't even apologize afterwards.

And I was a crock.

This was heavy.

I retreated into myself.

i was angry

I felt betrayed.

And I think I should have known that you were preparing me for a really big disappointment in life by the fact that you encouraged me to become a Mets fan.

(laughs) It's true.

Still, there was catch, season tickets and bacon, egg, and cheese sandwiches every Saturday from Long Island's best bagel place.

He lived the life he didn't want to live, but he lived it the way I could.

I stopped wondering if my father ever existed.

He was intentionally, consciously, intentionally present every day of my growing up years.

I was grateful for that.

Paula's body is hers now, her transformation is complete, but mine is just beginning.

I had another challenge, another journey, another choice to follow my father's advice and continue down that narrow path.

PSW: So I believe in God most days.

Tuesdays and Thursdays are hard days, and days on the New Jersey Turnpike are always hard.

I mean, do you really know?

(Laughter) It's hard to believe in God when the soul is in the wrong body.

Yet somehow I ended up serving.

When I lost all my jobs, it wasn't personal.

That's what religious tribes do.

They believe that a tribe needs enemies to survive, so they create enemies where they don't exist.

Now sexual minorities are the enemy. My departure was swift and secure.

I was amazed when my son left his teaching job in West Philadelphia for missionary work.

I didn't see it coming.

And now I thought: what will he do?

I didn't have to wait too long to find the answer.

Six months after my first visit, he invited me to New York.

JW: The designers of the Brooklyn Bridge had some bad luck.

John Roebling, who died shortly after the construction of the bridge began.

His son Washington took over, but he suffered from decompression sickness.

His wife Emily became the acting executive engineer overseeing the completion of the bridge.

Father and son, John and Washington have finished their work.

It was a sunny day in May and my father and I were sitting in the shadow of the Brooklyn Bridge.

Will our lives follow the life of Mr. and Mrs. Roebling, father and son, ended by our work?

My father thought his friends at church would help her through her transition, but they didn't.

They abandoned her and clung to me.

I was the pastor of a new church in Brooklyn.

This wonderful group is made up of progressive people, yet we were associated with a very conservative church economically.

Reserving space for Paula meant putting our church's livelihood at risk.

I was like straddling the line between these warring worlds.

So I said to my father, "Father, I am still living and working in your old world.

Could you please stretch out an olive branch for me? ”

And her reaction was enthusiastic.

You said to me, "Do you know what it feels like to finally show yourself to a true friend and be completely rejected?"

Are you telling me to lie and live?

you know what that feels like ”

And I didn't know what it felt like.

But I knew I had to make a decision.

It was a decision to continue walking that narrow road through the night, but for the first time I saw light.

I cannot ask my father for anything but my true self.

(Applause.) PSW: So that day, as we sat by the river, Jonathan talked about his pain, his suffering, his grief, his turmoil.

He put his all into that conversation and it ripped me apart that it caused such pain.

But as he spoke, something redeeming happened, full of tension and potential rooted in that narrow path.

He said, "This is always a big deal.

It will always be so.

But Dad, I love you. ”

My son is the best for me and more.

He is bold and strong, sensitive and thoughtful.

A gentle alpha male.

JW: It's time for the girls to meet Paula.

We returned to the apartment, where my daughters were drawing at the dining room table, and there was an awkward silence.

And finally, the youngest asked a confident question.

"So Grandpa, do you have a penis?"

(Laughter) Then, after the tension had cleared and the laughter had subsided, the girls took Grandpa back to his room, showed him a new toy, and gave him a new name.

They called her "Grand Paula".

(laughter) PSW: So this summer we had all five granddaughters at home in the foothills of the Rocky Mountains.

We went swimming in the cool river that runs through the small town.

Then one day one of Jonathan's girls said to me, "Grand Paula, can we go tubing on the river?"

And I said, 'Well, I'll really wait until your father comes here.

I feel like that should be his mission. ”

And she said, "Oh, but Grand Paula, he'll make the exact same decision as you.

he looks a lot like you ”

(Laughter.) And I thought, yeah, he looks a lot like me. We both decided to find the narrow path and follow the long dark night to the light of dawn.

JW: A safe child, a child who knows love, have you ever noticed that the child dances?

They wave their arms and kick their feet to music that only they can hear.

It's safe, intact and perfectly loved children's music.

The day after my kids met Grand Paula, she took them shopping for donuts and I watched them walk down the street and my daughters danced in my dad's arms.

Dad's arm shook violently.

You bought one too many donuts. Because I do it all the time -- (Laughter) As I watched my older daughter take a bite of her donut, she released two jumps and one twirl.

It was perfect.

That narrow road always comes with burdens and challenges.

But I was sure I would make it through to salvation.

I looked at my father, at my daughters dancing and eating donuts, and to no one in particular, I said out loud, "This is..."

God sees my father that way. ”

My father was literally reborn.

And by choosing the narrow path of salvation, I was reborn with her.

thank you.

(applause and cheers)

How will we be remembered 200 years from now?

I happen to live in the small town of Princeton, New Jersey, where every year a great event in Princeton history, the Battle of Princeton, is celebrated. In fact, this was a very important battle.

In fact, it was the first battle won by George Washington and was almost a turning point in the Revolutionary War.

That was 225 years ago.

In fact, it was a terrible disaster for Princeton.

The town was burnt down. It was the middle of winter, a very, very hard winter.

And about a quarter of Princeton's entire population died of hunger and cold that winter, but no one remembers it.

They remember, of course, the great victory when the British were defeated, we won, and this nation was born.

So I strongly agree that the pain of childbirth is not memorable.

I remember that child.

And that is what we are currently experiencing.

I just wanted to talk for one minute about the future of biotechnology. Because I think I know very little about it. I am not a biologist. So everything I know about it can be said in a minute.

(Laughter) What I'm saying is that we should follow the model that has been very successful in the electronics industry. In other words, it was the toys that made computers so successful all over the world. As soon as computers became toys and children could come home and play with them, the industry really grew. And it has to happen in biotechnology too.

There is a huge -- (laughter) (applause) -- in the world there is a huge community of practicing biologists, dog breeders, pigeon breeders, orchid breeders, rose breeders, biology hands-on, people who are dedicated to producing beautiful things, beautiful creatures, plants, animals and pets. These people can be empowered by biotechnology and it will be a very positive step towards acceptance of biotechnology.

It will blow away many opponents.

Once people have this technology, they can have their own biotech kits, grow their own plants, and even raise dogs and cats.

(Laughter) (Applause) You just buy the software, you design it. I will say no more, please continue from there. It's bound to happen, and I think it has to happen before technology becomes a natural thing, a part of the human condition, everyone is familiar with it, everyone accepts it.

So let's leave it at that.

I would like to talk about something completely different. That's what I know, that's astronomy.

And I'm interested in searching for life in space.

And it's open to us to introduce new ways to do that. I'll talk about that in 10 minutes or the rest of the time.

The important fact is that most of the real estate we have access to is in our solar system, not in the stars. It is within reach of a spacecraft and within reach of a telescope on the ground. Most of the property is very cold and very far from the sun.

If we look at the solar system as we know it today, there are several planets near the sun. That's where we live.

There are quite a few asteroids between Earth's orbit and Jupiter's orbit.

Asteroids are a significant amount of real estate, but they are not very large. And since most of it consists of rock and metal, mostly rock, it's not very promising for life.

Not only is it cold, it's also very dry.

So don't expect much from asteroids.

A short distance away are some interesting places: the moons of Jupiter and Saturn.

In particular, there is a place called Europa. Europa is one of Jupiter's moons and has an icy surface so flat that it appears to float above the ocean.

Therefore, we believe that Europe actually has a deep sea.

And that makes it a very interesting place to explore.

The oceans -- just as life began on Earth, it's probably the most likely place for life to begin. So we want to explore Europa and go down through the ice to find out who's swimming in the ocean, fish, seaweed, sea monsters, whatever's exciting, or cephalopods.

But it is difficult. Unfortunately the ice is thick.

I don't know how thick it is, but it's probably miles thick, which makes it very expensive and very difficult to dive in there and send submarines or whatever to explore.

I still don't know what to do with it.

I plan to do it, but it's difficult.

A little further out, beyond the orbit of Neptune, far from the Sun, is where real estate really begins.

Millions, trillions and billions of objects can be found in what we call the Kuiper Belt or the Oort Cloud. These are clouds of small celestial bodies that look like comets when they get close to the Sun. For the most part they only live in the cold outer solar system, but they are indeed of great biological interest. Because they are mainly composed of ice and other minerals, they are perfect for the development of life.

In other words, if life could be established there, it would have everything it needs, including chemistry and sunlight.

So what I'm proposing is that there are places we should look for life, not Mars. However, Mars is of course also a very promising and interesting place.

But we can look out in a very cheap and easy way.

That's what I'm talking about.

Imagine life originated on Europa and existed in the ocean for billions of years.

It is quite possible that they will migrate from the ocean to the surface, just as they do on Earth.

It stayed in the sea for 2 billion years, continued to evolve, and finally came out on land. And, of course, it was wonderful, with far greater freedom, and far more diverse creatures developed on land than was ever possible in the sea.

And the step from sea to land was not easy, but it happened.

Now, if life originated in Europa's oceans, it may have emerged on Earth as well.

There should be no air there - it's a vacuum.

It's cold, but it can still come.

You can imagine how plants grow like kelp from cracks in the ice and grow on the surface.

What do they need to grow above ground?

First of all, you will need to have thick skin to protect yourself from water loss from your skin.

Therefore, they must have something like reptilian skin.

But more importantly, the sunlight needs to be concentrated.

Because Jupiter is five times farther from the Sun, sunlight on Jupiter's moons is 25 times dimmer than here.

So they would have to have - I imagine these creatures, which I call sunflowers, live on the surface of Europa, but would have to have either lenses or mirrors to focus the sunlight so that they could keep themselves warm on the surface.

Otherwise they would be at a temperature of minus 150 degrees, which is clearly unfavorable for the development of at least the kind of life as we know it.

But if you can grow something as simple as a leaf, a tiny lens, or a mirror to collect sunlight, you can keep the surface warm.

They enjoyed all the benefits of sunlight and were able to bring down their roots to the sea. Then life will be more prosperous.

So what if we take a look? Of course, it is highly unlikely that there is life on Europa's surface.

None of these things are likely, but my philosophy is to look for the detectable, not the probable.

Astronomy has a long history of the improbable being turned out to actually exist. So the best example of that was radio astronomy as a whole.

This was originally the detection of radio waves coming from the sky by Jansky at Bell Labs when radio astronomy began.

And regular astronomers despised this.

they said "All right, we can detect radio waves from the sun, but the sun is the only one in space that is really close enough and bright enough to be detected. It's easy to calculate that the radio waves from the sun are fairly weak, and everything else in the universe is millions of times farther away, so you'll never be able to detect it."

So it makes no sense to look at it. ”

And, of course, it delayed the progress of radio astronomy by about 20 years.

There was nothing there, so it's better not to look.

Well, of course, as soon as anyone saw it, it was about 20 years later, when radio astronomy began in earnest. Because it turns out that the universe is absolutely filled with all sorts of wonderful things that radiate in the radio spectrum much brighter than the Sun.

So the same could be true for this kind of life on cold objects I'm talking about. In fact, it could be very abundant throughout the universe, but it goes undetected simply because we haven't bothered to look for it.

So the last thing I want to talk about is how to detect it.

There is something called pit ramping.

That's a phrase I learned from the spectator's son George.

It's a Canadian expression.

If you want to hunt animals at night, use a miner's lamp, a pit lamp.

Strap it to your forehead and you can see it reflected in the animal's eyes. So when you go out at night, use a flashlight to light up the animals.

They can see red light in the reflection of the flashlight in their eyes.

And if you're one of these anti-sport characters, shoot the animal and take it home.

And of course it's illegal in Canada as it would ruin the game for other hunters who hunt during the day. This is legal because New Zealand farmers use it as a way to get rid of rabbits, as rabbits compete with sheep in New Zealand.

So farmers go out into the night in heavily armed jeeps, turn on their headlights, and shoot anything that doesn't look like a sheep.

(Laughter) So I suggested applying the same trick to searching for life in space.

If these creatures live on the cold surface, be it on Europa or wherever they can live on the cold surface, they must be provided with reflectors.

You need lenses and mirrors to keep you warm, to focus the sunlight.

And when you shine it in the sun, it reflects the sunlight, just like an animal's eye does.

Therefore, these creatures brighten up against cold environments.

And the farther away from the sun, the more powerful this reflection. In fact, this life-seeking method of hunting becomes more intense the further away you go. This is because the performance of the optical reflector needs to be stronger so that the reflected light shines brighter against the dark background.

Therefore, the farther away from the sun, the more powerful it becomes.

So you can actually look for these creatures with a telescope from Earth.

why not do that? Simply because no one had thought of it yet.

But hope we can find out. And you probably won't find anything, and these speculations may have no basis in fact.

But still, it's a good chance. And of course, once that happens, our outlook on life changes completely.

That means that the way life can live there has enormous advantages compared to living on Earth.

It is very difficult to move from one planet to another.

We are currently facing great challenges and all life on earth is pretty much at a standstill.

Getting from planet A to planet B is very difficult, especially if you breathe air. because there is no air between them. But if you breathe air -- (laughter) -- you're dead -- (laughter) -- you're dead as soon as you leave Earth unless you have a spaceship.

But if you live in a vacuum and you live on the surface of one of these bodies, say the Kuiper belt, which is a Pluto-like body, or one of the smaller bodies near Pluto, then if you live on the surface there and are knocked off the surface by a collision, it doesn't change much.

You're still on ice, you can soak up the sun, and you can survive while traveling from one place to another.

And if it encounters another object, it can stay there and colonize other objects. Thus life spreads from one object to another. So if it exists in the Kuiper belt, it could be very widespread. And then there will be a wonderful race between species, Darwinian evolution, so that species that can jump from one place to another without waiting for a collision will have a great advantage. And having long forests of plants like kelp would also be beneficial.

I call these creatures sunflowers.

It may look like a sunflower.

Because the gravity of these objects is weak, they must always point towards the sun, allowing them to spread out into space.

Therefore, it can collect sunlight from a wide area.

So it's actually pretty easy to detect them.

So I hope that within the next decade these creatures will be discovered and, of course, change our whole view of life in the universe.

If you can't find it, you can create it yourself.

(Laughter) That's another great opportunity that's about to open up.

Once we understand a little more about genetic engineering, one of the things we can do with our take-home build-your-own genetic engineering kits (Laughter) is we can design organisms that can live in places like our cold moons, Europa. Then we can colonize Europa with our own organisms.

that would be fun.

(Laughter) Of course, in the long run, it will be possible for us to move there.

What will eventually happen is not just human colonization of the universe, but life will migrate from the Earth and transfer it to its kingdom. And the kingdom of life will of course be the universe. And if life is already there, in the short term, it becomes much more exciting.

But in the long run, even if life isn't there, we're going to create it ourselves.

We will transform the universe into something much richer and more beautiful than it is now.

Again, we have a big and wonderful future ahead of us.

thank you.

(applause)

My colleagues Art Aaron, Lucy Brown and others put 37 people who were madly in love into functional MRI brain scanners.

17 people were happily in love, 15 people were just dumped, and we just started our third experiment. It looked at people who reported being still in love 10 to 25 years after marriage.

Here is the short story of that study.

A temple stands at Tikal in the jungle of Guatemala.

It was built by the greatest Sun King of the greatest city-state of the Maya, the greatest civilization of the Americas.

His name was Jasaw Chan Kawir.

He was over 6 feet tall.

He lived into his eighties and was buried under this monument in 720 AD.

And a Mayan inscription declares that he loved his wife deeply.

So he built a temple in her honor across from him.

And each spring and autumn, exactly on the vernal equinox, the sun rises from behind His temple and bathes Her temple completely with His shadow.

And in the afternoon, when the sun sets behind her temples, his temples are perfectly tinted with her shadow.

1,300 years later, these two lovers are still touching and kissing from their graves.

People love all over the world.

They sing for love, dance for love, compose poems and stories about love.

They tell myths and legends about love.

They seek love, live for love, kill for love, die for love.

As Walt Whitman once said, "Oh, I'll bet everything for you."

Anthropologists have found evidence of romantic love in 170 societies.

They never found a society without it.

But love is not always a happy experience.

In one study of college students, they asked many questions about love, but two stood out to me the most. "Have you ever been rejected by someone you really loved?"

The second question is "Have you ever abandoned someone you truly loved?"

And nearly 95% of men and women both said yes.

Few people get out of love alive.

So before I talk about the brain, I want to read what I consider to be the most powerful love poems on the planet.

Of course, there are other love poems that are just as good, but I don't think they will top this one.

This was told to missionaries in 1896 by an anonymous Kwakiutl Indian of southern Alaska.

And here it is.

"The pain of loving you sets my body on fire.

Pain runs through my body with the flame of my love for you.

My love for you makes me feel like a bruise that's about to explode, my love for you burns me on fire.

I remember what you said to me

I'm thinking of your love

I'm torn by your love

Pain, more pain -- where are you going with my love?

They say you'll leave me here

Remember what I said, my love.

Goodbye, dear, goodbye. ”

Emily Dickinson once wrote, "All we need to know about hell is goodbye."

How many people have suffered in millions of years of human evolution?

At this moment, how many people in the world are dancing with euphoria?

Romantic love is one of the most powerful feelings on earth.

So a few years ago I decided to look into the brain and study this madness.

Our first study of people who were happily in love is widely known, so I'll only talk a little bit about it.

We found activity in a tiny little factory near the base of the brain called the ventral tegmental area.

We found activity in some cells called A10 cells. A10 cells are actually the cells that produce dopamine, a natural stimulant, and spray many brain areas with dopamine.

In fact, this part, the VTA, is part of the brain's reward system.

It's way below your cognitive thought process.

It's under your emotions.

It is part of what we call the reptilian core of the brain and is associated with desire, motivation, focus and craving.

In fact, the same areas of the brain that we detect activity become active when we feel an influx of cocaine.

But romantic love is more than a cocaine high - at least you can get off cocaine.

Romantic love is an obsession and possesses you.

you lose a sense of yourself.

Someone is camping in your head.

As an eighth-century Japanese poet said, "My yearning never ended."

Wild is love.

And rejection can make that obsession even worse.

So right now, Lucy Brown, a neuroscientist on our project, and I are looking at data from people who were put into machines shortly after being dumped.

Getting them on the machine was actually very difficult. Because their condition was very bad.

(Laughter) Anyway, we found activity in three areas of the brain.

We found activity in brain regions. This was the exact same brain region associated with intense romantic love.

What a bad deal!

You know, when you get dumped, one of the things you want to do is forget about that person and get on with your life. But no, you just love them more.

As the Roman poet Terrence once said, "The less my hope, the hotter my love."

In 2000 years we will be able to explain this in our brains.

When we don't get what we want, our brain systems—the reward system for desire, motivation, craving, and focus—are more active.

In this case, the greatest prize of life is a suitable spouse.

We also found activity in other brain regions, namely brain regions associated with gain and loss calculations.

You're lying there, looking at pictures, riding this machine, calculating what went wrong.

What have I lost?

Actually, Lucy and I have a bit of a joke about this.

It's from a David Mamet play, in which there are two crooks, a woman cheating on a man, and a man looking at a woman and saying, "Oh, you're a bad pony, I'm not going to bet on you."

And in fact, it is this part of the brain, the center of the nucleus accumbens, that is active when measuring gains and losses.

It's also the area of ​​the brain that activates when you're willing to take big risks to get big gains or big losses.

Lastly, we found activity in brain regions associated with deep attachment to other individuals.

No wonder people suffer all over the world and so many passion crimes.

When you are rejected in a romantic relationship, not only do you feel romantic love, but you also feel a deep attachment to that person.

Plus, this reward-seeking brain circuit is working, and you feel intense energy, intense focus, intense motivation, and the willingness to risk everything to win the biggest prize of your life.

So what do I learn from this experiment that I want to share with the world?

First and foremost, I came to think of romantic love as an urge, a basic mating urge.

Not lust. Libido leads you to seek out a variety of partners.

Romantic love allows you to focus your mating energy on just one animal at a time, save your mating energy, and start the mating process with this one individual.

It reminds me of the romantic love poems I've read, but the one that best sums it up is what Plato said over 2,000 years ago.

He said, "The God of love lives in poverty.

It is a need, an urge, an imbalance of homeostasis.

Like hunger and thirst, it's nearly impossible to get rid of. ”

I have also come to believe that romantic love is an addiction. When it's working, it's a pretty great addiction, and when it's not working, it's a pretty dreadful addiction.

And in fact it has all the hallmarks of an addiction.

You focus on that person, obsess over him, yearn for him, distort reality, and are willing to take great risks to win over him.

And addiction has three main characteristics. It's about endurance, more needs to be seen, and more to be seen. withdrawal; and finally: relapse.

It's been about 8 months and she's starting to feel better.

And the other day, she was driving in her car when she suddenly heard a song on the car radio that reminded her of this man.

Not only did her appetite return immediately, but she had no choice but to stop on the side of the road and cry.

So what I want the medical, legal, and even academic community to understand is that love is, in fact, one of the most addictive substances on the planet.

I also want to convey my love for animals to the world.

There is no animal on this earth that mates with what comes.

Too old, too young, too lazy, too stupid, they won't do it.

Unless you're stuck in a lab cage, if you spend your whole life in a tiny box, you probably won't be too picky about who you have sex with. But I've observed 100's of animals, and everywhere in the wild they have a favorite animal.

As a matter of fact, ethologists know this.

What they call "animal favors" has eight or more words, including selective receptivity, mate selection, female selection, and sexual selection.

And in fact, there are now three academic papers studying this attraction. It may only last for a fraction of a second, but this is a definite attraction, involving either this same brain region, this reward system, or chemicals in that reward system.

In fact, I think the fascination with animals is something that appears instantly. You can see the elephant immediately asking for another elephant.

And I think this is the true origin of what you and I call "love at first sight."

People often ask me if what I know about love has ruined it.

And I just say "almost."

You can know all the ingredients of a chocolate cake and feel the joy when you sit down and eat it.

And yes, I make the same mistakes as everyone else, but it has really deepened my understanding and compassion for human life as a whole.

As a matter of fact, in New York, babies often feel a little sorry when they see a pram.

And indeed, given how powerful this brain system is, sometimes the chicken on your dinner plate can be a little disappointing.

Our latest experiment was devised by my colleague Art Aaron. This involves putting people who are still in love and who report being in a long-term relationship on a functional MRI.

I've tested 5 people so far and got exactly the same results.

The brain regions associated with intense love are still active 25 years later.

There are still many questions to be answered and asked about romantic love.

The question I'm grappling with right now, and I'll just say a few words and then finish, is why people fall in love with one person and not another.

I never thought about it, but three years ago, the Internet dating site Match.com asked me that question.

And I said, "I don't know."

We know what happens in the brain when we fall in love, but we don't know why we like one person and not another.

So I've spent the last three years working on this.

And there are many reasons to like one person over another that psychologists can teach.

And we tend to fall in love with people who have the same socioeconomic background, the same general intelligence level, good looks, and the same religious values.

Your childhood certainly played a role, but no one knows how.

That's it, that's all they know.

No, they never found a way for the two personalities to get along and have a good relationship.

So I began to wonder if your biology was pulling you towards some people instead of others.

Then we created a questionnaire to find out how much dopamine, serotonin, estrogen, and testosterone are expressed.

I believe we have evolved four very broad personality types related to the ratios of these four chemicals in our brains.

And the dating site I created, Chemistry.com, starts by asking you a series of questions to see how well you represent these chemicals. And I'm watching who chooses who they love.

And 3.7 million people in the US responded to the survey.

About 600,000 people in 33 other countries are taking this program.

I'm putting together the data now, but someday, the magic of loving people will always exist. But I think it brings me closer to understanding why when you walk into a room, everyone has the same background, the same general intelligence and appearance, but you're not attracted to all of it.

I think there is a biology to it.

I think in the next few years we will understand all sorts of brain mechanisms that draw us to one person and not another.

Well, that's it.

"The past is not dead, not even the past," Faulkner said.

Indeed, we carry a lot of past baggage in our human brains.

So there was one thing that made me pursue an understanding of human nature, and this reminded me.

Here are two women.

Women tend to have different intimacy than men.

Women feel intimacy by talking face-to-face.

We circle towards each other to do what is called a "fixed gaze" and converse.

This is intimacy for women.

I think it comes from millions of years of holding babies in front of their faces, soothing them, scolding them, and educating them with words.

As soon as one man looks up, the other man looks away.

(Laughter) I think it comes from millions of years of sitting behind a bush, staring straight ahead, trying to hit a buffalo on the head with a stone.

I think for millions of years, humans have faced enemies and sat side by side with friends.

My last words are, "Love is in us."

It is deeply embedded in the brain.

Our challenge is to understand each other.

thank you.

As a minister, you can imagine how out of place I feel.

I feel like a fish out of water or an owl in the air.

(Laughter.) I was preaching in San Jose a while back, and my friend Mark Kvanme, who introduced me to this conference, brought in a few CEOs and leaders from a few companies here in Silicon Valley, and I, or I had breakfast with them.

And I was very inspired.

And it was an eye-opening experience to hear them talk about a world not yet possible through technology and science.

We know that this conference is coming to an end, but some of you may be wondering why we are inviting speakers from the religious field.

Richard made that decision so he can answer it.

But a few years ago, I stepped off an elevator in Philadelphia.

I was to speak at a conference at a hotel.

And in the elevator, a man said, "I heard that Billy Graham is staying at this hotel."

Then another man looked in my direction and said, "Yes, he's there. He's in this elevator with us."

And he looked me up and down for about 10 seconds and said, "What an anti-climax!"

(Laughter.) I hope you don't feel like these few minutes with me aren't anti-climactic after all the talks and talks you've heard, but I'm going to listen to all of them.

But a few years ago, I was on an eastern plane and the man sitting across the aisle was the mayor of Charlotte, North Carolina.

His name was John Berg. Some of you probably know him.

There was a drunken man there who got up from his seat two or three times and upset everyone with what he was about to do.

And he used to slap and pinch her as the stewardess passed by, so everyone was mad at him.

And finally John Berg said, "Do you know who is sitting here?"

Then the man said, "No, who?"

He said, "This is the preacher Billy Graham."

He said, "Don't say that!"

And he turned to me and said, "Put her there!"

"Your preaching certainly helped me," he said.

(Laughter.) And I think that's true for thousands of people.

(Laughter) I know you've been looking to the future, and I'd love to live in that time and see what happens, as I heard some of it here tonight.

But I'm 80 now, so I won't stop. I am 80 years old this year, and I know my time is running out.

I currently have phlebitis in both legs. That's why I need a little help getting up here. Because on top of that I also have Parkinson's and other issues that I don't talk about.

(Laughter) But this isn't the first time a technological breakthrough has happened.

There were others.

And there is one thing I want to talk about.

In one generation, the nation of Israel has undergone a tremendous and dramatic transformation, becoming a great power in the Near East.

A man named David took the throne and King David became one of the great leaders of his generation.

He was a man of great leadership.

He had the grace of God.

He was a great poet, philosopher, writer and soldier, with strategies in battle and conflict that people still study today.

However, about two centuries before David, the Hittites discovered the secrets of iron smelting and processing, and the technology slowly spread.

However, they did not allow the Israelites to investigate or possess it.

But David changed everything and brought Israel into the Iron Age.

And the Bible tells us that David stored up a large amount of iron, which archaeologists say they have found evidence of from that generation in what is now Palestine.

Now, instead of crude tools of sticks and stones, Israel acquired iron plowshares, sickles, hoes, and military weapons.

And in one generation Israel was completely changed.

In some ways, the introduction of iron has had the same impact that microchips have had on our generation.

And David realized that there are many problems that technology cannot solve.

Many problems still remained.

And they are still with us and you haven't solved them, and I don't hear anyone here talking about it.

How can we solve these three problems?

The first thing David saw was human evil.

where did it come from?

How can I solve this?

In the Psalms, which Gladstone described as the greatest book in the world, David repeatedly mentions the evils of mankind.

Yet he says, "He restores my soul."

Have you ever thought how contradictory we are?

On the one hand, you can delve into the deepest secrets of the universe and set the frontiers of technology back dramatically, as this conference exemplifies.

We've seen the ocean floor, three miles down, or hundreds of billions of years into the galaxy.

But on the other hand, something is wrong.

Our battleships, our soldiers are now on the frontier, almost ready to go to war with Iraq.

Now what is causing this?

Why do wars like this happen in every generation and in every part of the world?

And what about the revolution?

We can't get along with other people, even our own family.

We are paralyzed by unbreakable self-destructive habits.

Racism, injustice and violence are rampant in the world, with a tragic harvest of heartache and death.

Even the most sophisticated of us can't seem to break this cycle.

I would love to see Oracle pick it up or some other tech genius work on this.

How can we change people so that lies and deceit disappear and newspapers are filled with misconduct in business, labor, athletics and all manner of other areas?

The Bible says the problem is within us, within our hearts and souls.

Our problem is that we are separated from our Creator, whom we call God. We need to restore our souls, and only God can do this.

Jesus said, "For evil thoughts come from the heart, such as murder, sexual immorality, theft, false testimony, and slander."

The English philosopher Bertrand Russell, who was not a religious man, said, "It is in our hearts that evil lurks, and it is from our hearts that it must be removed."

Albert Einstein -- When I was speaking at Princeton University, I was just talking to someone and I met Mr. Einstein.

He did not have a PhD because he said no one was qualified to give him one.

(Laughter) But he said,

"It's easier to mutate plutonium than it is to mutate a human demon," he said.

And I'm sure many of you have also thought about it and been perplexed.

You've seen people take beneficial technological advances, like the Internet we heard about tonight, and twist them into something corrupt.

You've seen smart people come up with computer viruses that bring down entire systems.

The Oklahoma City bombing was simple technology, used horribly.

The problem is not technology.

The problem is who uses it.

King David said he knew the depths of his soul.

He could not free himself from personal problems and personal evils, including murder and adultery.

But King David asked God's forgiveness and said, "You can restore my soul."

The Bible teaches that we are more than body and mind.

we are the soul

And there is something inside of us that is beyond our comprehension.

It's the part of us that longs for more than God or technology.

Your soul is that part of you longing for meaning in life and searching for something beyond this world.

That's the part of you that really longs for God.

It turns out that young people all over the world are looking for something.

they don't know what it is. I speak at many universities and have a lot of Q&A time. Whether it's Cambridge, Harvard or Oxford, I've lectured at all of them.

I'm planning to go to Harvard and give a lecture in three or four days, no, in about two months.

And you'll be asked the same question the last few times I've been there.

And that leads to questions like: Where did I come from? why am i here where are you going?

What is life all about? why am i here

Even if you don't believe in religion, sometimes you wonder if there's something wrong.

Thomas Edison also said, "Looking at everything that happens in the world of science and how the universe works, you can't deny that there is a captain on the bridge."

Once, I remember sitting next to Mrs. Gorbachev at a White House dinner.

I went to Ambassador Dobrynin, whom I knew very well.

And I've been to communist Russia a few times, and they've given me amazing freedoms that I didn't expect.

And since I knew Mr. Dobrynin very well, I said, "I'm going to sit next to Mrs. Gorbachev tonight.

What shall we talk about with her? ”

And he surprised me with that answer.

He said, "Talk to her about religion and philosophy.

That's what she's really interested in. ”

I was a little surprised, but that night, we talked about that and it turned out to be a stimulating conversation.

And after that she said: “I am an atheist, but I know there is something higher than us.”

The second problem that King David found insoluble was that of human suffering.

Job, the author of the world's oldest book, said, "Human beings are born with difficulties, like sparks flying upwards."

Yes, indeed, science has made a great contribution to pushing back certain types of human suffering.

But I—I will be 80 in a few months.

I admit that I am very grateful to the advances in medicine that have kept me in relatively good health over the years.

Doctors at the Mayo Clinic advised me to come here rather than travel for this purpose.

I haven't spoken in almost four months.

And if you talk like I do 3 or 4 times a day, you get rusty.

That's why I use this lectern and these notes.

Every time I hear my voice on TV or elsewhere, I ad-lib.

haven't read. I never read your address.

I have never read a speech or lecture or lecture.

I speak ad lib.

But tonight I have some notes here. That way, when I start forgetting (which I sometimes do), I have something to rely on.

But here in the world's most advanced society, most of us live in poverty.

We have families that self-destruct and we have friends that betray us.

An unbearable psychological pressure weighs on us.

I have never met anyone in the world who had no problems or worries.

why do we suffer? It's a long standing question that we haven't answered.

But David said over and over again that he would turn to God.

He said, "The Lord is my shepherd."

The last problem David knew he couldn't solve was death.

Many reviewers have stated that death is a forbidden subject for our generation.

Most people live as if they will never die.

Technology projects the myth that it controls our death.

We see people on our screens.

Marilyn Monroe is just as beautiful on screen as she is in real life and many of us young people think she is still alive.

They don't know she died.

Or Clark Gable, or whoever it is.

Old stars come back to life.

And they look just as good on screen as they do in person.

But death is inevitable.

I spoke some time ago at a joint session of Congress last year.

And we were meeting in that room, the statue room.

About 300 of them were there.

And I said, "Whether you're a Republican or a Democrat, whoever you are, all of us in this room have one thing in common."

I said, 'We are all going to die.

And we have something in common with the great figures of the past who look down on us. ”

And that is often difficult for young people to understand.

It is difficult for them to understand that they are going to die.

He said that, as the ancient writer of Ecclesiastes wrote, all activity is taking place under heaven.

There is a time to be born and a time to die.

I have been on the deathbeds of some of the most famous people you know.

i talked to them.

I have seen them frightened to death.

But until a few years ago, death didn't cross their minds.

Last week I spoke with a woman whose father is a famous doctor.

She said he never thought of God, never talked about God, never believed in God. he was an atheist.

But one day, she said, when he was dying, he sat by his bed and asked the nurse if he could see the pastor.

And he said that for the first time in his life he thought about the inevitable and about God.

Was there a god?

A few years ago, a college student asked me, "What's the biggest surprise of your life?"

And I said, "The thing that surprised me the most in my life is how short life is.

It will pass very quickly. ”

But it doesn't have to be that way.

Werner von Braun concluded after the Second World War, "Science and religion are not hostile.

They're more like sisters. ”

He said it on a personal basis.

I knew Dr. von Braun very well.

And he said, "For myself, I can only say that the grandeur of the universe serves only to confirm belief in the certainty of the Creator."

He also said, "In our quest 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 this world and his resurrection is the hope of mankind. ”

I have given many lectures in Germany, France and various parts of the world and it has been my privilege to speak in 105 countries.

And then one day I was invited to visit Chancellor Adenauer, who was regarded as something of the founder of modern Germany after the war.

And he said to me once, "Young man." He said, "Do you believe in the resurrection of Jesus Christ?"

And I said, "Yes, sir."

He said, "So do I."

"When I retire, I will spend my time writing a book about why Jesus Christ was resurrected and why believing in it is so important," he said.

In his play, Alexander Solzhenitsyn depicts a dying man who tells people gathered around his bed, "The moment when you are afraid to feel regret is when you are dying."

How should I live so that I won't regret it when I die?

Blaise Pascal asked just that question in seventeenth-century France.

Pascal is called the architect of modern civilization.

He was a brilliant scientist who had been at the forefront of mathematics since he was a teenager.

He is considered by many to be the originator of probability theory and the creator of the first computer model.

And, of course, you are all familiar with the computer language named after him.

Pascal explored the human dilemmas of evil, suffering and death.

He was amazed at this phenomenon we have been thinking about. People can achieve extraordinary heights in science, art, and human undertakings, but they are also filled with anger, hypocrisy, and self-loathing.

Pascal saw us as a mixture of genius and self-delusion.

On November 23, 1654, Pascal had a profound religious experience.

He wrote in his diary: "I am absolutely obedient to my Savior, Jesus Christ."

Two centuries later, a French historian said, "Seldom have such powerful intellects submitted so humbly to the authority of Jesus Christ."

Pascal came to believe that not only did God's love and grace restore us to harmony, but that we could be forgiven of our own sins and mistakes, and that when we died we would go to a place called heaven.

He experienced it in a way that was beyond scientific observation and reason.

It was he who wrote the famous saying, "The mind has a reason, but the reason does not know it."

Also well known is Pascal's wager.

In short, he said, "If you stake on God and open your heart to His love, even if you are wrong, you lose nothing.

But if you bet otherwise there is no God, you could lose everything in this world and the hereafter. ”

To Pascal, scientific knowledge paled in comparison with the knowledge of God.

His knowledge of God was far beyond anything that had ever crossed his mind.

When he died at 39, he was ready to face him.

King David lived to be 70 years old, which was long for his time.

But he too had to face death, so he wrote these words: "Though I walk through the valley of the shadow of death, I fear no evil, for you are with me."

This was David's answer to the triple dilemma of evil, suffering and death.

If you seek the living God and allow Him to fill your life and give you hope for the future, it is yours too.

I was 17 years old and was born and raised on a farm in North Carolina.

I had to milk the cow every morning and the same cow every night when I came home from school.

I was in charge of 20 of them, and I tried to continue my studies while working on the farm.

I didn't get good grades in high school.

I didn't make them in college until something happened in my mind.

One day I met Christ.

He said, "I am the way, the truth, and the life."

Can you imagine it? "I am true.

I am the embodiment of all truth. ”

he was a liar

Or he was crazy.

Or he was who he claimed to be.

which one was he?

I had to make that decision.

I couldn't prove it.

I couldn't bring it into the lab and experiment with it.

But by faith I believe in him, he said, and he came to my heart and changed my life.

And now, when I hear that call, I am ready to go before God.

Thank you and may God bless you all.

(Applause.) Thank you for the privilege. good.

Richard Warman: Good job.

thank you.

(applause)

As dawn breaks in the mobile city of ten thousand yurts, Queen Borakutin has a terrible awakening.

A rogue sheep flew past the servants and guards into her yurt, where it flew into her bed and blew in her ear.

She's a formidable cartoon of the Golden Horde, the mighty kingdom of the Mongol Empire, but she takes a hands-on approach when it comes to governing.

She has been married to Batu Khan, the formidable grandson of Genghis Khan himself, since she was 15, and while her husband goes on raids, she juggles herding, family, and imperial duties at home.

This makes her the manager and mover of a city of thousands.

Borakutin moves between two seasonal campgrounds twice a year.

This ensures constant water and lush grass in summer and protection from harsh winds in winter.

The entire operation requires weeks of rigorous planning, coordination with other camps in the area, strategic missions, and the patience to move at the speed of a stumbling animal.

Today is Migration Day, and she must lead her maids, commanders, slaves, and herds of animals up the Volga River for the summer.

When Borakutin goes outside, he is greeted with a commotion. Unwanted visitors are running around the butler.

They are trying to safely load her belongings into the wagon.

Boraktin orders them to take control of it, but she is the only one who quickly catches the rogue.

She then supervises the women who unpin the yurts and lift them into custom-built wagons.

It takes a team of 20 oxen to pull it, and Borakchin trusts no one to steer it except himself.

Next Borakutin and her woolly companions meet with the guards.

She ordered them to keep a close watch on her husband's special reception yurt and portable throne during the journey.

They also act as outriders, and she secures routes, surrounds her for safety, and teaches them how to restrain animals.

But when the sheep are finally free to head for the fields, the guards can barely keep up as they run through the crowds that pack the yurts.

An outraged Boraktin mounts himself to the pastures.

When she got there, she saw a troublesome sheep wriggling in the middle of the flock.

When she followed him inside, he was cuddled next to his mother ewe.

She is pregnant and seems to be in pain.

Borakchin realized that in the rush of moving day, the ewe's impending birth had been forgotten.