It's common knowledge that trust is the cornerstone of everything, but when it comes to trusting others, something extraordinary is happening.

Raise your hand if you've used Airbnb as a host or guest in the audience

wow so many

who owns bitcoin?

it's quite a lot

So who ever tried to find a lover on Tinder? So who ever tried to find a lover on Tinder?

(Laughter) It's hard to count because everyone raises their hands so small.

(Laughter) All three of these are examples of how technological advances are creating mechanisms that allow us to trust unknown people, companies and ideas.

But at the same time, trust in existing institutions is eroding in banks, governments and even churches.

What the hell is going on? Who do we trust now?

First of all, it's a platform, or rather a company, in France, which sounds rather strange, but it's called BlaBlaCar.

A service that matches drivers and passengers to search for a passenger on a long-distance trip A service that matches drivers and passengers to search for a passenger on a long-distance trip

The average distance traveled is 320 kilometers

You want to choose your passengers wisely during that time, don't you?

Users select partners based on profiles and reviews

We're also able to tell if you're a smoker or not, what kind of music you like, or if you're bringing your dog.

But let's face it, the big factor in choosing a person here is how much they talk in the car.

(Laughter) One "Bla" means a person who doesn't talk much, two means someone who enjoys a little chatter, three means someone who doesn't stop talking on the way from London to Paris, and three means someone who doesn't stop talking on the way from London to Paris.

(Laughter) It's amazing how well this works. It contradicts what most people have been told as a kid, "Don't get in strangers' cars."

And yet there are more than 4 million people who travel by BlaBlaCar every month of the month, and yet there are more than 4 million people who travel by BlaBlaCar every month of the month.

By comparison, that's more than Eurostar and JetBlue passengers.

BlaBlaCar is a great example of a leap of trust that technology is making possible for hundreds of people around the world.

The "leap of trust" is what happens when we take the risk of doing something new or different.

Picture this in your head

Now close your eyes

There's a person who's wide-eyed and looking at me

I can see it on stage!

Please close your eyes!

(Laughter) (Applause) I'll close too.

Close your eyes and imagine that there is a gap between you and something unknown.

This "something" is someone you just met

A place I've never been to

It may be something you have no experience with

Did it come to mind?

Now open your eyes

Before you can jump out of the world of certainty and bet on something or someone you don't know, you need the power to pull you beyond the gap. That amazing power is trust.

"Trust" is an elusive concept, but it's essential to how life works.

I trust my children when they tell me to turn off the lights when they go to bed at night.

I trusted the pilots to fly safely when they came here.

It's a word that gets used a lot, but people who use it don't always think about what it really means or how it might work in different situations.

In fact, the word "trust" has hundreds of different definitions, most of which boil down to a kind of risk assessment -- how likely things are to go.

But I'm not very good at this definition because it sounds rational and unsurprising, and it doesn't touch on the human nature of what trust enables or what power it creates in connecting with other people.

So I thought of a slightly different definition.

It is a “reliable relationship built between unknown things”.

When you look at trust in this way, you begin to understand why trust has a unique quality, a quality that gives people the ability to navigate uncertainty, to put their trust in complete strangers and to keep going.

Humans are amazingly good at making trust leaps.

Remember the first time you entered your credit card information online?

This is the “leap of trust”

I can still remember clearly that when I told my father that I was looking to buy a second-hand navy blue Peugeot that I saw on eBay, he gave me a very justified remark: "The name of the seller is 'The Invisible Wizard'. Don't buy from this guy."

(Laughter) Now, my research looks at how technology is transforming the human trust that connects people in society. It's a very interesting area of ​​research, because there's so much we still don't know.

For example, do men and women open up differently in the online world?

Does meeting people in person to build trust work online?

Can trust be reused?

In other words, if people who are comfortable looking for a girlfriend on Tinder are comfortable carpooling on BlaBlaCar?

But when I looked at hundreds of dating services, I saw a common pattern in user behavior, a process I call "climbing the trust ladder."

I'll use the BlaBlaCar example to make it more realistic.

The first step comes from trust in the idea.

You have to trust that carpooling with others is safe and worth trying.

The next step is trusting the platform, believing that if something goes wrong, the people running the service will help you.

And in the third step, you use the little bit of information you have available to decide if the other user is trustworthy.

Climbing this "staircase of trust" can feel awkward and even risky at first, but once the idea starts to feel normal.

Our behavior changes, usually relatively quickly.

In other words, trust drives change and innovation.

Now, I have a big question: Is it possible to understand the profound shifts in individual behavior in society through the lens of trust?

The truth is, in human history, trust has evolved in three broad stages: direct trust, institutional trust, and now emerging decentralized trust.

For a long time, until the mid-19th century, trust was built between people who were very close to each other.

Suppose I lived in a village, and everyone in the fifth row from the front is a village resident. Everyone knows everyone, and I want to borrow money.

The person whose eyes were wide open earlier might lend it to you.

Their reputation will suffer, and future deals will be turned down.

Trust was built primarily in intimate relationships and based on responsibility.

In the middle of the 19th century, civilization underwent an enormous transformation.

People moved to burgeoning cities like London and San Francisco, and big corporations replaced the local banking industry, and we had no personal relationship with our customers.

Here, people put their trust in invisible structures called "authorities" -- legal contracts, regulations, insurance -- and they began to trust others less and less.

We've moved on to institutional and commissioned trust.

It's been said all over the place that trust in institutions and many corporate brands is declining, and will continue to do so.

We can't keep our mouths shut from the massive betrayal of trust: the major media wiretapping scandal, the Volkswagen emissions test fraud, the rampant sexual abuse of the Catholic Church, and the fact that only one stingy banker has been caught since the financial crisis hit.

What really strikes me is the attitude of the people at the top.

It's easy to conclude that trust in institutions isn't working, because we're sick and tired of the impudence of the lying elites, but what's happening is much deeper than a ferocious distrust of the structure and size of institutions.

People are starting to realize that trust in institutions is not well suited for the digital age.

The traditional way trust is built, managed, lost and repaired - the traditional way trust is built, managed, lost and repaired - across brands, leaders and institutions has been turned upside down.

This situation is both exciting and terrifying, because for many people, it challenges the perception of how trust is built and broken, not just between customers and employers, but also between people you love.

I was talking the other day with the CEO of one of the world's leading hotels, and as it happens so often, we were talking about Airbnb.

I was told that I had no idea what made Airbnb so successful.

Trying to trust each other, they seemed to struggle to understand how a company that relied on people's feelings could thrive in 191 countries.

So I said, "Actually, I haven't told you this before," and he looked puzzled. I said, I'm sure many of you know, "Sometimes when I leave a hotel, I leave my towels on the floor, but when I'm staying at an Airbnb, I never do."

The reason why I never do it is because I know that the host will write a review, because depending on this review, I may have trouble using the service in the future.

It's a simple example of how trust online changes how we behave in the real world -- and how it encourages us to act responsibly in ways we can hardly imagine.

I'm not saying we don't need hotels and traditional authorities.

But what I can say with certainty is that the flow of trust in society is changing. We're undergoing a major shift in direction.

Trust is no longer top-down

It's broken up and turned upside down.

No more opaque linear trust

A new way of building trust has emerged, and again, trust that is distributed between people, trust that is built on each of us acting responsibly.

The rise of blockchain will only intensify this trend The rise of blockchain will only intensify this trend This is the revolutionary ledger management technology that is the foundation of Bitcoin.

Now, let's be honest, when you try to mentally understand how blockchain works, it's confusing.

One of the reasons why this is so is that this system requires a very complex conceptual process, and the terminology is very arcane.

"Encryption algorithms", "hash functions", "transactions" authenticated by people called "miners", and the one who created them all was a mysterious person or group named "Tetsushi Nakamoto".

This is an incredible leap of faith. This is unprecedented.

(Laughter) But let's imagine

The Economist eloquently describes blockchain as a wonderful chain of trust in things.

In my words, to break it down as much as possible, blocks are like spreadsheets, filled with assets.

or land ownership

stock or

There are also creative assets, such as music copyrights.

Now, every time an asset moves from one place in the ledger to another, it's time-stamped and becomes a public record in the blockchain.

It's that simple

The real impact of blockchain is that it eliminates the need for any third parties -- lawyers, trusted intermediaries, perhaps even state intermediaries -- to facilitate transactions.

So back to the "staircase of trust", you need trust in the idea itself, you need trust in the platform, but you don't need trust in the other person in the conventional sense of the word.

this will have a significant impact

Just as the internet opened the door to the information age for everyone, so blockchain will revolutionize trust on a global scale.

Now, I've intentionally avoided mentioning Uber so far, because I see it as controversial and overused as a joke, but in the context of the new age of trust, Uber is an excellent example.

There will be cases of abuse of decentralized trust in the future.

It's actually happening, and the worst could happen.

It's no surprise that taxi associations around the world are protesting and urging governments to ban Uber because of its safety concerns.

I happened to be in London when these protests happened, and I happened to see a tweet from Matt Hancock, Minister for Business, Energy and Industrial Strategy.

It was a tweet that said, "Tell me about the #Uber app that everyone is talking about.

(Laughter) I didn't know until today."

Now here the Taxi Association proves the first step of trust in Uber.

They've proven the legitimacy of the idea they're trying to kill, and in 24 hours, Uber's registrations have grown by 850 percent.

This is a very clear example of the fact that once trust in a behavior or in an industry shifts, there is no going back.

Every day, 5 million people use Uber with a leap of trust.

In China, there are 11 million carpools every day using the ridesharing service Didi.

127 calculations per second, proof that this phenomenon is happening across cultures.

What's interesting is that both drivers and passengers testify that seeing someone's name, seeing someone's photo and rating makes them feel more secure, and, as you may have experienced, they may behave a little more pleasantly than in a taxi.

Uber and Didi are great examples of how technology, while still evolving, is creating trust between people in ways that never existed before, and on a scale that was never possible before.

Today, there are many people who are comfortable riding in a car driven by a stranger.

I also find people who meet my criteria on the app and meet them in person.

They even share their homes with strangers.

This is just the beginning, because the real change happening in society today is not the technology itself.

Because it's a transformation of trust driven by technology, and I want to help people understand this new era of trust, so that we can embrace the opportunity to change the world without getting off track, towards a more transparent, more open-minded and accountable society.

thank you

(Thank you for applause

(applause)

Introducing Jane

she is a high risk pregnant woman

I'm only 24 weeks pregnant, but I'm being monitored in a hospital bed for muscle contractions that can lead to premature birth.

You never look happy

One of the reasons is that the technicians and specialists put a heavy belt on her to watch her uterus contract.

Another reason is that Jane is insecure.

I'm particularly worried about what happens after 10 days in the hospital.

What will happen when you get home?

If she were to give birth prematurely at this stage, the results would be very disappointing.

Because she's African-American, her risk of premature birth and stillbirth is doubled.

So Jane has two options: either rest in a hospital bed, be a prisoner of technology until she gives birth, and spend the rest of her life trying to pay for the hospital, or go home after 10 days and wish her well.

I don't think either option is preferable.

When I started thinking about stories like this and hearing similar stories, I started to ask myself, I started to imagine, could there be another way?

Is there a way, in partnership with a trusted partner within the hospital, that patients can continue to live their normal lives in their own homes while enjoying the benefits of high-performance monitors?

With that in mind, I encouraged members of my research group to partner with some of the brightest materials scientists, and we all got together and brainstormed.

And after a long process, I had a vision and an idea for a wearable system that could be worn like an accessory or stuck like a bandage.

And through trial and error, we've come up with this flexible electronic seal, which was made in the same process that makes computer chips, but instead of using a rigid wafer of semiconductors, the electronics were made of a flexible material that can come in direct contact with your skin.

These systems are about the thickness of a human hair

We can measure the type of information that we're looking for, such as body movement, body temperature, the electrical rhythm of the body, the electrical rhythm of the body.

And you can design these systems, and you can put a power supply on them, and you can transmit them wirelessly.

We built these types of systems and started testing them in our research group.

We then contacted our clinical partners in San Diego and started testing multiple patients with different cases, including mothers-to-be like Jane.

Here's a picture of a pregnant woman in the delivery room at our university hospital being watched for uterine contractions with a conventional belt.

In addition, you can see our flexible electronic seals.

This picture shows waveforms for fetal heart rate, where the red points are the numbers obtained with a conventional belt, and the blue points are the numbers predicted using our flexible electronic system and our method.

At this moment, we congratulated each other in our hearts.

Some of the things we envisioned started to pay off, and we could actually see them in the clinic.

but there was still a problem

The problem is that the methods of manufacturing these systems are very inefficient, have poor yields, and are prone to errors.

In addition, when I spoke with nurses at the hospital, they recommended that we test our electronic equipment against the standard medical tapes used in hospitals.

I had an epiphany here, "Wait

Instead of attaching electronic devices with adhesive sheets, we can solve manufacturing problems by incorporating devices into adhesive sheets."

The picture you see here shows how these sensors can be integrated into the tape by simply peeling the tape off the wafer.

In a series of ongoing projects, our research group has built integrated circuits into flexible tape that can amplify and digitize signals, process signals, and encode wireless communications.

All of these functions have been integrated into the same medical tape that is used in hospitals.

When we got to this stage, we tried to make it more practical, both in terms of design and usability, but we ran into additional challenges.

In many of the digitization of healthcare discussions, people firmly believe that we can simply digitize the data, send it wirelessly, send it to the cloud, and the cloud can extract and analyze useful information.

Actually, if you don't worry about the power supply, you can do all of these things.

Consider the example of Jane

She doesn't live in Palo Alto or Beverly Hills.

What this means is that we need to consider her data plan and the cost of sending data continuously.

There are other issues that many medical professionals tend not to talk about.

It's Jane's lack of trust in medical institutions.

Jane and others like her and previous generations have not been treated well by doctors, hospitals or insurance companies.

That's why we need to care about privacy issues.

Jane wouldn't like all her data to be processed in the cloud.

And Jane knows, because she's reading the newspaper.

We know that if you can hack the federal government or any Fortune 500 company, your doctor is no exception.

Thinking about this, we had an epiphany.

You can't beat all the hackers in the world, but you can minimize your attack surface.

What if instead of running the algorithm that analyzes the data in the cloud, instead of running the algorithm that analyzes the data, instead of running it on a tiny integrated circuit that's housed in an adhesive seal?

And now that we've combined all of these things, we can think about the future, a future where people like Jane can go about their daily lives while being monitored, where they don't have to find another job to pay for their data plans, where it's possible, and where privacy concerns can be addressed.

We are very confident at this stage.

We've solved this problem, we've addressed some privacy issues, and I feel we're in the final chapter of our project.

Is this "Happily Happily Ever After"?

It's not that easy.

(Laughter) As I said earlier, I want you to remember that Jane doesn't have a high degree of confidence in medical institutions.

We must remember that there are growing health inequalities and unequal access to appropriate treatment management.

So this diagram is a simple representation of Jane and her data, and she's happy that the data is wirelessly sent to the cloud, and that the doctor is involved if necessary, but that's not the whole story.

So what we're starting to do is start thinking about how to put in place a trusted third party to act as an intermediary between people like Jane and the healthcare system.

Specifically, we're starting to think about partnerships with churches, nurses who are part of that trusted community, providing patient support and health coaching to people like Jane.

The other thing that's lucky for us is that we're getting more inquiries from insurance companies.

What they're beginning to realize is that paying a dollar now for wearable devices and health coaching is better than paying a premature newborn baby 10 dollars later in the hospital's most expensive neonatal intensive care unit.

It took me a long time to understand

Solving a problem and finding the next problem is never easy, but identifying the next problem actually leads us to our goal of not only innovating with technology, but also making sure it's available to those who need it most.

The other thing I've learned from this process, and it's very small, is that no matter how much technology advances, we need to remember and be aware that humans are using this technology, which means that we humans have one face -- one name -- one life.

And in Jane's case, we want two lives.

thank you

(applause)

I started my first job as a computer programmer in my freshman year of college, so I was a teenager.

Shortly after I started working for a company writing software, the company manager came up to me and whispered, "Did he find out what I was lying about?"

no one else in the room

"Who are you telling me to find out? And why are you whispering?"

the manager points to the computer in the room

"Did he find out about my lies?"

This manager was actually having an affair with the receptionist.

(Laughter) I was still a teenager.

So I whispered back to him, "Yeah, the computer can see through it."

(Laughter) I laughed, but the laughter actually came back to me.

Today, computer systems can detect emotions and even lies by processing images of people's faces.

Advertisers and even governments are very interested.

I became a computer programmer because of my passion for math and science since childhood.

But along the way, I also learned about nuclear weapons and became very concerned about the ethics of science.

I was worried

But for family reasons, I had to start working as soon as possible.

So I quietly thought, "Isn't there a job in an engineering field where I could get a job easily and not have to worry about all the thorny issues of ethics?"

That's why I chose the computer.

(Laughter) Haha laughing I'm laughing at myself

Computer scientists these days are building platforms that control what a billion people see every day.

We're developing a car that can decide who to run over.

They're making machines and even weapons that might kill people in war.

Ethics are important in everything

machine intelligence already exists

We now use computers to make all kinds of decisions, and even new kinds of decisions.

We're asking computers to answer a question that doesn't have a single correct answer, a question that's subjective, open-ended, and about values.

The question we ask is, "Who should we hire?"

"Which friends should I see updates from?"

“Who are the inmates most likely to reoffend?”

"Which news or movie should I recommend to people?"

Sure, we've been using computers for a while, but this is different.

This is a historical distortion, because you can't rely on computers to make subjective decisions like that, unlike when you fly a plane or build a building or go to the moon.

Are planes safer? Did the bridge sway or fall?

There are agreed-upon, fairly clear standards, and the laws of nature guide us.

It's about tough decisions in human affairs that we don't have any of those supports or standards.

More complicatedly, software is becoming more powerful, but it's also becoming less transparent and more complex.

Complex algorithms have come a long way in the last decade.

can recognize human faces

can read handwriting

It can detect credit card fraud, block spam, and even translate languages.

Medical imaging can also locate tumors.

It can even beat humans at chess and go.

Much of this progress comes from a method called "machine learning."

Machine learning gives computers detailed, precise, meticulous instructions - unlike traditional programming.

Machine learning is a way of stuffing systems with massive amounts of data, including the kind of unstructured data that humans generate in their digital lives.

And the system learns by combining this data.

And also importantly, these systems don't operate on the logic of a single answer.

It's more probabilistic than simply giving an answer, "This is probably closer to what you're looking for."

The good thing about this is that this method is very powerful.

The head of Google's AI system calls it "the unreasonable power of data."

The bad thing about this system is that we don't really understand what it's learning.

In fact, it's the strength that matters.

This is more like training a puppy-like creature than giving instructions to a computer, even though we don't really understand or control the machine that much.

this is a problem

Not only when this artificial intelligence system makes a mistake,

Even when we do the right thing, we have problems, because when it's a subjective problem, we don't even know right or wrong.

we don't know what this object is thinking

So let's take, for example, a hiring algorithm, a system that's used to hire people, that uses a machine learning system.

Such systems are trained on past employee data, and the system tells them to seek out and hire people who are similar to the top performers in the company.

looks good

I was once at a conference, and there was a group of HR managers and executives, high-level people who were using such a system for hiring.

they were very excited

In their view, this system would make hiring more objective and less biased, and would give women and minorities a better chance against managerial bias.

Yes, employment is stigmatized.

I know that

When I started working as a programmer at one place, my direct manager would sometimes come to me, either in the early morning or in the evening, and she would say, "Let's go to zaynap lunch."

It's a funny moment and I don't understand it at all

Lunch at 4pm?

I didn't have money, so it was a treat.

I realized what was going on later

My direct manager didn't tell upper management that he hired a teenage girl to work in jeans and sneakers for an important job.

I had a good job, but I was ugly, and I wasn't good for my age or gender.

So it seems to me that employment in a way that is gender-neutral and race-neutral is a very good thing.

But with this system, things get more complicated, because now computer systems can infer all sorts of things about you from bits of digital information, even if you don't disclose them.

The system can infer your sexual orientation, personality traits, and political leanings.

The system has the power to predict with a high degree of accuracy.

Remember, things you haven't even disclosed

this is a guess

A friend of mine is developing such a computer system to predict the likelihood of pathological or postnatal depression, using data from social networks.

the results are great

Her system can predict the likelihood of depression months in advance of symptoms, months in advance.

It is a prediction at the stage where there are no symptoms

She wants to use this for early intervention Great!

But let's think about this in the context of employment.

At that same human resources managers' meeting, I approached a high-level manager at a very large company and said, "I don't think you know this yet, but what if the system excludes people who are more likely to become depressed in the future?

Not now, but likely in the future

What if you're excluding women who are more likely to conceive? Next year or the year after that, if you're not pregnant right now, right?

What if an aggressive person is hired because they fit into the workplace culture? ”

You can't read that from the gender composition.

The composition ratio is balanced

It's machine learning, not a traditional program, so variables like "high risk of depression" or "high risk of pregnancy" or "aggressive personality" aren't included.

Not only do we not know what the system is basing its choices on, we have no clue how to know.

it's a black box

The system has predictive power, but it's something that humans can't comprehend.

"What kind of security measures do you take? So that your black box doesn't do bad things."

She looks like she's seen a bastard who's stepped on ten puppies' tails.

(Laughter) She looked at me and said, "I don't want to hear anything more about this."

and she turned and left

it's not that she's rude

It was a look of hatred telling me to go away, clearly wanting to pretend I didn't hear about it.

(Laughter) Look, in some ways, such a system might be less biased than a human manager.

It would also make sense in terms of cost

But it can also quietly but surely keep people at high risk of depression out of the labor market.

Is this the kind of society we want to build? We don't even know we're doing this, because we're letting machines make decisions that we don't fully understand.

Another problem is this: the training of such systems is often based on human behavioral data, imbued with humanness.

They can reflect our biases, and these systems can pick up on our biases, amplify them, and show them back to us, even though we say, "We're just objective, neutral computing."

Researchers found that women were less likely to see high-paying job ads on Google.

And if you search for an African-American name, you're more likely to get ads that imply a criminal record, even if you don't have a criminal record.

Sometimes researchers uncover these hidden biases and black-box algorithms, but sometimes they don't, and they can have life-changing consequences.

A defendant in Wisconsin was sentenced to six years in prison for escaping from a police officer.

What you may not know is that algorithms are increasingly being used to make parole and sentencing decisions.

he wanted to know how this score was calculated

it's a commercial black box

The company refused to have its algorithms tested in public court.

But a nonprofit research group called ProPublica audited the algorithm, using the public data that was available to them, and found that the results were biased, and the predictive power was horrendous, just slightly better than chance. Black defendants were wrongly labeled as being twice as likely to commit future crimes as white defendants.

Now consider this case: A woman was running behind schedule with a friend to a school in Broward County, Florida, to pick up her best friend.

They found an unlocked children's bike and scooter in the front porch of a house and foolishly jumped on it.

As I was about to run away, a woman came out and said, "Hey! That's my child's bike!"

They got off and walked away, but they were arrested.

She was wrong and stupid, but she's only 18.

she had a history of delinquency twice

The man, on the other hand, was caught shoplifting at Home Depo, where he shoplifted for $85 worth, also a misdemeanor.

He was a robber and had two previous convictions.

But the algorithm rated women as high risk, not men.

ProPiblica reveals the woman has not re-offended after two years

With a criminal record, it was really hard for her to get a job.

The man, on the other hand, is a repeat offender and is currently serving eight years in prison for a second crime.

It's clear that the black box needs to be audited, and we can't give this kind of power without checking it.

(Applause) Auditing is great and important, but it doesn't solve all problems.

In the case of Facebook's news feed, a powerful algorithm that ranks everything and decides what to watch among all your friends and pages you follow.

Should I see another baby photo?

(Laughter) What about the moody comments from acquaintances?

An important but esoteric news story?

no correct answer

Facebook optimizes for interactions on the site, things like likes, shares, comments.

In August 2014, protests erupted in Ferguson, Missouri, after an African-American teenager was murdered by a white police officer in suspicious circumstances.

News of the protests flooded my unfiltered Twitter feed, but nothing showed up on Facebook.

Is it related to friends on Facebook?

I disabled Facebook's algorithm, which was difficult because Facebook wants to be in control of the algorithm, and then I found my friend talking about the protest movement.

It's just that the algorithm didn't let me see it.

I did some research and found that this was a widespread problem.

Ferguson's topic didn't sit well with algorithms.

It's hard to "like"

Who Likes?

it's not easy to even comment

There were no likes, no comments, so the algorithm only showed it to a few people, so they never saw it.

Instead, it was the ALS Ice Bucket Challenge that Facebook's algorithm highlighted that week.

Douse yourself with ice water for a worthy cause and donate it to charity, nice.

But it fits very well into the algorithm.

The machine decided this for us.

A very important but esoteric conversation may have been stifled when Facebook was the only channel.

Now, finally, these systems can make errors that are unlike human systems.

Do you remember Watson, IBM's machine intelligence system running the quiz show Jeopardy! defeated a human opponent in

He was a great player.

But in the final question, Watson was asked, "The region's largest airport is named after a World War II hero, and the second airport is named after a World War II battle."

(humming the music of the final question) "Chicago"

Both humans answered correctly

Watson's answer, on the other hand, was about Toronto, a city in the United States!

This wonderful system also makes errors, errors that humans don't make, not even second-grade kids.

Machine intelligence can also make mistakes that are different from human error patterns, in ways that are unexpected and unprepared.

Not getting a job for a qualified person is bad, but if it's because of a stack overflow in a program subroutine, it's three times worse.

(Laughter) In May of 2010, a feedback loop in Wall Street's "sell" algorithm led to a momentary crash, losing $1 trillion in 36 minutes.

I don't want to think about what "error" means in the case of drones.

Yes, humans are prejudiced.

Decision makers and gatekeepers Courts, news, wars...

Mistakes happen there, but that's what I mean.

We cannot escape these challenges

We can't outsource responsibility to machines.

(Applause) Artificial intelligence doesn't give us the "ethical freedom" card.

Data scientist Fred Benenson called this math brainwashing.

we need the opposite

We have to become suspicious and scrutinize algorithms.

We must hold our algorithms accountable and demand audits and meaningful transparency.

We have to accept that mathematics and computers can't bring us objectivity to messy, value-related, human things; rather, it's the complexity of human nature that governs algorithms.

Yes, we can and should use computers to help us make good decisions.

But we must accept our own moral responsibility for making decisions, and use algorithms within that framework, as opposed to abdicating our responsibility and delegating it to someone else.

machine intelligence already exists

So we have to have a stronger sense of human values ​​and ethics.

thank you

(applause)

I am standing in front of you today, living the life that is here now.

But for so long I lived to die

When I was young, I believed that jihad could be accomplished through force and violence.

I wanted to correct the world with force and attack.

I was deeply saddened by the suffering of people, and I had a strong desire to save them from suffering.

I thought violent jihad was noble, brave, and the best way to save people.

Many of our Arab compatriots, especially young people, are at risk of becoming radicalized. Groups such as al-Qaeda and Islamic State call on them, saying that their unrelenting violence is the true form of jihad.

The true meaning of jihad is to elevate oneself

Work hard every day, improve your spirituality, look at yourself, purify your heart, and do your best for others.

Through learning, wisdom, and God's teachings, it's about transforming into a better you.

Jihad is the word that describes it all.

Sometimes jihad means fighting, but that's rare, in very harsh circumstances, under rules and restrictions, in Islam.

The benefits of an action must outweigh the suffering and difficulties that accompany it.

More importantly, the words written in the Quran about jihad and warfare do not deny generosity, philanthropy or patience.

But the violent jihad that is taking place around the world today cannot be tolerated, because it brings more suffering than good.

The idea of ​​jihad seems to have been hijacked.

It's been distorted into a term for violent struggle, and Muslims in distress are turned into terrorists by fundamentalists like Al-Qaeda and Islamic State.

But I understood that true jihad is to hone the virtues that God loves and to improve oneself to live.

I was born in Bangladesh but raised in England.

went to school in England

My father was a scholar, and our family moved to England because of his work.

In 1971, while I was still in Bangladesh, everything changed.

The Revolutionary War trampled us down. Families, townspeople quarreled and fought.

When I was 12 years old, I went through the war. My family was starving. 22 relatives were brutally killed. So was my brother.

where people are killed

I saw the beasts scavenging the roadside corpses Everyone was starving Outrageous acts Cruelty Unreasonable violence...

I was young and still in my teens and I had a lot of things I wanted to do.

I wanted to study, but I couldn't go to school for four years.

After the Revolutionary War, my father spent two and a half years in prison, I used to visit him every week, and I continued to educate myself.

In 1973, my father was released and went to England as an asylum, and our family followed him.

i was 17

Through such experiences, I was made aware of the cruelty and unreasonableness of the world.

I had a strong desire, very strong and deep, to put the world right and help the victims of oppression.

While studying at university in England, I met some friends who taught me how to fulfill my dreams and how religion could help people.

And I became a fundamentalist, to the point where I thought violence was justifiable and, in certain circumstances, a virtue.

And I participated in the Afghan jihad.

It was to protect Muslims in Afghanistan from Soviet forces.

I thought of it as a jihad, a holy mission rewarded by God.

I became an evangelist

I was a pioneer of violent jihadists in England.

We recruited like-minded people, raised funds, and trained them.

I didn't know what real jihad was because of the distorted view of jihad instilled by fascist Muslims, who seek power and rights and use the name to justify their desire to rule the world.

I was a fundamentalist, and for a short time in 15 years, I fought not only for Afghanistan, but also for Kashmir and Myanmar.

The goal was to repel the invaders, save the victims of oppression, and, of course, to obey God and create an Islamic state under the rule of the Caliphate.

i did it with pride

didn't break any law

I was proud to be British, and I still am.

I never had any animosity towards the British.

During one battle in Afghanistan, I and a few British people formed a special bond with a 15-year-old Afghan boy. His name was Abdullah.

was a poor boy

Boys like him were menial laborers in camps.

But he looked happy, and I couldn't help but wonder how much his parents would miss him.

And I'm sure you wish him a happy future.

The reality of being a victim of war in brutal conditions weighed heavily on him.

One day I picked up an unexploded ordnance in a trench and put it in a makeshift mud hut.

And then we left the hut for our usual brief, aimless battle, and when we returned to the hut a few hours later, there the boy was dead.

The unexploded ordnance exploded while trying to retrieve the gunpowder.

He died a tragic death, shattered by an unexploded ordnance that was harmless to him...

i asked myself

What is the meaning of his death?

Why is he dead and why am I alive?

I continued my jihad

i fought in kashmir

I also recruited in the Philippines, in Bosnia, in Chechnya.

The questions I had about myself just kept piling up

Later, in Myanmar, I met Rohingya fighters, barely in their teens, boys with machine guns and grenade launchers, born and raised in the jungle.

There I met two polite 13-year-old boys.

They looked at me and asked me to take them to England.

They just wanted to go to school, that was their dream.

My family... my children of their age live in England and go to school. They live in peace.

I couldn't help but wonder how many times these boys dreamed of such ordinary days and talked to each other.

They are victims of a world of absurdity, sleeping on the ground looking up at the stars, ruthlessly exploited by their leaders for their own self-interest and struggle for power.

I've also seen boys like them kill each other in group fights.

it was a common sight

Afghanistan, Kashmir, Myanmar, Philippines, Chechnya... Young people and the weak were killing each other because of stupid leaders in the name of jihad.

among Muslims

Not to protect anyone from invaders or rulers, not for freedom

Children were abused and exploited mercilessly People fought and died In the conflict I fought in the name of jihad...

and it still continues

I realized that the violent jihad I had participated in abroad was far from my ideal. There was a deep chasm between what I had experienced and what I believed to be a sacred duty.I had to reflect on what I had done in England.

I had to think deeply about preaching, recruiting people, fundraising, training, and most importantly, sending young people to the extreme, to the point of war, and everything I did was wrong.

I participated in violent jihad in the mid-'80s, starting in Afghanistan.

Until the time you realize in 2000

dedicated to the activity

Everyone in the organization supported me and praised me and celebrated what was done in the name of jihad.

In 2000, 15 years had passed when I realized my mistake and left the organization.

in retrospect

We spent all our time arguing about values, blinded by our cause.

We didn't try to polish our inner selves.

We told ourselves we were fighting for the weak, and those battles were never going to be won.

Like machines of death, we have created more tragedies for the self-interest of a few brutal leaders.

But a long time passed and I woke up

Without looking away, I began to face the truth. I began to think about the questions I had asked myself throughout my life.

and touched my soul

let me tell you what i learned

Those who participate in violent jihadism, and those who subscribe to such fundamentalism, are no different than ordinary people.

i believe they can change

They too can regain their hearts and be healed, and for that they need to know their worth as human beings.

When you turn your eyes away from the painful reality, people tend to accept what someone is telling them.

And at all times in life, people neglect what they should have cherished.

i thought i was doing the right thing

But now I'm starting to wonder why

I repeatedly told people to accept the truth, but I never considered whether I was right.

The conviction that people can change comes from my own experience, the journey of life.

After much reading, reflection, and self-discovery, I realized that the Islamic world that I and my colleagues were trying to build was fake and unjust.

By questioning the sacred, unwavering truths we believed and believed in, I became more flexible.

In a world full of change and contradiction, foolish evangelists like myself never see the contradictions of the myths and myths they claim to be true.

I've realized how important it is to know ourselves, to know politics, to have a deep appreciation of how our social interactions and actions affect others.

I make a sincere request to all of you today, especially those who believe in Islam jihadism.

Let us reject self-righteous authority Let go of anger, hatred and violence Let's not justify cruel and immoral behavior and learn to right what's wrong

Let's live beyond our own lives Let's create something beautiful and useful

Let's walk into the world with love into life

To raise and cultivate the mind, learn to know the kindness, beauty and truth of the world and people.

That way, you can value yourself more.

Each other, the connection between people, and I, God

That's jihad my real jihad

thank you

(applause)

In 2015, there were two great and hopeful advances for humanity.

The first is the adoption of the Sustainable Development Goals (SDGs), a global collective plan for humanity, to end hunger and promote economic growth and health within the limits of global environmental tolerance.

The second is the adoption of the legally binding Paris Agreement after 21 years of negotiations, where countries around the world aim to keep the average temperature rise below 2 degrees Celsius and aim to stay below 1.5 degrees Celsius.

But it's been three years, and we still haven't made any real moves.

We should take a step back and ask if the world leaders really understood what they signed into the United Nations General Assembly three years ago.

These are ambitious, transformative global goals for all of humanity to thrive in a stable planetary system.

But there are some underlying problems

The goals are in conflict with each other, and working towards one goal can come at the expense of others.

Take, for example, Goal 8, Decent Jobs and Economic Growth.

If we continue to develop natural resources and burn fossil fuels to achieve this, we will not be able to reach Goal 13.

Now, three years later, I have to frankly admit that we're doing very little as a global policy package.

take a step back here

We need to ask ourselves the tough questions: Is there any chance of achieving the SDGs by 2030?

Are there any trade-offs that are incompatible with your current growth strategy?

Can we expect a synergistic effect that accelerates change?

And is this really a human and planetary challenge that takes social and economic goals seriously within the life-supporting Earth system?

All over the world, people are finally starting to realize that global environmental challenges are looming, and that a stable planet is essential to the well-being of humans on Earth.

We need to define the limits of activity for a stable Earth system, and in 2009 the planetary boundaries were proposed by the scientific community for just that.

It is widely accepted by policies, companies, and regions around the world as a framework for sustainable development in the Anthropocene, where human beings affect the global environment.

This screen shot is a framework showing the nine environmental factors that control the stability of the Earth system. A safe range of operations has a high probability of human well-being, prosperity and equity.

The yellow area is the dangerous and unstable area, and when you enter the red area, there's a high probability that you'll cross an irreversible tipping point, and the Earth system will no longer be able to create social and economic well-being.

We can now scientifically quantify these boundaries and show humanity a stable Earth system.

But if we really want to go further and achieve the Sustainable Development Goals (SDGs), we must also recognize the need to do so within this safe sphere of action.

SDGs need to be done within the limits of the planet

But folks, even this isn't enough

We should also recognize that the SDGs are 12 years from now.

this is just a milestone

It's a goal that we must reach and pass, and that we must sprint towards change, so that all of our more than 9 billion global citizens can live a better future beyond 2050 within a stable planetary system.

This is a quest, not only to have an opinion, but to make this happen, we have brought together the scientific community, leading thinkers and statisticians, and set out to develop a completely new and complex dynamic model, the Earth-3 model, based on models from the last 50 years.

this is the model

great achievement

The climate module, the biosphere module, the global economic model, and the algorithms, it's an amazing achievement.

This is what excites us scientists.

(Laughter) It's a purely beautiful achievement.

I wish I could spend all night explaining this, but I'm sorry for all of you.

Can not do that

Now all I have to do is emphasize that this is the first time we've done something like this.

No one has ever tried to combine the SDGs with the limits of our planet.

We found patterns and laws that gave us confidence that we could predict economic growth, water, food and energy utilization, population growth, per capita income, along consistent, systematic paths.

For the first time, it explores the possibility of achieving the SDGs within the limits of the planet.

what to do

Please look

We have real data, measured between 1970 and 2015, from 100,000 data points from all over the world, showing the collective power of seven regions to achieve the SDGs.

Here's an example of how we measure it, here's data from the SDGs on poverty eradication, health education and food.

The circles represent the seven regions of the world, and show how the observed changes in GDP per capita have changed up to 2015, showing a global convergence trend. Based on this, it is now possible to perform a regression analysis and simulate the achievement of the SDGs by 2050 along the line.

This allowed us to create multiple scenarios and predict multiple futures: status quo scenarios, global transformation, corporate investment strategies, different governance planning scenarios, policy, finance, to see what the future might look like if we achieve the SDGs within the limits of our planet as much as we can.

the results were amazing

This is my first time to publish

In fact, it's something that shouldn't be mentioned outside of this room.

Results are presented along two axes

The y-axis shows the likelihood of staying within the Earth's limits

The higher you go, the closer you get to a safe range of activity.

The x-axis is the SDGs The more you go to the right, the more SDGs you can achieve

I want to aim for a safe and fair world in the upper right range for the future.

This is the point in 1980

We were in a safe working space, but we weren't achieving many of the SDGs.

This is the movement up to 2015

So in conventional societies, achieving more of the SDGs and lifting millions out of poverty, but at the cost of safer spheres on the planet.

Now, this is the future that our current scenario will lead us to.

If we continue on our current path, we can achieve some of the SDGs, but at the expense of global environmental stability.

What if we accelerated economic growth, increased income by 1 percent a year, and tripled the size of the global economy by 2050?

The curve looks like this

We're a little bit better at achieving the SDGs, but we're still at risk of sacrificing global environmental stability.

What if we try harder

What if we increased our ability to achieve the SDGs by 30% in all sectors of society, from climate to trade agreements?

A more severe scenario would push the curve even higher, but the SDGs are still out of reach, and the Safe Range for Humanity is still out of reach.

We've come to a very disappointing conclusion: we're not going to achieve the SDGs in the conventional way, and we're going beyond the limits of the planet.

We need bold ideas

We have to start thinking outside the box for a transformative, transformative future.

After building predictive models, working together and talking, we were able to identify five possible ways to reach our goals.

First, by halving our carbon footprint every 10 years, doubling our investment in renewable energy, and building a global energy democracy, in line with the Paris Agreement's plan, we can achieve several of the SDGs.

The second is to rapidly pivot towards a sustainable food system, investing 1 percent each year in sustainable yield increases and investing in and implementing the solutions that are at hand today.

And the third is to learn from developing countries that have successfully changed their growth strategies and achieved rapid growth.

What if we could achieve China's economic growth as an eco-friendly civilization within the limits of the global environment?

The fourth is the redistribution of wealth.

What if we could agree that the richest 10% could not own more than 40% of the national income?

And finally, the fifth is education, health, employment, strengthening contraception and investing in women around the world. These massive increases will enable us to achieve the SDGs on gender, inequality, economics and urban development.

If you push through all five -- they've been tested -- you're on an amazing journey closer to a safe and just playing field on the planet.

Conservative, empirically based, complex system dynamics models have also allowed us to envision the next 12 years and beyond: transformations that will return the planet to a safe haven and achieve ambitious social and economic goals.

I'm not currently on this trajectory, but it's very encouraging.

So in summary, we're three years into the SDGs, and we have to draw the line and admit that we haven't met the goals, and we also have to recognize that by pushing the planet past a tipping point, we risk severe problems for future generations.

In fact, the danger of turning the planet into a greenhouse is looming, increasing the odds of creating geopolitical instability and worsening the livelihoods of billions of people on the planet.

I think this is really scary to be honest

But that's why I'm here today because the door to success is still open.

The earth system is still resilient

The Earth still provides the ecosystem functions we need to return to a safe sphere of activity.

But we need a fundamental shift in thinking.

We need to see this as an important warning and an opportunity for transformative change, an opportunity to reorient ourselves to think seriously about the SDGs as transformative plans within a safe space of action on the planet.

In other words, we can create a safe and just world.

you really have to act

take action thank you

(applause)

About 10 years ago, I asked a friend to try holding a baby dinosaur robot upside down.

I got a toy called Pleo, and I was having a blast with it, because I've always loved robots.

This robot has a lot of amazing features.

In addition to motors, contact sensors, infrared cameras, etc.

It had a tilt sensor in it so that it could tell which way it was facing.

And when I turn it upside down, it starts crying

I was so impressed with this that I thought I'd show it to my friends and say, "Hey, just hold this tail and see what happens."

And I watched this robot writhe and cry,

After a while, I felt uncomfortable and said, "Hey, it's fine now, put it down."

I stroked the robot so that it would stop crying

it was a strange experience for me

I wasn't that maternal person back then.

But nine months ago, when I became a mother myself, I found that holding it upside down would cause babies to struggle.

(Laughter) And the reason my reaction to this robot was so interesting was because I knew the mechanics of it, but I felt compelled to be nice to it.

That observation sparked the curiosity that I've been chasing for the last ten years.

Why did I care for this robot?

One thing I've learned is that this response to robots isn't limited to that awkward moment in my living room, but that in a world where robots are becoming more and more part of our lives, this feeling can have many consequences.

In 2007, the Washington Post reported on a mine-clearing robot being tested by the US military.

It looked like a stick insect and used its legs to roam minefields, each time it stepped on a mine, one of its legs would be blown off, but as it continued walking, it would detonate the mines.

The colonel who was in charge had the experiment stopped because it was inhuman to watch a wounded robot crawl through a minefield.

What was it that made a hardcore soldier and someone like me react like that?

There's also the fact that science fiction and popular culture have become accustomed to anthropomorphizing these things, but this is more deeply rooted.

Biologically, we're wired to try to see intentions and life in things that move autonomously.

That's why people treat robots like living creatures.

These bomb disposal robots were named

awarded an award

Funerals with gun salutes are sometimes held

It turns out that people react this way to simple domestic robots, even the robot vacuum Roomba.

(Laughter) It's just a disk, and it moves around on the floor and cleans it up, and the fact that it moves around on its own is what makes it like having a name for its owner, or being cute when it's stuck under the sofa.

(Laughter) We can also design robots to evoke those responses, by adding eyes, faces, and other behaviors that people subconsciously associate with emotions.

There is also a field called "human-robot interaction" that studies such phenomena.

For example, researchers at Stanford University found that humans feel very uncomfortable when asked to touch their genitals, even in robots.

(Laughter) There's a lot of research that shows that humans respond to cues from these lifelike robots, knowing they're fakes.

We are moving towards a world where robots are everywhere.

Robot technology is no longer just for the factory

Expanding into offices and homes

Perhaps the best analogy for the machines that come into those places that can perceive, make autonomous decisions, and learn is our relationship with animals.

Thousands of years ago, humans began domesticating animals, taming them for work, warfare, and as playmates.

Throughout history, some animals have been treated as tools and commodities, while others have been treated with compassion and given their place in society as human companions.

It's likely that robots will be co-opted as well.

animals are alive

the robot is not alive

From my experience working with robotics researchers, I can tell you that robots with emotions are a long way off.

But humans empathize with robots, and that's the point. If we're going to integrate robots into society, we need to understand that humans treat robots differently than other machines. And that can lead to inefficiencies and dangers, for example, when soldiers become attached to the robots they work with.

But in other cases, cultivating an emotional connection to the robot can be useful.

We already know of some amazing examples, such as children with autism showing previously unseen reactions to robots, and teachers using robots to achieve new learning outcomes for children.

And this is not just for children

It's been shown that robots can help doctors and patients in medical settings.

This is a robot baby seal called Paro.

It's being used in nursing homes and dementia care.

It's been around for quite some time

I remember, many years ago, at a party, I was talking about this robot, and someone said, "Isn't that terrible?

I can't believe you let robots take care of you instead of humans."

It's a very common reaction, and I think it's totally correct, and if so, it's terrible.

But in this case, we're not replacing humans with robots.

What's replacing it is animal-assisted therapy, where we use robots when we can't use real animals, because people treat robots more like animals than machines.

Knowing this emotional connection to the robot will help us to anticipate the problems that arise when the robot becomes more familiar.

For example, is it okay for a child's teddy bear robot to record private conversations?

Is it okay to allow sex robots to prompt in-app purchases?

(Laughter) Because the combination of robots and capitalism raises issues of consumer protection and privacy.

But that's not the only reason why human behavior toward machines can be a problem.

A few years after my first experience with that baby dinosaur robot, I opened a workshop with my friend Hannes Gassert.

Prepare 5 baby dinosaur robots and give them to 5 groups.

We gave it a name and played with it for about an hour.

Then he took out his hammer and ax and beat the robot up and told him to kill it.

(Laughter) This came as a bit of a shocker than I expected, because none of the participants even tried to hit the baby dinosaur robot.

(Laughter) Still, it's not going well, and people are hanging around.

Finally, he said, "If someone doesn't pick up an ax and swing it down on one of them, we're going to destroy all the robots."

So one of them got up, grabbed the ax, and slammed the ax down the robot's neck, and everyone in the room was startled, and then there was a moment of silence, half-joking, half-serious, dedicated to the fallen robot.

(Laughter) It was a very interesting experience.

This wasn't a controlled study, but it later led to a study I did at MIT with Palash Nandy and Cynthia Brizeal, where we had people come into the lab and squash this HEXBUG, which was moving around like an insect-like creature.

I used a simpler robot instead of something cute and attractive, and found that the more empathetic people were, the more hesitant to destroy the HEXBUG.

This is a small study, but it's part of a much larger area of ​​research that's beginning to show that there's a link between human empathy and behavior toward robots.

The question about the coming era of coexistence between humans and robots is not "Will humans empathize with robots?"

"Can robots change human empathy?"

For example, is it effective to train a child not to kick a robot dog -- not only in terms of taking care of things, but also in order to prevent him from kicking a real dog?

This is not just for children

It sounds like the problem of violent games, but it's a whole different story, because we respond more strongly to tangible objects than to images on the screen.

Is acting violently, especially to robots designed to resemble living creatures, a healthy outlet for violence, or does it increase violence?

I do not understand

But the answer to this question can influence human behavior and social norms, and it can lead to rules about what robots can and can't do, just like animal cruelty laws --

Even if robots don't feel anything, how we behave towards them may affect us.

And whether it means changing the law or not, robots may bring a new understanding of humans.

A lot of what I've learned in the last decade isn't about technology.

It's about human psychology, empathy, how we relate to other people.

When a child treats a Roomba with kindness When a soldier tries to save a robot on the battlefield When people refuse to harm a baby dinosaur robot Robots are more than just motors and gears and programs.

It's a reflection of our own humanity.

thank you

(applause)

please close your eyes

And imagine yourself sitting in a wide open field with the sun setting to your right.

As the sun goes down tonight, not only can you see the stars in the night sky, but you can even hear them.

(music) Constellations made up of different types of stars, each with its own unique melody, such as Aries the Sheep.

(music) and Orion the Hunter

(music) And also the bull Taurus

(Music) We live in a universe full of sounds, and we can take advantage of this to experience that universe from new perspectives, and share those perspectives with a wider audience.

let's do it

(music ends) Most people are very impressed when they hear that I'm an astrophysicist.

And when I told him I was also a musician, he said, "Yeah, I know."

(Laughter) It seems like everyone knows that music and astronomy are deeply connected.

This is actually an ancient concept that goes back over 2,000 years to Pythagoras.

(Laughter) Pythagoras said, "There's geometry in the beat of a string. There's music in the celestial sphere."

Pythagoras thought that it was precisely the motion of the planets along the celestial sphere that created the harmony.

So if you ask me why I can't hear anything

You would have answered, "Of course, because we don't know what it means to be inaudible, which is true silence."

It's like noticing that your refrigerator was noisy only after a power outage.

You kind of get it, don't you? Someone like Aristotle didn't seem to understand it.

(Laughter) It's true.

(Laughter) If you break down the words of Aristotle,

"It's a good idea, but if something as vast as the sky were to move on its own and create sound, it would not only be audible, but it would destroy the earth.

There is no celestial music because we are here."

He's the kind of person who says that the brain is just for cooling the blood, so that's probably true.

(Laughter) But I'm going to show you that they were both right.

First, let's understand what makes music music.

This may seem like a silly question, but have you ever wondered why two notes played together resonate so nicely together, like these two notes (music), or even more tense and dissonant notes like these two notes?

(music) See why?

Why is there an interval in the first place?

Why are they in tune and out of tune?

In fact, this question was answered by Pythagoras himself.

Look at the string on the far left

When you pluck this string, it vibrates back and forth at high speed, producing a single note.

(sound) If you cut this string in half to make two strings, each will vibrate twice as fast.

make a corresponding sound

This is three times faster, and this is four times faster.

The more complex the ratio, the more dissonant it becomes.

It's this interplay of tension and release, or harmony and dissonance, of sound that creates music.

(music) (end of music) (applause) Thank you.

(Applause) We're not done yet.

(Laughter) Now let's talk about the characteristics of music: pitch and rhythm.

(slow rhythm) This is a rhythm, right?

What happens when you speed up?

(gradually faster rhythm) (higher sound) (lower sound) (slower rhythm) When the rhythm beats more than 20 times per second, the brain switches processing.

I perceive that sound as a pitch, not as a rhythm.

What does this have to do with astronomy?

Now let's talk about the Trappist-1 planetary system.

This is an extrasolar planetary system that was discovered last February 2017, and to everyone's excitement, it turned out to be seven Earth-sized planets orbiting a nearby red dwarf star.

And three of them are at the right temperature for water to stay liquid.

And because they're so close to Earth, in the next few years we'll be able to detect potentially life-significant substances like oxygen and methane in the atmospheres of those planets.

But this Trappist planetary system is very small.

This is the orbit of the rocky planets in our solar system: Mercury, Venus, Earth, Mars, and the seven Earth-sized planets of Trappist 1 all orbit Mercury.

If you zoom in on this photo by a factor of 25, you can finally see the orbits of the Trappist-1 planets.

We said that there are seven Earth-sized planets orbiting a star, but in terms of size, they're actually much closer to Jupiter and its satellite system.

Another thing that got everyone excited was the artist's rendering of the planet.

There's water, there's ice, and maybe there's land.

Everyone got excited, and then a few months later, a different paper came out, and they said it might actually be this place.

(Laughter) The papers say that the surface may be made of lava, and that there are indications that the central star is emitting very harmful X-rays that would make the surface barren and wipe out the atmosphere.

Luckily, a few months ago, in 2018, a few new papers came out with more sophisticated measurements, and we settled on something closer to that beautiful projection.

(Laughter) We know that some of the planets in Trappist 1 have an abundance of water, global oceans, and some have thick atmospheres, so they're good places to look for the possibility of life.

But there are more interesting things about this planetary system, especially for me.

That means Trappist 1 is a chain-like resonance relationship.

While the outermost planet makes two orbits, the one inner planet makes three orbits, and the inner planet makes four orbits, followed by 6, 9, 15, 24 orbits.

You can see that the orbital periods of these planets are very simple ratios.

Assuming that 1 beat is sounded every lap, if the lap speed is increased

It's obvious that rhythm is born, right?

But if you go much faster in orbit, you'll get pitches, and in this particular planetary system, these sounds blend well and even create harmonies like human music.

Let's listen to the sound of Trappist 1

The first thing you'll hear is the sound of each planet's orbit, and I want you to remember that this music is made by the planetary system itself.

I haven't messed with the pitch or the rhythm, just the frequency range that humans can hear.

Now that we've got all the sounds of all seven planets, we're going to play a drum every time two planets are next to each other.

At this time, the two planets are approaching each other, creating a gravitational pull.

(One note) (Two notes) (Three notes) (Four notes) (Five notes) (Six notes) (Seven notes) (Drum sounds) (End of music) This is the sound of the star itself, its brilliance transformed into sound.

I wonder if this is possible

I think you should think of it like an orchestra.

In an orchestra where people gather to perform, they don't make sounds as they please.

We all play the same note. You have to make sure that the notes you play resonate with the instruments around you.

In the early days of the planetary system's formation, the planets orbited in a disk of gas, and while they were in the disk, they avoided colliding with each other and kept in perfect alignment by making repeated orbit corrections.

This orbital correction worked. This small planetary system is packed with a lot of mass in a small space.

So music is exactly what keeps this planetary system alive and the life that might exist on it.

So what about the sounds of our solar system?

I hate to say it, but it doesn't sound very pleasant.

(Laughter) There's a reason for that, because our solar system is much larger than Trappist 1, so in order to hear the sounds of all eight planets, we have to use the full spectrum, starting with Neptune, which is at the lower end of the human audible range, to Mercury, which is at the very end of the human audible range.

And because the planets in our solar system aren't densely packed and spread out over a fairly large area, they didn't need to orbit each other, so the planets are just making their own sounds.

I'm sorry, but please listen to that tone.

(1 note) This is Neptune

(2 notes) Uranus

(3 sounds) Saturn

(4 notes) Jupiter

And then Mars joins

(5 sounds) (6 sounds) Earth

(7 notes) Venus

(8 notes) And finally, Mercury, hmm, let's stop.

(Laughter) Actually, this was a dream for Kepler.

Johannes Kepler was the man who discovered the laws of planetary motion.

I was a firm believer in the connection between music, astronomy, and geometry.

And he searched for any kind of musical harmony on the planets of the solar system, and left a single book about it.

It would have been a lot easier if I lived on Trappist 1, or another planetary system—

K2-138 or something

This is a new planetary system of five planets that was discovered in January of 2018, and like Trappist, the planets were in perfect harmony in their early days.

These planets were in tune with each other, exactly as Pythagoras proposed over 2,000 years ago.

But it was discovered by the Kepler Space Telescope, hence the Kepler name.

And over the last few billion years, K2-138 has been out of tune with Trappist's, so let's go back in time and speculate what K2-138 might have sounded like when it was forming.

(music) (end of music) (applause) Thank you.

So folks, how far does this story go?

I wonder how much music there is in the universe

I had the same question last fall, when I was working at the University of Toronto's planetarium, and I was approached by artist Robin Rennie and her daughter, Erin.

Robin loves the night sky, but severely deteriorating eyesight has prevented her from enjoying it for 13 years.

I was consulted to see if I could do something about it.

I collected all the cosmic sounds I could think of, put them together, and created "Our Musical Universe."

Exploring the rhythms and harmonies of the universe — a sound-based planetarium show

Robin was so touched by this that he created this stunningly beautiful painting of what he experienced after returning home.

I added Jupiter for the poster and messed it up.

(laughs) Well

This show doesn't matter if you're blind or visually impaired, it takes everyone on a journey through the night sky to the edge of the observable universe, using voice.

But this is just the beginning of our musical intellectual quest to experience the universe with new eyes and ears, and we invite you to join us.

thank you

(applause)

In Australia's lush tropical forests, birds perch on low branches and roam the ground, enjoying shade and tropical fruit.

But the jungle isn't just for them

Fruit is not enough to satiate the dingoes that roam in hiding.

All the birds flee to safety, except for the cassowary, whose wings are too weak to fly.

Instead, it attacks the dingo with its very sharp toenails and drives it away.

The cassowary is one of about 60 extant flightless bird species.

These ground-hugging birds are found all over the world, from the Australian outback to the African savannah to the Antarctic coast.

Among them are some ducks, all species of penguins, secret swamp creatures, fast-legged ostriches, giant emus and tiny kiwis.

A common ancestor of modern birds was able to fly, but many bird species have lost their ability to fly.

Flying offers tremendous benefits, especially when escaping predators, when hunting, when traveling long distances, and so on.

But it also comes at a high price: it consumes a lot of energy and is limited in size and weight.

Because flightless birds conserve energy, they may be able to survive when food is scarcer and less nutritious than flying birds.

For example, the New Zealand takahe bird spends most of its life on soft alpine meadows.

Birds that nest and forage on the ground are more likely to be flightless.

In the absence of a clear pressure to fly, birds can stop flying after a few generations.

Over the next thousands or millions of years, the bird's body changes to adapt to this new behavior.

Bones that were hollowed out to lose weight become denser.

Solid feathers become fluffy

Wings can become smaller and even disappear altogether.

The keel-like protuberance of the sternum to which the flight muscles are attached diminishes or disappears, with the exception of penguins, which use their flight muscles for another purpose, swimming.

When birds evolve to be flightless, it's often because they end up on predator-free islands.

As long as this predator-free environment continues, birds will thrive, but they are vulnerable to environmental change.

For example, the dogs and cats that settlers bring to the island, and the rodents that lurk on ships and planes.

These animals prey on flightless birds and endanger them.

In New Zealand, stoats brought by European settlers threatened many native flightless birds.

Some are extinct and some are in danger of extinction.

Despite the energy-saving benefits of being flightless, many flightless bird species are on the brink of the same fate as the dodo.

But some species of flightless birds have survived on the continental side, where predators abound.

Many small flightless birds emerged and soon became extinct, but these larger birds have existed flightless for tens of millions of years.

Their ancestors emerged and survived at the same time as the first small mammals, probably because they evolved and became large at the same time as the predators of those mammals.

Many of these birds, like emus and ostriches, have grown to be nearly 100 kilograms, more than their wings can lift.

Their legs became thicker, their legs stronger, and their newly developed thigh muscles turned them into great runners.

These birds no longer use their wings for flight, but they use them for other purposes.

They hide their heads under their wings for warmth, flutter their wings to potential mates, protect their eggs, and even use them to steer as they charge across the plains.

They may not be able to fly, but they're improvising something with their wings.

What is "normal"

So what is a "disease"?

I've been asking myself this question since I was seven years old, ever since I was diagnosed with Tourette's Syndrome.

Tourette's syndrome is a neurological disorder characterized by recurring, involuntary physical movements called tics.

Tics, medically speaking, are involuntary movements, meaning they occur without your conscious or intention to do so.

The funny thing is when the tic happens

It's more of a feeling of "against your will," rather than "my body moves of its own accord." For example, when a tic moves your shoulder, it feels like you're moving it, not anyone else.

Also, before a tic, there's an unpleasant sensation called the "precursor impulse," which is especially strong when resisting the tic.

Now, I think most of you got what I was talking about, but you probably think you can't empathize unless you have Tourette's Syndrome.

That's not true

Let's do an experiment here for a moment, and get a taste of what my experience is like.

Are you ready?

don't blink

No blinking is prohibited

What do you feel other than dry eyes?

Do you feel a pressure on your eyes?

Tingling eyelids?

I can not stand it?

Are you holding your breath?

(laughs)

(Laughter) To me, a tic generally looks like this.

Tics and blinking are neurologically different things, but what I'm trying to say is that even people without Tourette syndrome can empathize with the sensations of prodromal urges, because their brains give them similar experiences and sensations.

So let's not talk about the difference between normal and sick, but rather that most of us are both normal and sick.

Because, at the end of the day, we're all human, and our brains give us different kinds of experiences.

Ultimately, the breadth of human experience is all shaped by the brain's ability to take on different states.

If disease is the extreme extreme of the normal range, what is the difference between normality and disease?

As a researcher studying how neurons connect and reconnect in an individual's brain, and as someone diagnosed with Tourette's syndrome and related disorders, I've long been fascinated by the problem of lack of self-control in a variety of impulsive and compulsive behaviors.

Because most of my physical experiences and my actions were all over that spectrum.

Now, while there's been a lot of interest in the "opioid crisis," I've been particularly curious lately about where opioid painkillers and heroin abuse fall on the spectrum of "acting against your will."

As you know, the opioid crisis and its epidemic are now out of control.

91 people die every day in this country from drug overdoses.

Between 2002 and 2015, heroin deaths increased sixfold.

And our treatments for addiction aren't working perfectly, at least not for all addicts.

It's true that people who suffer from addiction lose free will in behaviors that stimulate their "reward system," such as those related to drugs, alcohol, food, and so on.

It's a medical and neurobiological truth that addiction is a disease of the brain.

How we view the disease, especially in the case of addiction, how we view it as a disease has a huge impact on how we treat addicts.

Ordinarily, we tend to think that most of our actions are entirely voluntary.

But the normal brain state is more like a car idling than parked.

Some of the behaviors that we think we choose are actually programmed to do what we do when we let go of the brakes.

Have you ever joked that your brain was working on self-driving cars?

it probably

that's right

That's right

The brain's self-driving function resides in a structure called the striatum.

The striatum perceives emotional and sensory motor states and remembers how to trigger actions that have been most common under similar conditions in the past.

Do you know why I became a neuroscientist?

Because I wanted to know the source of my tics (meaning "motivation")

(laughs) Thank you, thank you.

(Laughter) I've waited years for the chance to tell this joke in front of a crowd.

(Applause) In graduate school, I studied the genetic factors that direct neural connections to the striatum during mouse development.

And this is my license plate at the time

(Laughter) Now, let me tell you, I don't recommend making your PhD thesis a car license plate, unless you're prepared for the next two years of your experiment going awry.

(Laughter) I eventually realized

Now, in my experiments, I was investigating how neural misconnections in the striatum are related to compulsive behavior.

It's about actions compelled by unpleasant urges that you can't consciously resist.

So when my mouse started exhibiting this compulsive behavior, I was really excited. It couldn't stop rubbing its own face, and it kept rubbing until it hurt itself.

To say I was excited is an inappropriate expression.

I thought the tics were the result of misconnections in the striatum.

The mice's behavior was compulsive.

It was an unexpected thing that doesn't usually happen

The results of this experiment imply that while the striatum is indeed involved in obsessive-compulsive disorder-related disorders, it's also involved in humans' ability to form social connections, though not in humans in this case.

So I went further and entered the field of social neuroscience.

It's a new interdisciplinary area, but I found a paper in this area that the striatum is not only associated with abnormal social behavior in mice, but also in humans.

The papers say that the social neurochemistry of the striatum is also connected to things you may have heard.

For example, oxytocin, the hormone that makes cuddling feel warm and welcoming.

may be involved in signaling at opioid receptors

There are opioids in the brain that the brain makes itself, which are deeply related to social processes.

Naloxone, which blocks opioid receptors, demonstrates how essential opioid receptor signaling is for social interactions.

Humans given Narcan, which contains naloxone, are spared death from opioid overdose.

When administered to healthy humans, naloxone prevents that person from connecting with people they care about.

The nature of naloxone, which does not bind to opioid receptors, makes it difficult for people to feel the pleasure of social interaction.

For the sake of time, I won't go into the scientific details, but in a nutshell, what we think is

The effects of social disconnection, addictive drug effects, and abnormal neurotransmission on involuntary movements and impulsive behaviors caused by opioid receptor failure all converge in the striatum.

The striatum and its opioid-mediated signaling have been shown to be closely related to loneliness.

If you don't have enough signaling at your opioid receptors, you'll feel lonely even when you're surrounded by people who love and care for you.

Professor Cacioppo, a social neuroscientist at the University of Chicago, has discovered the dangers of loneliness.

Loneliness predisposes people to a variety of physical and mental illnesses.

Think about it this way: when you're really hungry, everything you eat tastes good, right?

Similarly, loneliness starves the brain and neurochemically sensitizes the brain's reward system.

And social isolation, acting through your own opioid and social neurotransmitter receptors, alters the state of your striatum, making it hypersensitive to reward and hedonic signals.

In this hypersensitive state, the brain emits signals of deep dissatisfaction.

People become fidgety, irritable and impulsive

If I don't get someone to carry my Halloween bowl of chocolate away, I'll eat it all myself.

Same, it makes social isolation very dangerous.

This brings us to another factor

If we are unable to connect with society, we will greedily seek help from everywhere to rebalance our social neurochemistry.

If that "from anywhere" is opioid painkillers or heroin, it hits our social reward system like a heat-seeking missile.

No wonder modern man is so easily addicted

Social Isolation — Rude — Promotes Relapse of Addiction

A number of studies have shown that people who survive relapse tend to have broader and more mutually beneficial social ties.

So if we're lacking the ability to truly connect, it's that society itself is increasingly losing its ability to truly connect, to experience higher dimensions than ourselves.

Once upon a time, these higher-dimensional experiences were derived from a sense of belonging to family and community.

But the community keeps changing everywhere.

There will be social and economic collapse, and things will get harder and harder.

I'm not alone in pointing out that the areas that have been hit hardest economically and where people are desperate for life are also areas that have been ravaged by opioids.

Social isolation makes things literally painful through the brain's reward system.

So maybe this pain, this loneliness, this disappointment, is what drives so many people to connect with anything indiscriminately.

Target is food

It could be a mobile device

For too many people it's drugs like heroin and fentanyl.

An acquaintance of mine who overdosed on drugs and was rescued by Narkan was angry that he wasn't even allowed to die.

Just imagine what it feels like

But the striatum is also a beacon of hope.

Because it also teaches you how to get people back together.

Now, remember that the striatum acts as a self-driving machine that guides us to act according to our habits. And that self-driving program can be rewritten. And that involves neuroplasticity.

Neuroplasticity is the brain's ability to reprogram itself and rewire itself, and it's this ability that allows us to learn new things.

As you may know, there's a saying about neuroplasticity that says, "Neurons that fire together connect together."

Right

So when we're alone, or when we have a trigger to remember a drug, we have to practice socially connected behavior instead of impulsive behavior.

We need repeated experiences to fire the nerves so that the striatum undergoes the neuroplasticity necessary to turn off the "find heroin" self-driving brain.

And the fact that social neuroscience, addiction, compulsive disorders all converge in the striatum means that it's simply not enough to teach the striatum to have a healthier response to compulsions.

We need social behavioral factors to replace drug-induced impulsive behavior, because we need to neurochemically rebalance the social reward system.

Until that happens, you can't get out of the craving state.

Even if it's not drugs, we repeat the same behavior

The solution to the opioid crisis, I believe, is to explore whether social and psychopsychiatric interventions can be used as neuro-related technologies in the neural circuits that process social or drug-induced rewards.

One possibility is to create and study applicable tools for connecting people with a common goal of recovery through psychotherapy.

So what can you incorporate into your psycho-psychotherapy? It could be a group of people chasing a band, or a group of people practicing parkour together, sharing their experiences of vulnerability and personal growth, or something more conventional, like a yoga session for recovery, or a meeting centered around a more traditional sense of mystical experience.

Whatever it is, it needs to activate all of the neurotransmitter systems in the striatum that are involved in processing social connections.

You can't go that deep on SNS

While it encourages comparison, it doesn't do much to encourage sharing of experiences.

It's like the difference between a superficial, casual conversation and a deep, eye-to-eye conversation.

The stigma associated with addiction also prolongs patient isolation.

There's plenty of evidence that stigma prolongs disease.

Stigma also makes addicts feel that it's okay to socialize with other addicts.

On the other hand, recovery groups, which are designed to rebuild social ties, are more receptive to people with a variety of mental health problems who are trying to recover from them.

What I'm trying to say is that when we connect on the basis of disability, we connect as people.

And it recovers itself from impulsive self-destruction in response to the pain of disconnection.

If you think of neuropsychiatric disorders as part of the phenomenon that makes us human, you'll realize that people who suffer from self-destruction are not alien to us.

Then we can remove the stigma from doctors, from patients, from nurses.

Earlier, I asked what it means to be "normal" as opposed to "sick" in the spectrum of human health.

In that expanse, we can all connect with each other and seek healing together as we struggle to be human.

thank you for listening

(applause)

The great philosopher Aristotle said that there are no words to give to things that do not exist, therefore there are no things to which no words can be given.

When it comes to elections, those of us in democratic societies know what elections are.

there's a word about elections, i know it

what is the polling station

I know what a ballot is

So what about countries where democracy doesn't exist, countries that don't have the words to describe the concepts needed to build a democratic society?

I work in elections, and I go to new democracies to help run elections, many of which are the first elections in the country.

When I talk about my work, people often say things like

"I mean, you're one of those people who travel around the world and the people in those countries can't handle it, and they impose Western democracy."

The United Nations does not impose anything on anyone.

It's true, what we're doing is firmly underpinned by Article 21 of the Universal Declaration of Human Rights, adopted in 1948: "All people have the right to choose their government."

This is the basis of our work

I specialize in public outreach

It's a technical term, so let me explain.

In a nutshell, it's about designing activities to communicate information so that candidates and voters who have never voted before can know when, where and how to register, when and how to vote, and why voting is important.

I also plan to work with women, because I want them to know that they can and have the right to vote.

It's also for the younger generation.

people with disabilities

I want everyone to know

we work with that in mind

It's not always easy. It's something I've faced many times over the years in this business.

Afghanistan example

Afghanistan is a country with a very low literacy rate, and the difficulty there was in 2005, where we had two elections in one day.

Because it's very difficult to manage logistics, and I thought that would be efficient.

It was a success in that respect, but on the other hand, it was even more difficult to explain to people two elections at the same time.

So we used a lot of pictures like this, but when it came to the actual voting, there was a problem, because there were so many candidates. In the first election, there were 300 candidates for 52 seats, for the lower house of the National Assembly, the Wolesi Jirga.

Furthermore, there are still many candidates for the prefectural assembly.

330 people for 54 seats

And so the design of the ballot paper went like this.

It's about the size of a newspaper

This is the ballot for the People's Assembly (Laughter), and this is the ballot for the County Council.

even more

I used a lot of symbols like this to make it easier to understand.

In South Sudan, we faced a different problem.

It was so different from other countries

Of course, most of them had never voted, and the literacy rate was very low, and the infrastructure was very poor.

For example, South Sudan is roughly the size of Texas.

And yet there are only seven kilometers of paved roads, only seven kilometers in the country, including the length of the paved runway at Juba Airport, where our plane landed.

That's why it takes a tremendous amount of labor to transport election materials.

People didn't even know what ballot boxes looked like.

It was a very complicated thing to do, and verbal communication was essential, but there were 132 languages ​​in this country.

it was a tremendous challenge

In 2011, I went to Tunisia.

It was the time of the "Arab Spring"

Massive demonstrations were taking place in the area, giving people new hope.

Happens in Libya, Egypt, and Yemen

It was truly a turning point in history.

We sat down with the electoral commission and talked a lot about the upcoming election, and they used a term I had never heard before. I had worked with Iraqis, Jordanians, Egyptians, and all of a sudden I came across a term I didn't know.

The trigger was the word for "observer."

When we were discussing election observers, the election commissioner described "monitoring" in Arabic as "murahaz."

It means "notice," but it has a passive nuance.

Is it blue or not?

The role of an election observer

It's a very active role that has the function of overseeing elections in accordance with all election codes.

And in Egypt, we also discovered something new: they call their watchers "Mutabi," which means "to follow."

A "watchman" is described as a "follower"

This is also not correct, because there is an expression that is already accepted and in use, and that is "murakib", which means "controller."

This captures the concept correctly

It's not a good idea to say the same thing in three different ways.

Together with my colleagues, I thought it might be our role to help the language flow without distortion, and that's why I decided to create a glossary of terms that people in the Arab world could refer to.

and put it into action

Together with my colleagues, we decided to create an "Arabic Election Glossary," and we worked in eight countries.

We've picked 481 terms that form the basis of what you need to know when conducting democratic elections.

I defined them, and then worked with my Arab colleagues to decide which Arabic words to use.

One of the problems was that the Arabic language is very rich.

However, although Arabic is spoken in 22 countries, there is, of course, a standard language. Standard language is used throughout the Arab region, and it is also used in newspapers and on television.

The situation made matters even more complicated.

This was in part a matter of what we call the immaturity of the language, new words, new expressions were being born all the time.

We started defining terms, because we had eight local staff in different Arab countries.

I sent the manuscript and had it checked.

"I can understand this definition.

I agree, but in my country, it's expressed like this."

Our aim is not to unify terminology or enforce it.

It was to help us understand each other better.

So, for example, here in yellow, we have different expressions that are used in different countries.

After three years of work, I'm happy to say that this was completed. After finishing the manuscript, I took it to the field, discussed and refined it with members of the electoral commissions in each country, and finally published it in Cairo in November 2014.

The response was great, and 10,000 copies have been published to date.

3,000 PDFs downloaded

A colleague recently contacted me and decided to use it in Somalia as well.

They're going to make a Somali version of this glossary, because Somalia doesn't have election terms.

it was very nice news

And the newly formed Organization for Arab Electoral Administration, which works to improve the administration of elections in the Arab region, also uses this glossary.

More recently, the All-Arab Election Observation Unit, launched by the Arab League, uses this glossary.

I am very happy

The content of this glossary is very advanced

It's complex and contains a lot of jargon, and you usually only need to know a third of it.

But people in the Middle East have been deprived of all the civic education opportunities that we have.

we learn at school

We really don't have that kind of education in the Middle East, and I think it's everyone's right to know about elections.

So I'm thinking it would be nice to have an election glossary for the general public. We already have the foundations to do that, and we have the technology.

With such tools, for the first time, they can communicate these ideas in their own language.

many tragic events in the Middle East,

The chaos of war, the threat of terrorism,

Not a day goes by without hearing dark news about sectarian strife.

But we can't hear what ordinary people on the ground think.

What do people want?

give them the means and the words

The voice of the silent majority goes unheard because there are no words to express it.

The silent majority should know

Now is the time to give them the tools to capture new knowledge.

there is no need for them to remain silent

Let's help them speak up

thank you

(applause)

Some people are picky about French wine,

Some people like to play golf, some people are into literature.

One of the greatest pleasures in my life is, to be honest, a little bit special.

Looking at the city from the sky, especially from the window of an airplane

Some cities exude a gentle industriousness, like Düsseldorf or Louisville.

Some cities, like New York and Hong Kong, emit unbridled energy.

And then there are cities, such as Paris and Istanbul, which are full of history and stately.

The city looks alive to me

And when I see those cities from far above, I like to look for the boulevards and highways that make up the spaces in the city.

It's especially good at night, when the commuters and the city's arteries, the main roads, are painted in striking reds and golds, and the city's vascular system comes to life, right in front of us.

But after you sit in your car and spend an hour and a half on your daily commute, that reality looks very different.

(Laughter) Nothing, no public radio, no podcasts.

(Laughter) Isn't it crazy that we built a car that can go 210 kilometers per hour, and we're driving it at the same speed as a horse-drawn carriage from the 19th century?

(Laughter) In the United States alone, we spent 26.9 billion hours commuting in 2014.

With that much time, the ancient Egyptians could have built 26 pyramids at Giza.

(Laughter) Spend that in a year.

A tremendous waste of time, energy and human potential.

For decades, our solution to congestion has been simple: build new roads or widen existing roads.

it went well

In Paris, it's been spectacularly successful. The city of Paris has demolished hundreds of historic buildings to create 135 meters of traffic-friendly boulevards.

And it's still working today in fast-growing, emerging cities.

But in the more established downtown areas, it's almost impossible to significantly expand the transportation network: housing is too dense, real estate is too expensive, and public finances are too fragile.

Our city's vascular system is clogging and heading for disease, and we should be vigilant.

Our current thinking is not working.

We need new sources of inspiration to improve the flow of transportation.

Now, after about 16 years of experience in the transportation industry, I had an eye-opening moment when I was talking to a bioengineering customer.

The client told me how to influence the specificity of the vascular system with his treatments.

"I see," I thought, "our vascular system, every vein and artery in our body, is doing miraculous logistics every day."

That's when I realized that life has been doing this transportation for billions of years. Life has been doing this transportation for billions of years.

It's tried countless solutions to circulate nutrients, gas, and protein.

In fact, it's the world's most sophisticated transportation test laboratory.

What if the solution to our transportation problem was within us?

I wanted to know, why does blood flow through my veins for most of my life, but it's routinely blocked in big cities?

In fact, these two are very different networks.

I don't know if you've noticed, but each of us has 100,000 kilometers of blood vessels in our bodies, 100,000 kilometers.

There's something in your body that's two and a half times the circumference of the Earth.

That means blood vessels are everywhere in our bodies, not just just below the surface of the skin.

But if you look at our cities, yes, we have some subway systems, we have tunnels and bridges, and we also have helicopters in the sky.

But most of the traffic is concentrated on the ground, just on the surface.

In other words, the vascular system uses three dimensions inside the body, whereas urban transportation is mostly two-dimensional.

So we should use more verticals as well.

If the traffic network on the surface is saturated, let's bring the traffic up.

This Chinese idea of ​​a bus across traffic jams was a new and revolutionary way of thinking about space and movement in the city.

Or you can go even higher and hang traffic like a power grid.

Tel Aviv and Abu Dhabi are considering piloting future transportation networks with magnetically suspended cocoon-shaped vehicles.

And we can go higher and higher and fly

The fact that companies like Airbus are serious about making flying taxis a reality tells us something.

Flying cars are finally moving from being a run-of-the-mill science fiction to a compelling business case.

It's an exciting moment

Now, building this 3D transportation network is one way to reduce and solve traffic congestion.

not the only way

We have to rethink other fundamental choices, like which vehicle to use.

Imagine a scene like this, you've been driving for 42 minutes.

The two kids in the backseat were getting restless.

you are going to be late

Can you see the slow-moving car ahead?

I only show up when I'm going to be late

(Laughter) The driver is looking for parking.

There's no vacant parking lot around, but he doesn't know.

It's estimated that nearly 30% of urban traffic is driven by drivers looking for parking.

Can you see the 100 cars around

Only one person is on board 85 of them.

Eighty-five drivers can fit in one London red bus.

So the question is, why are we wasting so much space when we need it most?

why do you do this

No living thing would do that

The space within our arteries is fully utilized.

With each heartbeat, blood pressure rises, literally compressing millions of red blood cells into a copious stream of oxygen that quickly flows throughout the body.

And the little space in red blood cells isn't wasted.

In healthy conditions, more than 95 percent of the maximum amount of oxygen a red blood cell can carry is utilized.

Can you imagine, if the vehicles we take in our cities were 95 percent full, we would have enough extra space to walk or bike, and we would enjoy the city.

The reason blood is so incredibly efficient is that red blood cells don't just serve a particular organ or tissue, otherwise you're bound to have traffic jams in your blood vessels.

red blood cells are shared

shared by all cells in the body

And our networks are so extensive that every one of our 37 trillion cells receives oxygen delivery exactly as it needs it.

Blood has a collective and individual mode of transport

But if you look at our cities, they're congested.

We are stuck in a never-ending debate about whether we should build a car-centric society or a massive mass transit system.

I think we should transcend this discussion

I think we can create vehicles that combine the convenience of cars with the functionality of trains and buses.

please imagine

You are comfortably seated in a fast, comfortable city train with 1,200 passengers.

The problem with urban trains is that sometimes you have to stop five, ten, fifteen times to get to your destination.

What if the train didn't have to stop?

In this train, the cars are mechanically decoupled while in motion, and then they become express trains and self-driving buses that go onto a secondary road network.

And without a single stop, without any time-consuming transfers, you're on the bus and heading to your destination in the suburbs.

And when it gets closer, it separates where you're sitting and drives itself to your doorstep.

it is both collective and individual

This could be one of the shared modular self-driving cars of the future.

Now

In a city where drones whiz around, flying taxis, modular buses, and hanging cocoon vehicles roaming about, as if it wasn't new enough yet, there seems to be another force at work, the force that makes urban transportation attractive.

If you think about it, the current generation of self-driving cars is just trying to participate in a transportation network built by humans for humans.

Getting a self-driving car to learn traffic rules is relatively easy, but getting it to deal with human unpredictability is much harder.

But what would happen if the whole city were self-driving?

do you need a signal

do you need lanes

what about the speed limit

red blood cells don't flow in the lane

Never stop at a red light

The first self-driving city has no red lights and no lanes.

And when all the cars are self-driving and connected, everything is predictable and reaction times are minimal.

Self-driving cars will be able to go even faster, and by acting rationally, they will be able to speed themselves and the cars around them.

So instead of strict traffic rules, traffic flows are regulated by a web of dynamic, constantly self-improving algorithms.

The result is a traffic wonder that combines the fast, smooth precision of German autobahns with the ingenious vitality of Mumbai's crossroads.

(Laughter) Transportation will be functionally rich.

it becomes liquid like our blood

And, by a strange paradox, the more mechanized the transportation network, the more organic and active its movement will feel.

Yes, organisms have all of the properties of the best transportation we talked about today.

But it's taken billions of years to get there, and it's gone through all sorts of iterations and changes.

We can't wait billions of years for transportation systems to develop.

We have the dreams, we have the concepts, we have the technology to create 3D transportation networks, invent new vehicles, and change the way cities flow.

let's do it

thank you

(applause)

Have you seen Hitchcock's movie "The Birds"?

Who was so scared that they went mad?

It's better to leave your seat...

(Laughter) This is a vending machine for crows.

I've been asked a lot lately, "Why did this happen?"

Great ideas always come out of cocktail parties, even if they're not that great. About ten years ago, at a cocktail party, a friend of mine

When the crows ravaged the garden, he started complaining about the crows.

He said we should be exterminated. He said we should exterminate him.

What if I train you? When I suggested that, they said it was impossible.

I got weirdly pissed off when someone said, "You can't do that," and spent the next ten years studying crows in my free time.

(Laughter) After 10 years, my wife said, "I've been saying this all along, why don't you build a vending machine?"

Interesting is

While we are sensitive to the existence of species that are likely to become extinct as human settlements expand, we are indifferent to the species that are currently "surviving," especially those that are "co-homogeneous."

Animals that have adapted to human life, like mice, cockroaches, crows.

I am amazed at their adaptability

Evolved to live with humans

In exchange for that, we're just trying to kill

that makes them even more "parasitic"

We are creating a situation where we have no choice but to adapt.

Rats grow very fast

As anyone who's ever gotten rid of cockroaches knows, cockroaches have become more resistant to pesticides.

I thought there might be a way that would be beneficial to both sides.

and this machine

But before that, let me tell you a little bit about crows.

They're not just barely surviving, they're actually thriving.

They live everywhere except the Arctic and the southernmost tip of South America, mostly away from human habitation.

We live within 5km, but we don't mind.

they are always by your side

Given the population growth of mankind - the majority of the population lives in urban areas

Ninety percent of population growth is happening in urban areas -- and the crows are also exploding.

We may be witnessing their rapid proliferation.

but more than that

What's really interesting is their ability to adapt.

let me show you an example

Caledonian Glass Betty

Crows of this species have a habit of using twigs to catch food from trees.

I'm still trying to catch the bait

the researcher made a mistake

I gave her just a piece of wire. She's never experienced anything like this before.

it doesn't seem to work

but she adapts

This is completely voluntary behavior, I've never seen it before.

No one taught you how to bend it into a hook, but you discover it yourself.

even though I've never seen it

oh yeah

(Laughter) Yes, well done.

(Applause) This is the scene where the researcher went insane.

(Laughter) It's becoming clear that crows are really smart.

equivalent to that of chimpanzees

There are as many anecdotes as their wisdom, in Sweden.

Wait for the angler to drop the line into the ice hole, and when the angler leaves the field

pull up the thread and eat the fish and the bait

A good nuisance for anglers

On a different note, a few years ago at the University of Washington, students were catching crows for research.

Some students were catching crows, weighing them, doing things like that, and releasing them when the investigation was over.

Interestingly, during the week, the crows teased the students who caught them by cawing and walking around whenever they appeared.

This situation continued the next month and even after summer vacation ended, so I couldn't stop laughing.

It ended up lasting until I graduated, which must have been nice, but I still remember them after graduating.

If you make a crow angry, you will be punished

Now students who study crows wear wigs and masks.

(Laughter) It's interesting.

Crows are really smart.

Video: Crows find ways to thrive in urban environments

This Japanese crow has discovered a way to eat hard nuts by getting them run over by cars.

But how do I pick it up without being run over?

wait for the signal to change

You can pick it up safely

(Laughter) (Applause) Yes, that's pretty interesting.

The point is not to use a car to crack nuts, this is a piece of cake for crows.

about 10 years ago

It happened at a driving school in Sendai.

From then on, the neighboring crows began to imitate

Now all the crows around here are waiting on the pavement to eat their lunch.

They are proven to learn from each other

Parents educate their children, they learn from their peers, they learn from their enemies.

If I have time, I'll tell you about the raven betrayal that symbolizes this, and they've mastered cultural adaptation.

As you heard in my talk yesterday, this could be a Pandora's box of human suffering, and we see it in the crows, as they react to changes in the environment and resources.

You can adapt quickly and flexibly, which is great for living in the city.

Now crows are everywhere

I've found that they're smart and learn from each other.

Now that these facts were clear, I decided to build a vending machine.

This is it, a vending machine for crows.

Using Skinner's theory, we divide the learning into four stages.

very simple

First, place this machine in a field or somewhere where there are crows.

Then you scatter coins and food around, and they come to eat the food.

It will get used to the existence of the machine and eventually eat up the fallen food.

When I see that there is still food in the tray of the machine,

Jump on and eat

And when they leave, I'll scatter more coins and more food. It's like a dream for the crows.

The next step is to look at crows that have become regulars.

They've grown accustomed to the noise of the machines, and they don't mind coming back again and again to find food in the piles of coins, once they've started enjoying their happiness.

bestow hardships

In the third stage, I only give you coins.

Like humans accustomed to an easy life, crows get angry, just as they instinctively do when they're looking for something.

Sweep up the area with its beak

And if by chance the coin goes into the slot

Bait comes out

They keep doing this for a while, and eventually they wait for the coin to come out.

If you put it in the slot, you will learn that food will come out Once you get used to this daily life

Proceed to the final stage of "nothing happens"

This is where crows show the difference from other animals, and squirrels, if they don't have food, they leave.

I'll come looking for you again, but I'll give up soon

You do this a few times, and then you get bored, and you run out onto the road.

In the case of crows, we try to solve the problem

They know that this machine has toyed with them in three stages.

(Laughter) So you think there's still something

So I push and poke

Before long, they come up with an idea, "There are a lot of coins that were used in stage 1."

The crow can temporarily monopolize the food, but only until people notice it.

For me, it's not about making money with crows.

We lose $200 million in change every year, and we don't need crows to make that much of a return on investment.

But what if we think bigger?

I think crows can be trained to do other things as well.

to pick up trash at the stadium

Let's find expensive parts in the waste

Searching for victims, etc. The point of this story is

It is possible to build a mutually beneficial society.

How to live with them - you can have a balanced relationship where you help each other instead of driving them out.

thank you

(applause)

Let's start with an experiment

I will show you three videos of rainy days.

I've changed the audio in one of the videos, and instead of the rain, I've added the sound of bacon frying.

Think about which video has the sound of bacon.

(Sound of rain) (Sound of rain) (Sound of rain) Sounds good

Actually I lied

It's all bacon sounds

(Bacon grilling) (Applause) My goal is not to make you hungry every time you see a rain scene, but to show that our brains are conditioned to accept lies.

we are not looking for accuracy

So I'd like to quote one of my favorite authors about lying.

In "The Decline of Lies," Oscar Wilde said, "Bad art comes from trying to be realistic in imitation of nature; great art comes from lying and deceiving, talking about the beautiful unreal."

So when you're watching a movie and the phone rings in the movie, it's not actually ringing.

This sound was added in the studio during post-production editing.

All the sounds you hear are fake

Any sound that isn't spoken is— it's fake.

If you hear a bird flapping its wings in a movie -- (a bird flapping its wings) -- it's not a recording of a bird.

Flapping sheets and latex gloves make a much more realistic sound.

(Flaps) The sound of a cigarette burning up close -- (the sound of a cigarette burning) Actually, the more authentic sound is the unraveling of a ball of saran wrap.

(Sound of saran wrap unraveling) How about a punch?

(punch sound) oops let's hear it again

(punch sound) This sound is usually made by sticking a knife into a vegetable, often cabbage.

(The sound of a knife being thrust into a cabbage) The next sound is the sound of breaking bones.

(broken bones) Now, no one actually gets hurt.

This is actually-

It's the sound of breaking celery or frozen lettuce.

(Cracking frozen lettuce or celery) [In Brooklyn, we use kale.] (Laughter) But it's not always as easy as going to the grocery store to get the right sound.

often more complicated

Now let's reverse engineer how to create a sound effect.

One of my favorite stories is by Frank Serafini.

He's a contributor to the sound library, and he's done sound design for movies like Tron and Star Trek.

He won an Academy Award for Best Sound Editing for The Hunt for Red October! was on the Paramount team of

The team was asked to create the sound of a submarine's propeller in this classic Cold War movie from the '90s.

So the problem we faced was that we couldn't find any submarines in West Hollywood.

So what they did was, they went to a friend's pool and Frank jumped into the pool.

They set up an underwater mic and an overhead mic outside the pool.

Underwater microphones could hear

(Sound of jumping into water) If you add the overhead sound, it sounds like this.

(Water splashing an octave down) And then I erased the high frequencies.

(sound of splashing water) And then I lowered it another octave.

(More low water splash) And then I added a little water splash from the overhead mic.

(Splashing water) By looping this sound and repeating it, we got this sound (propeller spinning) So it's a combination of creativity and technology to create this illusion. You feel like you're in a submarine.

But when you create a sound effect and match it to a picture, you want that sound to come to life in the story.

One good way is to add reverb.

This is the first acoustic tool I want to talk about.

Reverberation is the continuation of sound after the original sound has stopped.

So what we're talking about is what the sound bounces off of different materials -- the reflections off the surrounding objects and walls.

Take gunshots for example

The source of the gunshot is less than a half second.

(Gunshot) By adding reverb, you can make it sound as if it was recorded in a bathroom.

(Gunshot in the bathroom) Or you can make it look like it was recorded in a chapel or a church.

(Gunshots echoing through the church) We can make it like a canyon.

(Gunshot in the canyon) So the reverberation tells us a lot about the space between the listener and the original source.

If sound is like the taste, then reverberation is like the smell of that sound.

Reverb can do more

As soon as we hear a sound that reverberates much less than the action taking place on the screen, we immediately think that the sound is from the commentator, that is, the sound of an objective narrator who is not participating in the action on the screen.

Also, the most intimate moments in film are often presented without reverberation, because that's what it sounds like when someone speaks in your ear.

Quite the opposite, if you add a lot of reverberation to your voice, it can sound like you're hearing a flashback, or you're inside a character's head, or you're hearing God's voice.

Morgan Freeman is more effective in movies.

(Laughter) So -- (Applause) So what are the other tools and methods that sound designers use?

here is the very important

yes it's silent

Even a little silence can get your attention.

And in the West, we're not very used to silence in conversation.

because it's considered awkward or rude

So when a conversation is preceded by silence, it creates a lot of tension.

But think about Hollywood blockbusters with lots of explosions and guns.

Even at high volumes, after a while, it doesn't feel loud anymore.

So, just like yin and yang, silence has loudness, loudness has silence, and each has its own effect.

But what is silence?

It depends on how it's used in the movie.

Silence makes you feel like you're inside the character's head and gives you time to think.

What we associate with silence-

Contemplation, meditation, contemplation, etc.

But rather than having a single meaning, silence becomes a blank canvas upon which the viewer can project their own thoughts.

But let me be clear, there is no such thing as silence.

Sounds like the most bombastic statement in TED talk history.

Even if you walk into a room with no reverberations, no outside noise, you should still be able to hear your heart pumping your own blood.

And in the movie theater, traditionally, there was no silence, because of the sound of the projector.

Even in the age of Dolby sound systems, if you listen carefully, you'll find that there's no such thing as complete silence.

there is always some kind of sound

Now that we know there's no such thing as silence, what do filmmakers and sound designers use?

As an analogy, environmental sounds are often used.

Ambient sounds are the unique ambient sounds found in each location.

Each place has its own unique sound, and each room has its own unique sound, this is called the room tone.

This is a recording of a Moroccan market

(voices and music) This is a recording of Times Square in New York.

(Traffic, horns, voices, etc.) Room tone is the sum of all the noises in the room: fans, air conditioners, refrigerators.

This is a recording from my apartment in Brooklyn.

(Ventilation fans, boilers, refrigerators can be heard outside the street.) Environmental sounds have a very primitive effect.

It speaks to the subconscious mind of our brains.

So when a bird chirps outside your window, it's a sign of normalcy, and that's probably because we humans have heard this sound every morning for millions of years.

(Birds chirping) By contrast, industrial sounds entered our lives more recently.

I personally love it, because it's used by my idol David Lynch and his sound designer Alan Splett, but industrial sounds often have a negative connotation.

(mechanical sound) Sound effects appeal to our emotional memory.

Sometimes they even become characters in movies because they mean so much.

The sound of thunder could mean divine intervention or divine wrath.

(thunder) Church bells remind us of passing time and finite life.

(The sound of church bells ringing.) The sound of breaking glass can signal the end of a relationship or friendship.

(Cracking glass.) Scientists say that dissonant sounds -- like wind instruments playing loudly -- remind us of how animals roar in nature, and that makes us feel anxious and fearful.

(Sounds of wind instruments) So far, we've talked about sounds on the screen.

But sometimes the sound source is invisible.

This is called off-screen sound, or "acousmatic."

The acousmatic sound -- by the way, the term "acousmatic" comes from the ancient Greek Pythagoras, who for many years hid behind veils and curtains, hiding himself from his disciples and teaching.

I think this mathematician-philosopher thought that by doing so, his students would be able to focus more on the voices, the words and their meanings, and not be distracted by the appearance of Pythagoras speaking.

So when you separate the voice from its source, like in The Wizard of Oz or Big Brother in 1984, when you separate cause and effect, it creates a sense of omnipresence or all-seeing, authoritative.

Acousmatic sound has a strong tradition

Nuns in Roman and Venetian monasteries are said to have sung hymns in cloistered rooms close to the ceiling to create the illusion that they were hearing angels singing high in the sky.

Richard Wagner famously hid the orchestra in an orchestra pit between the stage and the audience.

My idol Aphex Twin played in a dark corner of the club.

What these greats knew was that by making the sound source invisible, they could create a mystique.

This technique has been used repeatedly in movies like Hitchcock and Ridley Scott's "Alien."

When you hear a sound whose source you don't know, it creates a kind of tension.

It also minimizes the filmmaker's visual constraints and allows them to show things that weren't there at the time of filming.

It may be difficult to understand just by explaining, so I would like to show you a little video.

(Toys clanging) (Typewriter) (Drums) (Ping-pong) (Knife sharpening) (Record scratching) (Saws) (Woman screaming) What these tools are trying to show you is that sound is language.

You can make them feel like they're in a different place, they can change the atmosphere, they can set the pace, they can make them laugh, they can scare them.

Personally, I fell in love with the language a few years ago, and I managed to make a career out of it.

I think in our work with the sound library, we're trying to expand the vocabulary of this language of sound.

In doing so, we're giving sound designers, filmmakers, game and app designers the right tools to help them tell better stories and tell better lies.

thank you for listening

(applause)

(music) I went to St. James's Infirmary to see that girl She lay on a long wooden table So cold, so quiet, so beautiful I went to see the doctor and he said, "She's not feeling well" When I came back and looked at the girl Oh my god, she was dead I went to Old Joe's bar It's the bar on the corner of the square Everyone was pouring drinks As always, the usual crowd was there Standing to my left was Olde It was Joe McKennedy, his eyes red and bloodshot He spouted to the crowd around him, "Let me go, let me go, God bless you, wherever she goes, she'll find the wide world, but she'll never meet a man like me, she'll find the wide world, and she'll never meet a man like me again, when I die, please bury me in my $10 cowboy hat." Put a $20 gold coin on my pocket watch chain inside So my friends know it was the way I died Get six gamblers to carry my coffin Get six choir girls to sing for me Put a jazz band on the hearse that carries me and yell and send me where I'm going (Applause)

Today, I want to talk to you about a small but powerful word that we all try to avoid at all costs.

There are billion-dollar industries that thrive because of this fear, and those who really fit that description have no choice but to navigate the unrelenting storm that surrounds them.

I don't know if anyone has noticed, but I'm "Fat"

Harmless-looking words such as chubby and chubby, instead of chubby people who secretly gossip

Even more glossy expressions such as plumpness and plumpness don't apply

Shall we stop wrapping ourselves in oblates?

I'm "fat" as if I had drawn it thick and thick with a magic marker.

I'm the "elephant in the room"

When I came out on stage, did anyone of you think, "This is going to be a hilarious talk, because the market is set for fat people to be funny?"

(Laughter) Some of you may be wondering, "Where does this guy's confidence come from?"

There's no such thing as a fat and confident woman.

The fashionable people at the venue may think that the dress I'm wearing really suits me and is cool (Cheers) Thank you!

On the other hand, some people may be thinking, "Well, black would have made me look slimmer."

(Laughter) You may have subconsciously asked yourself these questions: Do you have diabetes? Do you have a girlfriend? Do you eat carbs after 7:00?

(Laughs) Some of you may have thought that you ate sugar after 7 o'clock last night, or that you should start going to the gym again.

These prejudices pose an invisible threat.

It can be directed at individuals and groups, and it can be directed at ourselves.

This way of thinking is known as fatphobia.

Like all social oppression, fatphobia is so deeply rooted in the complex fabric of capitalism, patriarchy, racism, that it's hard to question or even notice.

We live in a culture where being fat is dehumanizing: we are seen as lazy, greedy, unhealthy, irresponsible, and morally questionable.

On the other hand, being thin is more likely to be universally seen as a good thing, being more responsible, being successful, being in control of your appetite, your body and your life.

Over and over again, these ideas show up in the media, in public health systems, in hospitals, in our daily conversations, in our own attitudes.

It's even thought that fat people are being discriminated against because they themselves are to blame.

it's easy

This "anti-fat" prejudice is so tightly embedded and permeated in the way we value ourselves and others that we rarely wonder why we have such disdain for people of larger sizes, or where this disdain comes from.

But it should be questioned, because this extreme obsession with appearance affects everyone, without exception.

It's hard to live in a society where basic humanity is denied unless someone arbitrarily decides what constitutes "permissible."

Now, when I was six years old, my older sister was teaching ballet to little kids in our garage.

I was a head taller than most of them, and a little overweight.

When it came time to do my first recital, I was so excited to wear a cute pink tutu.

I was full of intentions to shine on the stage

While other girls could easily fit into a costume made of stretch material and tulle, there was not a single tutu that I could fit into.

I didn't want to be left out of the recital, so I turned to my mother in a voice that everyone could hear and said, "I don't need a tutu (2-2).

I want "4-4"! ”

(Laughter) Mom, thank you.

(Applause) I didn't realize it at the time, but wearing the 4-4 proudly and claiming my place was the first step in becoming a radical fat activist.

I wouldn't say that since the day the battle to love your body began, you've skipped lightly along the glorious road to self-acceptance.

it was far from

I soon learned that living outside what most people consider normal can be a frustrating and lonely road.

I've been trying to untangle these messages for the last 20 years, but it's been a pretty turbulent 20 years.

I've been laughed at in front of people, I've been verbally abused by passing cars, I've been told I have a delusional disorder.

People I don't know sometimes look at me and smile at me.

(Cheers) Thank you.

All this time, I've been able to stay with the stubborn six-year-old me, and it's allowed me to stand here as an unapologetic fat person, someone who refuses to pander to the popular view of how I should navigate the world with the body I own.

(Applause) I'm not alone.

There are many people in all countries who think like me, people who choose to live in their current physical state, instead of just passively accepting the fact that they are, and will always be, fat.

People who have self-respect for their strengths and are willing to take advantage of seemingly limitations People who measure their health in a much more holistic way than outdated BMI numbers

People who consider mental health, self-esteem, and how they feel in their bodies to be important aspects of their overall well-being.

People who would never believe that living with a fat body would be a barrier to anything.

There are countless articles written by doctors, scholars and bloggers on different facets of this complex topic.

Fat nystas who are not fashionistas who have regained their bodies and beauty wear fat kinnies and midriff-baring tops to reveal the flesh that all fat people are told to hide.

Whether you're running a marathon, teaching yoga, or doing kickboxing, all the "fat athletes" are doing it with a big middle finger on the status quo.

What I've learned from these people is that radical body politics is the antidote to a culture that disdains the body.

But let me tell you, I'm not telling you not to change whoever you want to change your body.

Self-reclaiming is one of the most beautiful acts of self-love, and it can be seen in an infinite variety of ways: hairstyles, tattoos, body modifications, hormones, surgeries, and of course, dieting.

It's simple: you decide what's best for your body.

My approach to social activism is to do all sorts of activities that don't look good on us fat people, but there are many different kinds. I invite other people to make art.

What most activities have in common is claiming a place where big people don't exist, from fashion shows to dance showcases in clubs to public swimming pools to top-notch dance performances.

Collectively claiming our place is not only a powerful artistic message, but also a radical way of constructing society.

A good example of this is "Aqua Porco" (Laughter).

The power of showing a group of strong, fat women in floral swim caps and bathing suits, stretching their legs above the water, shouldn't be underestimated.

(Laughter) Along the way, I've learned that fat bodies are ingrained with politics.

When Kate Champion, the director of a prestigious dance company called Force Majeure, asked me to collaborate artistically on a production featuring only fat dancers, I literally jumped at the chance.

It's literally

The giant dancers who participated in this work, "Nothing to Lose," drew on their own life experiences to create a colorful, realistic piece that reflects our reality.

It was as far from a ballet as it could be.

The very idea of ​​a dance company of this renown producing a dance piece by fat people was, to put it mildly, controversial, because it was unprecedented in mainstream dance anywhere in the world.

the public was skeptical

"What exactly do you mean by 'fat dancer'? Are you talking about size M or size L?

Where did you learn to dance?

Do you have the stamina to dance through the performance? ”

But despite public skepticism, it was a sold-out smash at the Sydney Festival.

It's received glowing reviews, toured, won awards, and been reviewed in over 27 languages.

Photos of these spectacular casts have been seen by the world.

I've received countless comments from people of all body types who have told me that the show changed their lives, that it made them reassess how they thought about their bodies and that of others, and how it made them confront their own prejudices.

However, slander and slander always accompany works that touch people's nerves the wrong way.

criticized for exaggerating obesity

I've also received vicious death threats and slander for making films that center on the bodies and lives of fat people and treat them as respectable human beings worth listening to.

I've even been called "ISIS for the obesity problem."

At the same time, there's a public dismay, the extreme fear that a fear of obesity can trigger.

The diet industry preys on this very fear, and that's why so many people can't come to terms with their bodies.

Because the real "elephant in the room" is fatphobia.

As a means of refusing to give in to this fear, fat activists

We are calling for a strong will and respect for all human beings. I believe that we can move from a society that does not welcome diversity to one that recognizes the myriad patterns of how the body behaves.

thank you

(applause)

In the spring of 2016, the world's attention was focused on the legal battle between Apple and the FBI.

Apple builds security features into its mobile devices so that no one but the owner can see the data on the device.

That means criminals, hackers, and even governments can't touch it.

Great for Apple customers

On the other hand, it's a source of frustration for the government.

Apple deliberately chose to walk away from the surveillance business that lends a helping hand to governments.

Apple is trying to make surveillance as difficult as possible for governments and other actors.

There are actually two operating systems in the global smartphone market: iOS and Android.

iOS is made by Apple Android is made by Google

Apple has spent a lot of time and money trying to make its products as confidential as possible.

All data stored on the iPhone is encrypted by default, and text messages sent between users are also encrypted by default, with no user configuration required.

What this means is that if an iPhone that the police seize is password-protected, it will be very difficult, and probably impossible, for the police to get the data out of it.

Android security isn't quite there by comparison.

Most Android phones on the market do not encrypt data on the device by default, and Android's standard text messaging app does not use encryption.

So if the police seize an Android phone, they'll probably be able to extract all the data they need from the device.

There are two types of smartphones made by two of the world's biggest companies, one with data protection by default and one without.

Apple deals in luxury goods

Dominating the high end market

What we expect from luxury goods manufacturers is to add more functionality to their products.

But not everyone can afford an iPhone.

That's the market that Android absolutely dominates -- the mid-to-low end market -- smartphones for the 1.5 billion people who can't or don't want to pay $600 for a phone.

But Android's dominance of the market creates what we call the "digital security divide."

So the widening divide today is that of privacy and security, where the rich can buy devices that have data protection by default, while the poor have very little data protection by default.

Think of your average Apple customer: a banker, a lawyer, a doctor, a politician.

The smartphones in these people's pockets encrypt all the data on their calls and texting devices, but they don't have to do anything to protect their information.

Poor and vulnerable people, on the other hand, are highly vulnerable to surveillance because of the devices they use.

In the United States, where I live, African-Americans are more likely to be criminal suspects, more likely to have their personal information collected, making them more likely targets for state surveillance.

Yet African Americans are far too often using Android devices that cannot defend themselves against surveillance.

this is a problem

And don't forget that surveillance is a tool.

It's a tool used by those in power against those without power.

I definitely think it's great that a company like Apple gives people a simple means of encryption, but if only the rich and powerful can protect themselves from government surveillance, that's a problem.

This goes beyond privacy and cybersecurity issues

it's a human rights issue

Poor out-of-the-box security on Android goes beyond the poor and marginalized who rely on Android devices.

It's really a question of democracy.

Let me explain this point

Modern social movements rely on technology, including "Black Lives Matter," "Arab Spring," and "Occupy Wall Street."

Leaders and members of these movements are increasingly communicating and collaborating on smartphones.

So a government that sees these movements as a threat should naturally target leaders and their smartphones as well.

Now, it's not out of the question that a future Martin Luther King, Mandela, or Gandhi could pick up an iPhone and escape government surveillance.

But they're more likely to have a cheap, $20 Android phone in their pocket.

So if we don't do anything about the digital security divide — if we don't make sure that everyone in our society benefits equally from encryption and that everyone has the same ability to protect themselves from state surveillance — not only will the poor and vulnerable be exposed to scrutiny, but future human rights movements may be crushed before they even reach their potential.

thank you

(Applause) Helen Walters: Thank you, Chris.

I have a question

Recently, it was revealed in the press that Facebook's Mark Zuckerberg is covering his webcam and doing something to his headphone/mic jack.

So I'd like to ask you personally, do you do it too?

For everyone here and me, please tell everyone Should I do that?

Should it be covered?

Christopher Sogoian: As for sticking things on, I actually like Band-Aids because when you want to make a call or use Skype, you can take them off and put them back on.

Putting something on your webcam is probably the best cost-effective way to protect your privacy.

There really is malware and malicious software out there that can hijack your webcam without even turning on the lights.

It's used by criminals and stalkers.

You can buy "ex-girlfriend monitoring" software online for $19.99

it's very scary

And then, of course, the government uses it too.

And there's also an obvious sexual assault component to this, and this kind of surveillance can be very effective against women and other potentially socially stigmatized people.

Even if you think you have nothing to hide, if you live with children or young people, you should at least put something on their cameras to protect them.

Helen: I see. Thank you. Chris: Thank you.

Helen: Thank you Chris

(applause)

For over 10 years, I've watched young people who are kicked out of school, so-called "dropouts."

They are kicked out of the education system, roaming the streets and vulnerable to violence, police harassment, brutality, and imprisonment.

I've been tracking these young people across institutions for years, trying to understand what I call the "school-to-prison pipeline."

When I see these young people in my research, I see

It must be trouble

One of them has a bottle of sake in his hand, but he's only 14 and it's a weekday.

Depending on who you look at it, you'll see gangsters, rogues, delinquents, and criminals in this photo.

looks different to me

To me, they look like irreplaceable people who will eventually contribute to the education system.

Would you like to change the label of young people together? From “problem child” to “promising stock”

(Applause) How do I know they have the potential to change?

because I was

I grew up in a poor neighborhood in the city, my father abandoned my family before I was born.

We were on welfare, sometimes homeless, and we were always hungry.

By the time I turned 15, I was in juvenile detention three times for felonies.

my best friend was killed

Then my uncle, who was standing next to me, was hit by a bullet.

I waited for an ambulance for over an hour...

he bled to death on the street

I lost hope, I lost faith in anything, I abandoned society because society betrayed me.

I had nothing to contribute, and no one helped me.

Giving up on this fate

I thought I would never reach my 18th birthday.

I'm here today because a teacher once reached out to me and opened my heart.

This teacher's name is Mr. Russ.

He was the type of teacher who would always stick his nose into other people's affairs.

(laughs) It's like, "Victor, if I were you, I'd be here. I'll be waiting for you."

(Laughter) I wasn't ready.

But my teacher knew a young man like me.

It's like an oyster with a hard shell closed.

It only opens when you're ready.When you open it, if there's no one by your side, it closes again.

the teacher stayed by my side

He was raised in the same culture as me and respected my community, my peers and my family.

I told my teacher about Uncle Ruben.

My uncle knew I was broke and needed an income, so he took me to work.

I made my living collecting glass bottles.

One day at school at 4:00 a.m., when I loaded the glass bottles into the back of the van, the fragments of the broken bottles

My hands and arms are bleeding, my tennis shoes and trousers are bloody

I got scared and stopped working

He looks into my eyes and says, "(in Spanish) Mijo, estamos buscando vida."

"We're all empty-handed, but we're trying to live a better life."

Professor Russ listened to me and welcomed me into his class and said, "Victor, this is your power.

is your ability

Your family, your culture and your community have taught you hard work, and now it's time to apply that to your studies so you can come back to your community and empower everyone."

With the help of my teacher I went back to school

I was able to get credits within the period and graduated with my classmates.

(Applause) But right before he graduated, Mr. Russ said, "Victor, I'm so proud of you.

I thought you could do it

Now, let's go to college."

(laughs) Eh, college? I?

Hey teacher what are you thinking I'm going to college?

With the help of the mentors and support that my teacher had provided, I submitted my application, and when I received my acceptance letter, the passage said, "This is a probation."

Probation? I'm already on probation, what is that?

(Laughter) I was completely wrong.

How do teachers like Mr. Russ work with these young people?

We propose three strategies

First, we need to get rid of this kind of perspective full of wrong subtractions from education.

"These kids are from a culture of violence, a culture of poverty.

They're a problem child, a bunch of lazy people.

An empty vessel that can be filled with knowledge, so to speak.

They have a problem and we are the ones who know the solution."

it's the second

Share and Respect Young People's Stories in Schools

Their stories of perseverance and overcoming are very powerful.

I'm sure some of you have heard stories like this.

These experiences and stories really already have the grit, the character, the spirit to face adversity.

So let's help young people refine their stories.

So they can be proud of themselves because our education system embraces their families, their cultures, their communities, and the skills they've learned to live on.

The third strategy is the most important: resources.

we must provide young people with adequate resources

Grit alone is not enough

Anyone can sit there and say anything, "Tighten your shoes and pull yourself together."

But if I was born into a family without shoelaces (Laughter), how would I tighten them?

(Applause) Vocational training Mentoring Counseling

Teach young people to learn from their mistakes, instead of punishing them and dragging them out of the classroom like animals.

What about doing this?

We're bringing restorative justice practices to high schools across America.

(Applause) To test this idea, I met with 40 young people who dropped out of community school in the Watts area of ​​LA.

William was one of them

A child who seems to have been labeled with all sorts of labels

He was a dropout, a gang member, a criminal.

When I met him, he was very rebellious.

But I remembered Mr. Russ' favorite phrase.

"If it's me, I'll be here, so I'll be waiting~"

(Laughter) And then gradually -- he started to open up.

I remember the day he changed his mind

In a large group, a young woman in the program was crying because she had just told the shocking story that her father had been killed.

She kept crying I didn't know what to do I was watching her quietly And suddenly William lost his patience

I slammed my hands on the desk and said, "Hey guys! Let's hug! Group hugs!"

(Applause) Her tears and pain turned into joy and laughter because she knew that this community was supporting her. And so William found his purpose in life, to heal the wounded in his community.

he tells his own story

We refined his story, from being just a victim to being a survivor who overcame adversity.

highlighted the experience

William then graduated from high school, passed his certification exam, became a security guard, and now works in a local school district.

(Applause) Dr. Russ always said, "If you teach the heart, the heart will follow."

The great writer Kahlil Gibran said, "The greatest souls arise from suffering.

An unshakable personality bears scars."

I believe that when this education reform engages young people and refines their already existing grit, resilience and character, their academic performance will improve.

believe in young people

and provide the correct resource

This is what my teacher did for me

Because my teacher believed in me through and through, I came to believe in myself without even realizing it.

thank you

(applause)

I would like to talk to you about my children.

We all know that you think your child is the most amazing and cutest of all.

But my child is real

(Laughter) I have 696 children, and they are some of the brightest, most creative, most innovative, brightest, most talented kids you'll ever know.

The students I get the chance to teach are my children.

But because their "real" parents aren't wealthy, and because their children are mostly people of color, they have little chance of realizing the magnificence I see in them.

What I see in my children is who I am, or who I might have been.

I am a hard working, public service career — the daughter of college-educated African-American parents, my father a pastor and my mother a teacher.

We weren't a wealth-oriented family.

We weren't wealthy, so we lived in a less wealthy neighborhood and didn't get a better education.

Luckily, however, our family hit the jackpot educationally when we hit the Voluntary Desegregation Program, which busses African and Latino kids from shanty towns to schools in affluent white suburbs.

When I was five years old, I had to ride a bus for an hour to a school far away to get a better education.

At that time, I thought everyone was living like I was.

Everyone went to school and drew pictures of their families, thinking that they were the only ones using brown crayons and all the other kids were using pink.

When I was five years old, I thought that's what everyone was doing.

But as I got older, I started to realize, why didn't my neighbors wake up at 5 in the morning and drive an hour to go to school far away?

Why am I learning to play the violin and my neighbors don't even have music class?

Why are my friends in the neighborhood using materials that I finished two or three years ago?

As I grew older, I began to feel guilty inside me, feeling like I was doing something I shouldn't be doing, like I was receiving something that wasn't mine, like I was given a gift but someone else's name was on it.

I felt like all the wonderful things I had touched and experienced were really things I shouldn't have.

A library, a gymnasium with everything, and a ground where you can play safely

I felt like I shouldn't have had a theater department that dealt with seasonal concerts and plays - digital arts, visual arts and performing arts.

Well-equipped biology and chemistry laboratories, school buses that take you home, fresh meals and even air conditioning.

It's all out of reach for my children.

As I grew up, there was a constant struggle between being grateful for this wonderful opportunity that was given to me and wondering what about everyone else.

There are thousands of children like me who should enjoy this.

Why isn't it available to everyone?

Why is quality education given only to the rich?

It was like I was the only one alive and I felt guilty.

All my friends in the neighborhood had an accident on the train called Education, and I survived on the bus.

I was like the Moses of education, shouting, "Set my children free...

Send them to quality schools! ”

(Laughter) I've seen firsthand how the other half of the children are treated and educated.

Having experienced "educational heaven," I just couldn't justify inequality.

Now I'm a teacher in the same school system that I escaped from.

I know first-hand the tools that were given to me as a student, but now that I am a teacher, I don't have those tools and I can't give them to my students.

There were countless nights of tears of disappointment, anger, and sadness, because I couldn't teach my children the way I was taught, and I didn't have the same equipment and tools that were used to educate me.

students should be given better

We are in a state of wrestling sumo wrestling alone with this phrase, "Academic gap, academic gap!"

Is it really that hard to understand why some students are doing well and others are not?

I really think so

i think we're getting it wrong

We should, as Gloria Radson-Billings puts it, flip the thinking and the terminology and call it by its true name.

It's not the academic gap, it's the educational debt. All the school facilities and budgets that are not spent and cut to educate African and Latino children are debt.

It's a little-known fact in American history that the only American institution that was created specifically for people of color is the American slave trade.

(Laughter) The public education system in this country was founded, bought, and financed by the slave trade and the commerce that grew out of slave labor.

While African Americans were enslaved and barred from the school system, the system that excluded them was built on their labor.

Since then, every legal precedent and every education policy reform has been an attempt to change the design of the system, not to abolish it or to admit that it was all wrong from the beginning.

It's an oversimplification of the history of education in America.

please stay with me for a little while

Black people, i.e. all slaves, were kicked out.

With the help of benevolent white people they built their own schools

"Separate but equal" was accepted as good

But we all know that they were separated, but they weren't equal in any way.

Here comes the 1954 Brown v. Board of Education trial in Topeka, Kansas, where racial segregation by law is now illegal.

But few have heeded any subsequent precedents that sought to restore the educational haven for every child that Brown v. Board of Education intended.

Some argue that today's schools are more discriminatory than the old days when they first tried to abolish racism.

Teaching kids about the Little Rock High School incident and the civil rights movement in relation to desegregation is a really awkward moment, because you have to hear this kid say, "If the schools were desegregated in 1954, why aren't there any white kids here?"

(Laughter) These kids are smart.

They know exactly what they've done and what they haven't.

We all know that when it comes to education, we can't say, "Black lives matter," and it's never been.

I have spent many years trying to instill a love of reading in my children.

Little by little, we collected books from second-hand bookstores, thrift stores, and attics, and built a small classroom library.

But I think every time I said those dreaded words, "Get a book and read it," it was like a declaration of war.

it was a torment

One day, I heard about a website called "Donors Choose," where teachers would create a list of what their students wanted for their class, and anonymous donors would make it happen.

Over 200 brand new books have been trickled into my room.

Every day a new book arrived, and the children were overjoyed and exclaimed, "It's like Christmas!"

(Laughter) And then they say, "Dr. Sumner, where did this book come from?"

I answer, "Some strangers all over the country want to give it to you."

And the kids will say, suspiciously, "But this is new."

(Laughter) And I say, "Everybody deserves a new book."

This experience struck a chord with me, as one girl opened a brand new paperback and said, "I thought Mr. Sumner bought this book, because they always buy us stuff.

But it's so cool that someone I don't even know cares about me this much."

Knowing that there are other people who care is a privilege my children will never be given.

Since the donation, more and more children have happily picked up the books and brought them home.

(Laughter) Now, when I say, "Bring me a book and read it," they run to the classroom library.

It wasn't that people hated reading books, they were willing to read them if they had something to read.

Institutionally speaking, the public education system has not treated African and Latino children fairly.

We continue to focus on final grades and test results, and we're disappointed.

I'm confused by the catastrophe and I'm thinking, "Why did it get so bad? Why did this happen?"

Is it right?

If you leave your children alone for too long, you no longer have the right to be surprised when things go wrong.

Stop being baffled, confused, and confused by academic achievement gaps, income gaps, incarceration rates, and how all socioeconomic gaps are just buzzwords of the moment.

The problems we have as a country are the problems we created as a country.

The quality of education is directly related to access to college, access to jobs, access to the future.

Until we can create a world where every child, no matter where they live or what color their skin is, can get a quality education, there's something we can do at the societal level.

School budgets shouldn't be determined by property tax revenues or by some crazy economic equalization where rich kids continue to benefit from state aid while poor kids continue to be deprived of food and resources.

Governors, senators, mayors, city council members, if we call public education "public education," it has to be.

Otherwise, we should call it by a more realistic name, "poverty protection."

"Public Education - Since 1954 Poor Children Stay Poor"

(Laughter) If, as a country, we truly believe that education is the great equalizer, then education should be equal and fair.

Until then, there can be no democracy in democratic education.

At the local level, historically speaking, the education of African and Latino children has always depended on the charity of others.

And unfortunately it still is

If your sons, daughters, nephews, nieces, or Timmy's neighbors go to wealthy schools far away, ask your local school board to take over the very poor schools and classrooms.

Engage in communication, build relationships, and bridge the gap

When you share a resource, it's not divided, it's increased.

On a personal level, if you're human, make a donation.

Time, money, equipment, opportunity - whatever comes to mind

Websites like Donors Choose are recognizing the gap and trying to fix it.

What is a carpenter without tools?

What is an actress without a stage?

What is a scientist without a lab?

What is a doctor without medical equipment?

I'll answer. They're my children now.

It must be your child too, right?

thank you

(applause)

June 2010

I landed in Rome, Italy for the first time

not for tourism

to solve world hunger

(Laughter) Yes

I was a 25-year-old PhD student at the time, and I brought in a prototype tool I had developed in college to support the World Food Program and end hunger.

I strode through the headquarters building, looked at the United Nations flags, and smiled at myself and said, "Engineers here."

(Laughter) Hand me the data.

Optimize everything

(Laughter) Tell me what food you bought, where to ship it, how long it will take, and I'll tell you the shortest, fastest, cheapest, and best route to send the food.

It cuts costs, eliminates delays and disruptions, and ultimately saves lives.

Please choose for me

(Laughter) I thought it would be about 12 months, or maybe 13 months.

But it didn't work

A few months into the project, my French boss said to me, "Hey, Mallory, you have a good idea, but you don't have the data you need for your algorithm.

A good idea is not timed A good idea that is not timed is a bad idea

(Laughter) The project is over.

devastated

Looking back now on that first summer in Rome, I can see how things have changed in the last six years. They've completely changed.

It's time to bring data into the world of humanitarian aid.

It excites me and inspires me

haven't arrived yet

Now, corporate leaders, it's time to step up, because we're asking companies to step up in a position of responsibility, and ask them to play a role that they can.

Our experience in Rome taught us that using data can save lives.

Well, it's not what I originally envisioned, but I finally got there.

I will explain what the situation is

Suppose we prepare breakfast, lunch and dinner for 500,000 people We only have a fixed budget 670 million yen per month

what do you all do? What is the best course of action?

Is it better to buy rice, wheat, chickpeas and oil?

how much should i buy?

Sounds easy but it's not

You have to choose 5 items from 30 ingredients

There are already over 140,000 combinations

You have to decide how much to buy your chosen ingredients, where to get them, where to store them, how long to transport them, etc.

All transportation routes must also be examined.

So you have 900 million options.

It would take you over 28 years to consider one option in one second.

900 million choices

So we built a tool that allows decision makers to weed out the unnecessary from 900 million options in a matter of days.

this was a huge success

In Iraq, we cut costs by 17 percent and fed 80,000 more people.

Thanks to the use of data and modeling of complex systems, the achievements are unique to us.

not attributed

The departments I worked with in Rome had their own characteristics.

was convinced of the joint venture

pulled into university

attracted the enterprise

If we really want change in a big problem like world hunger, we all need to talk.

We need data-savvy humanitarian organizations to lead the way in coordinating appropriate efforts from universities and governments.

But there are groups that were underutilized.

Guess it's a company

Corporations have a major role to play in solving the world's biggest problems.

I have been working for a private company for two years.

We've seen what companies can do and what they're not going to do. There are three ways we can bridge that gap: by providing data, by providing decision scientists, and by providing technology to aggregate new data sources.

This is data philanthropy. That's the future of corporate social responsibility.

On top of that, it's also correct for business.

Businesses today are amassing vast amounts of data, and the first thing they can do is provide that data.

Some companies already offer

For example, a major telecommunications company

We've made data publicly available in Senegal and the Ivory Coast, and researchers have found that the patterns in which cellphones are connected can tell us where people are traveling.

From that data, we can predict, for example, where malaria is prevalent.

And in the example of an innovative satellite communications company,

We published and provided data that allowed us to track the impact of drought on food production.

We can use it to start raising aid funding before a crisis hits.

a head start

The siled corporate data contains important insights

yes you have to be careful

For example, data de-identification needs to respect privacy concerns.

But even if we opened the floodgates and all businesses provided data to NGOs, universities and humanitarian organizations, it would not be enough to harness the full impact of data for humanitarian purposes.

Why?

Because we need decision scientists to extract insights from data.

A decision scientist is someone like me

It takes data, organizes it, transforms it, and processes it with algorithms that work for the business problem at hand.

In the world of humanitarian aid, there are very few researchers in decision science.

most of them work in companies

So this is the second reason we need companies.

In addition to providing data, we also need to provide decision science researchers.

Companies will say, "Oh! Don't take decision science researchers out of companies.

You can't waste even one minute and one second."

But there is a way

If a company is going to donate a portion of a decision science researcher's time, I think it actually makes sense to spread that time out over a longer period of time, say, five years.

This might be a couple of hours a month, and it's not going to hurt the company very much. What really matters is long-term partnerships.

Long-term partnerships allow us to build relationships, to understand the data, to truly understand the data, to begin to understand the needs and challenges facing humanitarian organizations.

In Rome's World Food Program, it took five years, five years.

The first three years were a period of preparation.

It's been two years since we've been working in Iraq and refining and implementing our tools in other countries.

I don't think that's an unrealistic agenda for using data to improve business operations.

It's an investment and it takes patience.

The results are clear

In our case, we could feed tens of thousands more people.

That's why we ask you to give us data, to give us researchers in decision science.

There are many things that have not been converted into data

At the moment, Syrian refugees are pouring into Greece, and the UN refugee agency is overwhelmed.

Right now, we're tracking people with pen and paper, which means that when a mother and her five children arrive at a refugee camp, headquarters basically have no idea of ​​the moment.

Thanks to collaborations with private companies, everything will change in a few weeks.

I'm building a new system based on package tracking technology provided by the logistics company where I work.

With this new system, we're going to track the data, and we'll know as soon as a mother and child arrive in a refugee camp.

And we can also see if we're getting enough rations this month or next month.

Visualizing information creates efficiency

For companies, using technology to collect critical data is like a daily bread.

We've been doing this for years, and the efficiency of our business has increased tremendously.

Imagine your favorite beverage company not knowing how many bottles they have on their shelves until they take an inventory.

it's ridiculous

Data drives good decisions

Now, if you're a company president, and you're a pragmatist, and you're not just an idealist, you might be thinking to yourself, "That's really cool, Mallory, but why should I join?"

More than just good publicity, humanitarian aid is a $2.6 trillion sector, and more than five billion people in the developing world could become new customers.

What's more, the companies that provide the data will discover new hidden meanings in the data.

One credit card company, for example, has set up a collaborative center to play a central role in universities, NGOs and governments.

See credit card usage information and gain insight into how Indian households live, work, earn and spend

For the humanitarian world, it's about informing people about how to lift people out of poverty.

But for companies, it gives them insight into their current and potential customers in India.

win on all counts

Now, what I'm looking forward to in data philanthropy is providing data, providing decision science researchers and technology, and it makes sense for young professionals like me who choose to work in companies.

Studies show that the next generation of workers want to make a big impact through their work.

We want to make a difference, so through data philanthropy, companies can actually get jobs and retention for decision science researchers.

important for high-demand professions

Data philanthropy makes business sense and can transform the world of humanitarianism.

If we can coordinate planning and logistics in all aspects of a large-scale humanitarian operation, we can feed, clothe and shelter hundreds of thousands more people, and to make a difference, companies need to step up and do what they can.

You all know the term "food for thought."

This is literally "food thinking."

It was a good idea that finally got the time.

(Laughter) (Buddha) Very nice.

thank you

(applause)

When you think of TEDx, you think of a world that's changing with technology and innovation.

The same goes for automated driving

Self-driving cars are a hot topic these days. The concept of a self-driving car is great.

I'm still too scared to ride a self-driving bus

self-driving airplane

What if the world had no drivers?

The reason I ask this is because the world is slowly changing in that way.

But it shouldn't be like that

We're number one, the United States is a superpower, we're in charge of the world.

For generations, globalization meant Americanization.

don't you Whether it's the World Trade Organization, or the IMF, or the World Bank, or the Bretton Woods agreements with fixed exchange rates, they're all American-led institutions and institutions, based on American values, friends, allies, funds, standards.

This is how the world worked

This is a little bit interesting, but here's what America looks like now.

This is the international relationship we recognize

President Obama walks the red carpet and exits Air Force One.

Now, have you seen how I went to China last week to attend the G20?

Is that possible?

This is how America landed at the most important conference in China, where leaders from all over the world gather.

The National Security Advisor actually threw swear words down the runway. No red carpet.

At the G20, after a while, we have President Obama.

(laughs) "Hey George."

"Hey Norman"

Looks like we're about to start a deathmatch

We really started talking about Syria for 90 minutes.

It's a topic that President Putin wanted to talk about.

he's slowly becoming commanding

I should be in charge of things in Syria

We don't have a lot of friendship and trust between us, but it's not America telling Russia what to do.

What about when all 20 nations come together

Of course, on the big stage of the leaders, the United States carries its own weight.

…husband

(laughs) Xi Jinping has a nice smile.

Angela Merkel is always in this familiar pose

Putin is giving orders to Turkish President Erdogan, and Obama is like, "What are you doing there?"

The problem, then, is not the G20. The problem is this G-Zero world we live in. We are in a world order in which there is no single country or coalition capable of international leadership.

The G20 is not working, our allies, the G7, that is in the past.

The world continues to globalize

Goods, services, people and capital continue to move across borders at unprecedented speed, but Americanization is not.

If you are satisfied with this, I would like to devote the remaining time to the following two points.

About the effect this will have on the whole world About the effect this will have on the whole world

let's see in order

And then I'd like to talk to you about our thoughts here in New York, USA.

Then why? what impact? How did this happen?

The reason this happened is because the United States wasted two trillion dollars on the wars in Iraq and Afghanistan.

I don't want to repeat this blunder

A large portion of the population, the working class and the middle class, are not interested in globalization because they do not feel they have enjoyed the affluence it promises.

Energy innovation has made us less dependent on OPEC and the Middle East than we used to be.

Because we can manufacture everything in America.

The American people don't want to be the world's policeman anymore, or the world trade builder.

The American people don't want to advocate the values ​​the world should have.

Let's look at Europe. Until now, the most important alliance in the world has been Western relations.

But now that relationship is at its weakest since World War II, crises, Brexit, a check between France and Russia, Germany and Turkey, and a check between Britain and China.

China wants more control

They're certainly in control of the economy, but they want to stick to their values, their standards of right and wrong, their currency, which competes with America's.

Russia wants to take the lead

You see that in the Ukraine, the Baltics, the problems in the Middle East, but they're not aligned with the United States.

they insist on their own priorities and order

That's how the world is now

What will happen next?

Let's start with the easy-to-understand Middle East

(Laughter) It's a little cropped, but you get the general idea.

There are three reasons why the Middle East is in the antagonism it is today.

One is that the United States and its allies actively intended to send a certain amount of armaments.

Two, because oil was expensive, and it was like digging in the ground and making money.

And third, no matter how chaotic the leaders were, the people were rather docile.

Without the means, many of them wouldn't even have the will to revolt.

In the world of G-Zero, all three of these factors have changed, leading to state collapse, terrorism, refugees, and more.

Will the whole Middle East fall apart?

No, the Kurds will do just fine, Iraq, Israel, Iran will soon.

But overall things aren't that good

What about him? [Russian Federation President Putin]

I'm hitting a few pieces well

I have no doubt that you are fighting more than you are capable of.

But in the long run — (to the audience) it doesn't mean that.

In the long term, the Russians have expanded while their rivals, the US and Europe, have said they won't -- with NATO spying on their borders, the EU trying to invade them, and eventually China will start throwing out hundreds of billions of dollars to influence the countries around Russia.

If China takes over, Russia will have nothing left of it.

This G-Zero world is going to be a very tough decade for Putin.

It's not all dark ahead, is it?

In fact, the situation in Asia looks good.

Asia has credible leaders and political stability.

it will last a while

Prime Minister Narendra Modi of India, Prime Minister Shinzo Abe of Japan, are likely to run for a third term in the Liberal Democratic Party, and Xi Jinping is on the verge of becoming the most powerful leader since Mao Zedong.

These are the three most important economies in Asia.

But Asia has its problems too.

There is a battle over the South China Sea

Kim Jong-un conducted another nuclear test just a few days ago.

But Asian leaders don't see the need to wave flags, engage in xenophobia, or escalate tensions over geopolitical borders.

Desire to maintain and develop long-term economic stability

doing politics like that

take a look at europe

Europe looks a little intimidated by this situation.

The mess in the Middle East is literally washing up on the shores of Europe.

In the face of Brexit, we can see that European countries are wary of populism.

In the long run, in the world of G-Zero, Europe's expansion will be seen as overkill.

Europe borders on Russia and the Middle East, and if the world were truly flattened and Americanized, it wouldn't have been so much of a problem.

Europe could expand under the G7 regime, but under the G-Zero Europe would shrink.

Europe's heartland, Germany, France, and so on, will still be tranquil, prosperous, united and functioning.

But its neighbors, Greece, Turkey, and others, don't look so good.

Latin America has been hit hard by populism, which has had a negative impact on its economy.

They've been anti-American for decades,

We're getting closer to America again

It is also found in Argentina

Cuba's resumption of diplomatic relations

Even if Venezuela's Maduro government falls in the future,

We will see it when the impeachment trial in Brazil removes President Rousseff from office and the newly elected president takes office.

The only thing moving in the opposite direction is Mexico, where we see it in the unpopularity of President Peña Nieto.

This country will be away from America for years to come This country will be away from America for years to come

The presidential election in the United States will also have a big impact on this.

(Laughter) Next is Africa.

Many people are saying that the African decade is finally here.

The world of G-Zero is an exciting time for some African countries, with good politics, urbanization, high talent, more and more women entering the workforce, and a growing entrepreneurial culture.

But it's going to be a much tougher time for many African countries, with a harsh climate, Islamic and Christian fundamentalism, shaky political controls, poorly defended borders, and frequent forced migrations.

These countries are at risk of disappearing from the map.

There will be a stark divide between the winners and losers in Africa.

Let's look at America one last time

what do i think about this country

There are a lot of dissatisfied people in this country, you won't be in this room, but in America, after 15 months of campaigning, people are outraged.

I know

Many people are complaining, "Washington doesn't work anymore. I can't trust the establishment. I hate the media."

Even globalists like me are under attack.

What you have to realize, fellow campers, is that if you're attacked by a bear, in a global world -- don't run faster than bears, run faster than other campers.

(Laughter) Now, I just mentioned my campmates.

We seem to be fine in that regard.

In that context, many people would say, "Let's buy the dollar." "Let's buy some real estate in New York."

"Let's send our kids to college in America"

Our neighbors are wonderful, aren't they Canada, Mexico and the two oceans between continents

Can you imagine how much Turkey would envy such a neighboring environment?

really good neighbors

Terrorism is a problem in America

In New York it's really no stranger

But this is a bigger problem in Europe.

In the Middle East it's even worse than in Europe In the Middle East it's even worse than in Europe

this is a serious problem

We've taken in 10,000 Syrian refugees, and they complain bitterly about it.

But they can't swim here.

Turks would be happy if they only had to take in 10,000 Syrian refugees.

So do the Jordanians, the Germans, the British

But that's not the case.

that's the reality of america

not bad

Our challenge is to

In the world of G-Zero, we lead the world by exemplary behavior.

If you want to stop being the world's policeman, if you also step back from being the builder of global trade, you can't be the flag of global values.

Even if you're not being chased by a bear, that's a good position.

I hope so

The way this year's elections are going doesn't seem very conducive to leading by example.

Hillary Clinton says country will look like it was in the 90's

America can still lead the way in values.

Continuing to build international trade

I will continue to serve as the world's policeman

Donald Trump is taking us back to the 30's

"Follow our method! Don't like it? Did you know?"

Both miss the essence of the G-Zero world, which is that even in the absence of America's decline, it's becoming objectively harder for Americans to influence and influence world affairs.

Are we really ready to lead the world by example?

After November, what am I supposed to do? After the next president comes in.

Will there be a situation where a crisis arises and you are forced to respond?

there will be panic

Could be global financial crisis

It's a crazy story, but it's like the second coming of 9/11.

--or if there is no crisis, we need to recognize that the hollowing out, the inequalities and the problems that are growing in America are serious enough to force our leaders to change, and that we have a voice.

We have the power to use our phones to force change.

Of course, there's also a third option, which is probably the most likely one.

thank you very much

(applause)

Over the next 20 years, half of the workforce is expected to be replaced by software and robots.

Many business owners welcome it as an opportunity to increase their profits.

Humans are complex and unwieldy compared to efficient machines.

But I want organizations to be human.

On the contrary, we want our organizations to be beautiful.

Machines will take our jobs and do them more efficiently than we can, and the kind of work that we will be left with will be more beautiful than efficient.

Creating beauty may be the only way to stay human in this second mechanized age.

beauty is hard to define

For the writer Stendhal, beauty was the promise of happiness.

For me, it means Lionel Messi's goal.

(Laughter) So I'd like to take a minute to suggest four principles, which are undeniably subjective, for building beautiful organizations.

First, do what is not necessary

[Doing the Unnecessary] A few months ago, Chobani Yoghurt CEO and founder Hamdi Urukaya made headlines when he decided to transfer shares to all 2,000 employees.

Some said it was a publicity stunt, others said it was pure sharing.

But there was something better than that decision.

It was a completely unexpected act.

There was no pressure from the market or shareholders, and the employees who heard the story were so shocked that they began to cry.

Acts like his are beautiful because they catch you off guard.

These acts come out of nowhere; they weren't needed at all.

The company I used to work for was the result of the merger of a large IT outsourcing company and a small design company.

9,000 software engineers and 1,000 creators were subject to merger.

A new brand is planned to integrate the two companies' vastly different corporate cultures.

Its brand color was orange

When we were putting together a budget for the launch event, at the last minute, the purchase of 10,000 orange balloons, which were supposed to be distributed to all employees around the world, was cancelled.

Ultimately, it seemed fancy but unnecessary.

I didn't know it at the time, but that decision was destined to be the beginning of the end -- the two organizations would never get along.

Sure enough, the merger ultimately failed.

Is it because there was no orange balloon?

of course not

But it all came down to the idea of, "Don't do orange balloons."

Sometimes you don't realize it, but when you get rid of what you don't need, you get rid of everything.

Leadership through beauty is doing more than just what is needed.

That's why we can't lose the orange balloon

The second principle is to create intimacy.

[Creating intimacy] Studies show that how you feel about your workplace is strongly influenced by your relationships with co-workers.

What kind of relationship do you have other than a series of small exchanges?

The myriad of interactions that take place on a daily basis in an organization have the power to make the difference between a normal life and a beautiful life.

According to marriage researcher John Gottman, the secret to a healthy marriage is not over-the-top considerations or big commitments, but small amounts of affection.

it means intimacy

In today's networked organizations, the power of weak ties is overestimated and the power of strong ties is underestimated.

Remember the words of author Richard Bach, "The opposite of loneliness is not solidarity, but intimacy."

How can we create intimacy in an organization?

CARE, a humanitarian organization, tried to promote gender equality in villages in northern India.

I quickly realized that I needed to have a conversation with the staff first.

So the place where all 36 staff members and their spouses were assembled was a corner of the Khajuraho Temple, famous for its erotic sculptures.

There was a candid discussion about relationships, where the experiences of co-workers and spouses were shared from a gender-equal perspective.

It was an amazing experience for the participants.

Not only did the staff feel closer to the community they would be working in, but it also removed invisible barriers and created strong bonds between staff.

For the next four years, not a single person on staff quit.

So to create intimacy

Take off the mask of your heart...

or wear many masks

(Laughter) Danone, a food company, wanted to connect its new corporate philosophy to its product strategy, and the management team and 100 employees from different departments gathered together, with varying years of service and geography, and a three-day training camp.

During the meeting, we were all asked to dress up in costumes: wigs, funny hats, feather necklaces, giant glasses.

The result was solid conclusions and strong enthusiasm.

I asked the woman who organized this conference what made it so successful, and she said, "Don't underestimate the power of a silly wig."

(Laughter) (Applause) Katsura removes hierarchies, but hierarchies destroy intimacy, for everyone, CEOs and interns alike.

By wearing a wig and disguising yourself, you can expose your true nature.

It's a difficult thing to do in our day-to-day work, because the relationship between an organization and its employees is like that of a married couple that has grown cold, plagued by betrayal and disappointment, desperate to make it beautiful again for each other.

For both, it takes courage to take the first step toward beauty.

I have the guts to try to be ugly

[Be ugly] Many organizations these days are obsessed with designing beautiful workplaces, looking for unconventional workplaces, like resorts, cafes, playgrounds, college campuses.

(Laughter) "Beauty in the skin, ugliness in the bone," Dorothy Parker said.

If you try to be real, you become ugly

Instead of telling us to give up on the fun or live with rudeness and cynicism, let's tell the real, ugly truth.

This manufacturer was trying to reinvent a business that was not doing well.

I identified all the pain points, wrote them on sticky notes, and put them on a big panel, and there were hundreds of pain points that were preventing me from doing well.

The problem panels were grouped together in a room called the "ugly room."

Everyone could see the ugly side, and we all celebrated the achievement.

The ugly room became a combination of a mirror and an operating room, and work was done to clean up the formalities.

The ugliest part of the human body is the brain

both literally and neurologically

The brain sees unfamiliar things as ugly.

Modern art, atonal music, maybe jazz, and VR goggles, unfamiliar objects, sounds, and people.

But all humans were once ugly

I was a clumsy baby, a new neighbor, a foreigner.

And when you go to a new place, you're seen as ugly again.

The Center for Aesthetics in Politics is an activist group in Berlin that has just recently launched a radical artistic movement.

With the family's permission, the bodies of the drowned migrants were exhumed at the border of Europe, transported to Berlin, and reburied in the heart of the nation's capital.

The intention was to take the immigrants to the land they were aiming for, at least the corpses.

These activities may look ugly, but they are needed.

When there is only one truth, one meaning, no questions, only answers, things tend to get ugly.

A beautiful organization constantly asks

Stay imperfect. That's the fourth and final principle.

[Continued to be imperfect] A friend of mine recently took me to the Nuits Deves in Paris, a civic protest movement that translates to "Rise Night," which began as a backlash against changes to French labor laws.

Every night, hundreds of people gathered in Republic Square.

Each night, the participants set up a small makeshift tent and sat down to discuss what the French Republic should look like.

At the heart of this adhocracy was a general assembly where everyone could speak, using specially prepared sign language.

Like America's Occupy Wall Street and other protests, Nuit Doves was born in crisis.

It was in turmoil, full of controversy and contradiction.

Whether you agreed with the movement's goals or not, the daily meetings were a wonderful lesson in raw humanity.

And how appropriate Paris was, this city of ideals, this city of beauty, set the stage.

Like a great city, it reminds us that the most beautiful organization is an idea worth winning, even if -- or rather, when we don't see the results.

Beautiful organization is a movement, and it's perpetually imperfect, it's never perfect, and that's why it doesn't become obsolete.

There's something about those organizations, but I don't know for sure.

It will remain a mystery forever, and we can't take our eyes off it.

We find such an organization beautiful.

Doing things that aren't necessary, creating intimacy, being ugly, and being imperfect -- these four traits aren't just found in beautiful tissue, they're also inherent in humans.

This is also a characteristic that can be seen in something called "whereabouts."

When we create chaos, when chaos hits us, the least we can do is make sure that the organization feels like it belongs in the organization and makes other people feel that way.

We can save the world with beauty if we organize around these four principles.

In the face of artificial intelligence and machine learning, we need a radically new anthropocentrism.

We should have and spread a new aesthetic and emotional education.

Otherwise, what we end up with is an outsider in an organization or society full of intelligent machines. Machines, whatever they are, do not allow for unnecessary things, they do not allow for intimacy, they do not allow for imperfections, and they are ugly.

thank you

(applause)

What I want to talk about is understanding --

The nature of understanding, what is the essence of understanding, because understanding is what we all want.

we want to understand things

Understanding, in my view, is about the ability to change the way we see things.

without it there is no understanding

that's my claim

Let's just focus on the math here.

What most people think of as mathematics is addition, subtraction, multiplication, division, fractions, percentages, geometry, algebra... that kind of stuff.

But I also want to touch on a more essential part of mathematics.

If you ask me, mathematics is about patterns.

There's a pretty pattern on the screen behind me, and this pattern is created by drawing circles in a certain way.

The definition of mathematics that I use every day is that it's primarily concerned with finding patterns.

By "pattern" I mean associations, structures, regularities, rules that govern what we see.

Second, mathematics is the act of expressing those patterns in language.

If we don't have a suitable language, we create it, which is essential to mathematics.

In mathematics, we also make assumptions, play around with them, and see what happens.

I'll do it later and see

Finally, math is about doing cool things.

Mathematics allows us to do many things.

let's see this pattern

When it comes to tying a tie, there is a pattern.

How to tie a tie has a name

And how to tie a tie can be handled with mathematics.

The one on the left is "Left Outer - Right Inner - Middle Outer - Knot" (LoRiCoT)

The middle one is "left inner - right outer - left inner - middle outer - knot" (LiRoLiCoT)

It's a language that was created to describe the pattern of tying a tie.The one on the right is also known as "Half Windsor."

This is an undergraduate-level math book on how to tie your shoelaces, and there are patterns in how you tie your shoelaces.

there are so many different ways

analyze it

you can create a language for that

The word "representation" comes up all over mathematics.

This is Leibniz's notation written in 1675.

He created a language for describing patterns in nature.

Throw something up and it will fall

why?

I don't know, but the pattern can be expressed mathematically.

This is also a kind of pattern

It's a language made for a thing.

do you know anything?

It's actually a systematic notation for tap dancing.

And it opens him up to do some really cool new things as a choreographer, because he's got a new idiom.

I want you to think about how amazing it is to express something.

This stands for the word "mathematics"

It's just dots, right?

How can the word be expressed in this way?

but I can actually do it

It stands for the word "mathematics." This symbol also stands for "mathematics," but it can also be heard as a sound.

It sounds like this

(Morse) This sound expresses words and concepts.

How?

Amazing things happen when you express things.

I want to talk to you about this magic that happens when you express something.

There are just lines here of different thicknesses.

This represents a number that refers to a particular book.

By the way, I recommend that book. It's a very good book.

(laughs) really

Let's do a little experiment. Let's play a little bit with straight lines.

there is one straight line

draw another line

Each time draw a line with one end down and the other end sideways.

Repeat this to find patterns

And then you get a pretty pretty pattern like this.

It looks like a curve, right?

I'm just drawing a straight line

Let's look at it a little differently. Rotate it.

look at this curve

what do you look like?

part of a circle?

not part of a circle

keep looking to find the true pattern

If I copy it, will it become something like art?

Not really

Extend lines and look for patterns

let's add more lines

just like this

I'll zoom out and try another perspective

At first, it was just a collection of straight lines, but you can see that it has become a curved line called a parabola.

This is a beautiful pattern expressed in a simple equation.

this is what we do

Finding a pattern and expressing it

I think this is a good interim definition of mathematics.

But today, I want to dig a little deeper and consider the nature of that.

what makes it possible?

And what you dig down to is something related to your ability to change your perspective.

My argument is that when you shift your perspective and look at it from a different perspective, you learn something new about what you see and hear.

I think this is a very important thing that we do all the time.

Look at this simple equation x + x = 2 \* x

This is a nice pattern, and it's correct, like 5 + 5 = 2 \* 5.

I saw that pattern repeatedly and expressed it this way.

I want you to think that this is an equation

It means something equals something, two different ways of looking at the same thing.

One view is "Wa"

to add something

Another way of looking at it is the product, two different ways of looking at it.

Let's say that all equations are like that, any mathematical equation that uses the equal sign is a metaphor.

It's an analogy between two things.

We have two different ways of looking at something, and we express that in language.

look at this equation

this is one of the most beautiful equations

It's just saying two things -- they're both -1.

If the left and right sides are the same -1

This is one of the essential things about mathematics, and it's about looking at it differently.

Let's try more

pick a number it's 4/3

we all know what 4/3 is

It's 1.333... but you have to dot it or it won't be exactly 4/3.

But this is for the decimal case.

In a number system that uses 10 different numbers, that means

If we decide to use only two numbers, it becomes a binary system.

4/3 is represented as 1.010...

We are now talking about the number 4/3

I'm thinking

By changing the base, we can write it like this: by changing the genus of a number, the notation changes.

These are all different representations of the same number

You can also just write 1.3 or 1.6

It depends on how many types of numbers there are.

You can also simplify it and write it like this

I think it's good to express it as 4 ÷ 3.

This number also represents the relationship between the two numbers.

one has 4 and the other has 3

This can be visualized in various ways.

What I'm doing now is looking at a number in different ways.

for one thing

I'm trying to see what I can see, and I'm doing it very consciously.

You can also use grid

If the width is 4 and the height is 3, then the length of the diagonal is always 5.

That's how it's decided. It's a beautiful pattern made from 4, 3, and 5.

This rectangle has a width-to-height ratio of 4 by 3, and you'll often see it.

The size of a typical computer screen

800 x 600 and 1600 x 1200 are used for television and computer screens.

They're all nice expressions, but I'd like to go on and play with these numbers a little longer.

I have two circles here, I'm going to rotate each one.

The left one is spinning a little faster

you see

It's spinning exactly 4/3 times faster

So while the left one makes four turns, the right one makes three turns.

If you draw two lines like this and draw a point where they intersect,

the point dances

(Laughter) This point comes from the number 4/3.

what is the trajectory of the points

Let's draw a trajectory and see what's happening

That's what mathematics is

to see what happens

That's what comes out of the number 4/3.

You could say that this is what 4/3 looks like.

This one has always been... (cheers) Thank you

(Applause) This is nothing new.

It's been known for a long time. (Laughter) But this is 4/3.

Let's do another experiment

Now I'm going to use a sound. This sound. (Beep) This is the sound of La. It's 440 Hz.

let's double the frequency

It sounds like this (Electronic sound) When you sound these two together, it sounds like this

is one octave

You can play with the sound. Let's take the same la sound, but now multiply it by 3/2.

(Beep) It's called a perfect fifth.

(Electronic sound) Together, it sounds very beautiful.

Let's multiply by 4/3 this time. (Beeps) What happens?

It sounds like this (Electronic sound) This is a perfect fourth

If the original sound is la, the new sound is re.

Put it together and you get this (Beep) This is the sound of 4/3.

What I'm doing here is changing my perspective.

I tried a different way of looking at a number.

You can also do this with rhythm.

Take a rhythm and play a sound three times in a certain period of time (drum beat) You can also play another sound four times in the same period of time.

(metronome sound) This is boring, but when you put it together —

(2 sounds at the same time) (laughs) Hey!

(Laughter) You can also add a little hi-hat.

(3 sounds at the same time) Can you hear me?

this as a rhythm

it's 4/3

(4 sounds at the same time) You can continue to play with this number

4/3 is a really great number. It's my favorite number.

(Laughter) I think it's really underrated.

If you look at the volume of a sphere, it's four-thirds the volume of a cylinder.

4/3 is inside the sphere as a volume.

why am i talking like this

what does it mean to understand something what do you mean when you say you understand

that's my aim here

To understand is to be able to see differently - that's my argument.

look at this letter it's a nice R letter

How do you know that?

Because I've seen a lot of R, and I've generalized it, abstracted it, and found patterns.

So I know this is R

What I'm trying to do is show that understanding and changing perspectives are connected.

I'm a teacher and a lecturer, and I can use this when I teach, by giving other stories and metaphors and analogies -- because understanding can be elicited by telling the story from another perspective.

In order to understand, you have to generalize everything you see and hear, and it's easier to do that by presenting another perspective.

Let's take another look at a simple example

4 and 3 — there are 4 triangles

It's kind of a 4/3

combine this

Let's play a little bit. Let's fold this into a three-dimensional structure.

this is my favorite

It's a square pyramid

Let's prepare two of these and combine them

This is called an octahedron

It's one of the five Platonic solids.

You can literally change your perspective by rotating it around each axis and looking at it from a different perspective.

If you change the axis, you can see it from a different perspective, the same thing, but it looks a little different.

You can do it another way

Every time you do that, you'll see something different, and if you look at it differently, you'll learn more about it.

This can be used to generate understanding

Let's take two pyramids, put them together like this, and see what happens.

looks a bit like a regular octahedron

Rotating like this

what will happen?

If you put two square pyramids together and rotate them, you'll see the octahedron again, a beautiful structure.

When you squash it flat, the octahedron looks like this

It is a regular octahedral graph structure

You can also do

Draw three great circles around the octahedron, rotate them, and the three great circles are associated with the octahedron.

When you inflate it with a bicycle pump, it's also kind of like an octahedron.

do you know what i'm doing

I'm changing the way I look at things.

Let's take a step back. It's a metaphor, but what have we done so far?

toying with metaphors

Playing with perspectives and analogies

tell one story in many ways —

tell a story

create many stories

all of this makes it possible to understand

this is the essence of understanding

I really think so

It is essential for humans to change their point of view.

let's play with the earth

Zoom in on the ocean Look at the ocean —

you can do this for anything

take a good look at the sea

look to the waves

go to the beach

you can see the sea in a different way

Every time I do, I learn more about the ocean.

When you go to the beach, you can smell the tide

I hear the sound of waves

tastes like salt

This is a different point of view

and this is the best

get into the water

Seeing water from inside

and this is

It's really essential to mathematics and computer science.

If you can see the structure from the inside, you can really learn about it.

something essential to that

We used our imagination to make this journey to the sea.

This is one level deep, and it's what you need to change your perspective.

i have a little game

while sitting here

I imagine myself there

I see myself from the outside

it's very strange

change one's point of view

use your imagination to see yourself from the outside

this requires imagination

Mathematics and computer science are the most imaginative art forms.

Changing your perspective should be familiar to all of you, it's something we do every day.

it's called empathy

When I see the world through someone else's eyes, I have empathy for them.

If I truly understand the world from another's point of view, then I can say that I empathize.

it takes imagination

That's how we come to understand

We use it all over the place in mathematics and computer science, and there's a deep connection between empathy and these sciences.

So my conclusion is that understanding is very much tied to the ability to change perspectives.

My advice to you is to change your perspective.

good to learn math

This is a great way to train your brain

Changing your perspective makes your mind flexible

It opens your mind to new things and makes things easier to understand.

And if I use a metaphor, it's to have a mind like water.

that's good

thank you

(applause)

I am very lucky because I come from one of the best countries in the world for women to live in [Iceland, number 1 on the Gender Gap Index].

In 1975, I was seven years old, and Icelandic women went on strike.

I didn't do any work that day, whether I was working professionally or doing household chores.

We marched through the center of Reykjavik, with 90 percent of women participating, peacefully and unitedly demanding equality.

Nothing worked in Iceland that day, because nothing works if women don't work.

(Applause) Five years later, Icelanders had the courage to elect a female president through democratic elections, the first in the world.

I'll never forget this day. President Vigdis -- we call him by his first name -- showed up on the balcony of his house. The winner was a single mother with her daughter next to her.

(Applause) This woman was a great role model for me, for the children of my time, and even for boys.

He used to tell the story that after a few terms, a young boy came into the Oval Office and asked, "Can boys grow up to be president?"

(Laughter) It's really important to have role models.

The president is not tall enough."

Studies show that women are less likely than men to consider running for office.

A 2011 study in the United States found that 62 percent of men had considered running for office, compared to 45 percent of women.

That's a 16 percent difference, and that number hasn't changed from 10 years ago.

This is very unfortunate, because the world desperately needs women leaders, and we need more principled leadership.

So my decision to run for office boiled down to the fact that I was determined to do as much as I could, even if I had never been in politics, but I wanted to step forward and be a part of a better, more sustainable society for our children, and to create a world where boys and girls could be whatever they wanted to be.

this was the journey of life

it was great

This journey started with 20 candidates

Nine candidates remained in the preliminaries, and we narrowed it down to four finalists: three men and myself.

(Applause) But the drama is yet to come.

You might think that drama is in the United States, but I was -- (Laughter) Iceland had drama.

After 20 years in office, the president announced that he would not be running in the next election, which is probably why so many candidates have considered running.

But later he had a change of heart, because the prime minister was forced to resign because the Panama Papers accused him and his family of involvement.

There were popular protests in Iceland, and the sitting president thought he needed a leader he could trust.

A few days later, a company run by the president's wife and her family was also exposed in the Panama Papers, and the president once again decided not to run.

Before I announced that I wasn't running, I said that I had two male candidates who I thought would be good candidates to replace me.

May 9th, 45 days before Election Day, wasn't my best day.

It wasn't even a leading candidate in the newspapers.

The polls showed 1 percent approval, but this was the highest approval rating of any female candidate who has ever run for president.

So, to put it mildly, I had to work feverishly to be a candidate and have my seat in the TV debate, because TV stations only pick candidates with 2.5 percent or more approval ratings in the first TV debate.

On the afternoon of the first televised debate, I found out that I was going to debate with three male candidates, and in the live feed, I learned that the first televised debate had just 2.5 percent support.

(Applause) Then there's the challenge.

The biggest challenges I've faced, and my journeys through them, have to do with media, political power, and money.

Let's start with the media

Some people say that gender is irrelevant in media and politics.

i don't agree

Because it was really hard to access the media and get airtime.

In fact, the hottest candidates were on TV 87 times a month during the campaign, whereas I was 31.

I'm not saying that the media is doing it on purpose.

I think it's mostly unconscious bias, because in the media -- just like anywhere else -- we have conscious and unconscious bias.

When I finally got access to the TV station, the first question they asked me was, "Are you going to quit running?"

it was a difficult question

But if your approval rating is between 1% and 2.5%, you might understand this question.

But the media is really important, and every time I've been on TV, my approval rating has increased, so I've learned firsthand that media exposure is important and we need to talk about it.

Of the four finalists, I was the only one who wasn't interviewed on the front page of the newspaper.

Sometimes I asked questions of other candidates, but I wasn't asked, and I wasn't the only one to be reported.

Now that you've faced this, let me say this to compliment the Icelandic media.

I barely explained my hairstyle and pantsuit.

(Applause) Kudos to them.

Besides this, I had a very important experience

I ran as an independent, so I had no other party or power behind me.

This led to a lack of experience, which made it difficult to access resources, which hurt our campaign.

Once you start a positive campaign, it seems to change the tone of the campaign for other candidates as well.

That's probably why I didn't get a lot of TV exposure, because I wanted to show respect to other candidates.

We found it difficult to access media, so we decided to move our media.

We ran a live session on Facebook where voters asked open-ended questions and answered them on the spot.

We put all the questions and all the answers on a public Facebook page because we value transparency, which is important if you want to build trust.

When I found it difficult to reach younger voters, I used Snapchat.

I asked young people to teach me how to use it, and in the final stages of the campaign, I used all of Snapchat's filters.

It took a lot of humor and humility, which is something I'm not very good at.

But this kind of thing has won the support of young people.

So it's possible to play a different battle than the previous election campaigns.

But unfortunately politics is always about money.

I'm sorry, but it's true, my campaign was underfunded compared to other candidates.

I think part of the reason for this is that it's been extremely difficult to ask for funding.

And on my part, I had a goal to do more, even though I didn't have enough money.

I was told that this is very feminine.

And yet, with one-third the media exposure, one-third the funding, and just one, but an amazing team of entrepreneurs, I was able to surprise everyone on Election Night when the first numbers came out.

Even I was surprised, as you can see from the photo.

(Laughter) The first number that came up was a close margin to the leading candidates.

(Applause) We haven't won, so it's too early to celebrate. We still came in second. It's been a long road.

This is why some people say I am the real winner of the election, and there are others who encourage me to run again.

But what I'm really proud of is that I got a particularly high approval rating from the younger generation, and a lot of people are cheering for my daughter to run for the 2040 election.

(Applause) My daughter is 13, and she's never been on TV before.

On Election Day, I've seen him on TV many times, smart, confident, loyal, and rooting for his mother.

It was probably the highlight of my campaign.

(Applause) But there were other highlights.

Kindergarten girls walking down the street saw my poster at the bus stop and thought they should kiss me.

Audience: wow

This photo alone is enough of a win for me.

Because what we see shapes our society.

So please don't worry about fears and difficulties

(Applause) It's important for women to run for office. It's time for women to rise to the top, whether it's the office of CEO or the office of president.

I was able to influence the 'The New Yorker' that everyone is so proud of.

I received a new title, "Walking Honest Emoji."

(Applause) It's probably the title I'm most proud of right now, because women are so often mistreated, and that's because they use what I've dubbed "emotional assets."

(Applause) We need to do more.

We celebrated as if we had won election night, because it felt like it.

So it doesn't necessarily have to be at the top.

You just have to work towards that goal, and if all of you, your family, your friends, all the people you work with, do well, you'll achieve more than anything you've ever experienced.

So we've had good experiences, and we've learned a lot on this journey, and we've learned more than we can share with you here in the limited time we have today.

But it's been a tough road, no doubt.

I've been sleep deprived for months

It took a lot of resilience and perseverance to not give up, but what I knew even before I got 1% approval is that the only way to be the best version of yourself is when you truly listen to your inner voice and work with it.

My good sister sometimes says, You can fool your intuition, but your intuition will never let you down.

The following is also very important, and as you all know very well on your own journey, the companions you travel with.

It's about bringing together people who share your values ​​and vision, but who are different in every way, as a team.

So that's my formula for success. What I'm grateful for is having an amazing husband -- I'm here today. I have an amazing family -- (Applause).

In fact, a leading public relations expert told me that when I made the decision to run, I would be able to get a 7 percent approval rating.

I appreciate his predictions, and they're probably right, and I think they're based on a lot of experience.

But on that one-percent day, I wanted to prove him wrong.

This point is important, because I was sleep-deprived, and I worked hard, and so did the people around me.

If you don't take care of yourself, you'll never be able to run long distances.

Two things that I think are very important about this is to put yourself in the people and things that enrich you, but just as—or even more important—have the courage to get rid of the people and things that drain your energy, including the bloggers and commentators who are supposed to be great.

By doing this, I received so much support from those around me, and when others gave up, I made the decision to aim high, and that's one of the reasons I was able to keep my energy up throughout the campaign.

Every time I lost my energy for even a moment -- it was hard sometimes, because it was so hard -- I went back to why I decided to run and how I decided to run my campaign.

I named it the 4G campaign, where the "G" is the first letter of the four Icelandic words.

The first G is “Gagn” [do good deeds]

I ran for good.

Then “Gleði” which is “Joy”

I decided to enjoy this journey

There was a lot to be gained from this, whether we reached our goal or not.

And I worked hard to make it fun for others.

The third is “Gagnsæi” [transparency]

i will answer any question

We didn't hide anything, and we made Facebook and our website equally open.

Because if you were to choose a president, you would want one who could answer your questions.

Finally, I don't think I need to explain the fourth thing in this room.

(Applause.) I'm so glad I had the courage to run for president, to risk failure and achieve success, and on countless levels.

I can't say it was easy, but I can say this, and I think my team will agree with me.

thank you

(Applause) Thank you.

thank you

(Applause) Pat Mitchell: I'm not going home yet.

Jara Tomasdottir: Great audience.

Pat: Let me just say this, probably everyone in this room is ready to move to Iceland and vote for you.

It's going to be difficult to actually vote, but if there's one thing I get from Iceland, it's the inspiration that I keep getting.

I remember very well 1975, when Icelandic women demonstrated, and that was really a big factor in starting up the women's movement.

You said at the beginning of the talk, please show me that picture again, can you tell me again what it was like when the country stood still.

And you may not know that the American media didn't tell you that the Icelandic women marched this Monday too, right?

Halla: Exactly. Pat: Tell me about it.

Halla: It's been 41 years since the first strike, and it's said to be the best country in the world to be female, but our work isn't done.

At 2:38 p.m. on Monday, an Icelandic woman left her job because that's what she gets for the day.

(Applause) What's cool about this demonstration is the unprecedented number of young women and men who participated, because now is the time to close the gender income gap.

Pat: I'm not going to ask you to declare what Halla is planning to do next, but let me just say that if she does something next, there will be a large volunteer army.

Thank you Hara

Hara: Thank you everyone.

(applause)

Last year, three members of my family were murdered in a hate crime.

Needless to say, it's really hard for me to be here today, but my brother Dea, my brother's wife Yuso, and her sister Razan will say, 'This is the only way.

I hope that by the end of this talk, you will decide to stand together against hate crimes.

This is from the morning of my brother's wedding on December 27, 2014.

He asked me to get his hair done for his wedding photos.

He was a 23-year-old, 6-foot-1 basketball player who was a big fan of Stephen Curry.

When Dare and Yuso were doing their first dance, I was moved by the love reflected in his eyes and the joy she responded with.

I went to the back of the wedding hall and started crying

When the second song was over, my brother rushed over to me and took me in his arms and rocked me.

Even when it was very disturbing, my brother and I were on the same wavelength.

He wrapped his face around me and said, "Suzanne, I'm here because of my sister.

Thanks a lot

I love you"

About a month later, I stopped by my parents' house in North Carolina, and on my last night, I ran up to Dare's room, desperate to know what it felt like to be newlyweds.

My brother said with a big boyish smile, "I'm so happy. I love her. She's a wonderful woman."

she is exactly what she is

At the age of 21, he had just been accepted into the same University of North Carolina, Chapel Hill dental school as Dare.

Like her brother, she loves basketball, and at her suggestion, we started our honeymoon by watching a game of the NBA's LA Lakers, which she loves.

'Cause look at this

(Laughter) I will never forget that moment when I sat down with my brother -- how free I felt in my happiness.

My younger brother, a boy who was an avid basketball fan, grew up to be a fine young man.

In the Faculty of Dentistry, I was the head of the faculty. Together with Yuso and Razan, I was involved in community and international outreach activities to help the homeless and refugees.

Razan was then 19 years old, an architectural engineering student, using his creative outreach to create care packages for the local homeless, among other things.

they are those people

That night, I stood there, took a deep breath, looked at Dare, and said, "I've never been more proud of you."

He pulled me in a hug and said good night, and the next morning I drove back to San Francisco without waking him up.

That was the last time I hugged my brother.

Ten days later, I was on call at San Francisco General Hospital when I received a flood of unintelligible comforting words.

Confused, I called my dad and he quietly said, "There's been a shooting in Dare's neighborhood in Chapel Hill.

It's blocked, that's all I know

I hung up and did a quick Google search for "chapel hill shooting."

1 hit

It read, "Three people were shot in the back of the head and pronounced dead at the scene."

everything connected

I fell out of my chair onto the gritty hospital floor and cried out in grief.

Stupid and confused, I immediately boarded a late-night flight out of San Francisco.

When I entered my parents' house, I collapsed into my parents' arms and sobbed.

Then, as usual, I ran up to Dare's room, looking for him, but all I could find was a void that could no longer be filled.

Investigations and autopsy reports have finally revealed the chain of events.

Dare had just returned from school by bus, and Razan, who had come to eat dinner, had already gone home with Yuso.

When I started eating, I heard a knock on the door.

When Dare opened the door, the neighbors fired multiple shots at him.

She said she heard them screaming on the emergency call to the police.

In the kitchen, the man shot Yuso in the hip and stopped her from moving.

Then he went around behind and pushed the barrel to his head and destroyed his midbrain with one shot.

Then he turned to Razan, who begged for his life and screamed, and shot him in the back of the head like an execution, killing him.

As he walked out, he shot one last shot into Dare's mouth. Of the eight total, two went to Dare's head, two to his chest, and the rest to his limbs.

Dea, Yuso, and Razan were shot dead inside their own home, which was supposed to be safe.

The perpetrators had been harassing them for several months, banging on their doors and brandishing their guns repeatedly.

His Facebook was filled with anti-religious posts.

Especially Yuso was afraid of him.

When she moved in, he told Yuso and her mother that he didn't like how he looked.

In response, Yuso's mother told her to be kind to her neighbors, because when she got to know them, they would know who they were.

We were all so paralyzed with hatred that we couldn't even imagine how it would lead to violent murder.

The man who killed my brother turned himself in to the police shortly after the incident and confessed that he had been executed as if he had been executed after a parking dispute with three young men.

That morning, the police did not question the culprit's statement, did not investigate further, and made a hasty announcement based on the statement.

But it turns out there was no dispute over parking.

there was no argument

No parking issues

But it's already the next festival

Already in the 24-hour mass media cycle, the phrase "fighting over parking" was repeated.

As I sat on my brother's bed, I remembered his words, the words he said to me so generously and so lovingly, "I'm here because of you."

Those were the words I needed to speak out through this hopeless grief.

It's unforgivable that even the local news doesn't properly report the death of a family member.

They were murdered by their neighbors because of their faith, because they chose to wear a cloth on their heads, because they looked Muslim.

At that time, I felt a strong sense of anger because, if the situation were reversed, what would you call me if an Arab, a Muslim, or someone who looked like a Muslim murdered three white American college students in their own home as if they were being executed?

it's a terrorist attack

In America, when white men commit violent acts, they are blamed for being a lone wolf, a mentally ill person, or a parking dispute.

I did the only way I knew how to get my family's voice heard: I sent a Facebook message to everyone I knew in the press.

A few hours later, in the middle of a chaotic house filled with friends and family, neighbor Neil sits next to his parents and asks, "Is there anything I can do for you?"

Neil has more than 20 years of reporting experience, but he came to us not as a journalist, but because he wanted to help as a neighbor.

I got a lot of requests for interviews from the local media, so I asked him for advice on what to do.

He suggested a press conference at the local community center.

I am still grateful to him more than I can put into words.

He said, "Give me the dates and I'll have all the stations attend."

He arranged what we could not have done on our own in dire circumstances.

When I made the statement to reporters, I was still in my surgical gown from the night before.

I was interviewed by CNN's Anderson Cooper within 24 hours of the murder.

The next day, major newspapers -- including the New York Times and the Chicago Tribune -- published stories about Dare, Uso, and Razan, and they were able to tell the truth and caution against anti-Muslim hatred becoming mainstream.

These days, Islamophobia is a racial prejudice that seems socially acceptable.

we have to endure it and keep smiling

They got nasty stares, they were visibly intimidated when they got on planes, and random body searches at airports happened 99% of the time.

that's not all

We have brought political and even financial benefits to politicians.

Here in the United States, we have presidential candidates like Donald Trump who are willing to demand that American Muslims be registered, or that they will ban Muslim immigrants and refugees from entering the country.

It's no coincidence that the rise in hate crimes coincides with election cycles.

A few months ago, Khalid Jabara, a Lebanese-American Christian, was murdered in Oklahoma by a neighbor who called him a "vile Arab."

The killer had previously spent just eight months in prison for trying to run over Khalid's mother.

You probably don't know Khalid's story, because it didn't make national news.

The least we can do is call this a hate crime.

The least we can do is talk about it, because violence and hatred don't exist out of thin air.

Shortly after returning to work, I was making rounds at a hospital as a senior physician, and one of my patients looked at my colleague, pointed around his face, and said, "San Bernardino," referring to the recent terrorist attacks.

I lost three family members to Islamophobia, and I continue to speak out at work about how to respond to these "little" hostilities.

i was discouraged

was humiliating

A few days later, when I made rounds with the same patient, she looked at me and said, "Your buddy is a murderer from Los Angeles."

I looked around, hoping for a rescue ship.

and again silence

I was reminded again that I had no choice but to raise my voice.

I sat down on her bed and gently asked, "Have you done anything other than be considerate and considerate?

What have I done but loving care? ”

She looked down and realized that what she had said was wrong, and she apologized in front of the whole team and said, "For what I did, I'm Mexican-American.

I get treated like this all the time."

There are many people who are subject to "small" hostile attacks on a daily basis.

As you may have experienced, it's about race, gender, sexual orientation, faith, and so on.

Everyone must have been silent when they witnessed a scene where a mistake was made.

I may not have been able to react immediately.

You may not have even been aware of your own hidden preconceptions.

We all think that prejudice is unacceptable, but when we see it, we go silent because it makes us feel uncomfortable.

But overcoming shyness means becoming an ally.

There are over 3 million Muslims in America.

Still only 1% of the total population

Reverend Martin Luther King once said, "In the end we will remember not the words of our enemies, but the silences of our friends."

So why was Neil's camaraderie so strong?

there are a few

Not only was he a caring neighbor, but he brought his expertise and resources when needed.

other people did the same

As the first African-American tenured professor at Wheaton College, Larisia Hawkins has shown solidarity with Muslim women who face daily discrimination by wearing the hijab.

As a result she was fired

Less than a month later, she became a faculty member at the University of Virginia, currently researching pluralism, racial beliefs, and culture.

Reddit co-founder Alexis Ohanian has shown that not all ways to show camaraderie are serious.

He helped a 15-year-old Muslim girl create a hijab emoji.

(Laughter) It's a casual thing, but it has a huge unconscious impact on Muslim normalization and humanity, including society in general as part of the "us" rather than the "other."

The editor-in-chief of Women's Running is the first American fitness magazine to feature a hijab on its cover.

People with completely different backgrounds are actively expressing their camaraderie with their respective positions and resources in academia, science and technology, and the media.

What resources and expertise do you offer?

When you see hateful prejudice, will you overcome your timidity and speak up?

Will you be like Neil?

Like many neighbors in this story

In each community, you're likely to have Muslim neighbors, colleagues, and friends at your child's school.

please give me your hand

tell them you will stand with them

They may be small things, but I believe that these things will make a difference.

No matter what I do, I can't get back Yuso Razan.

But the hatred will end when we all speak up.

thank you

(applause)

I'm devising craft projects for middle school and high school students, and I often use materials that I can't even think of.

Inspiration comes from everyday problems

For example -- when I was going to a comic convention and needed a costume, I didn't want to spend too much money, so I made my own.

The crown and skirt were made to shine

(Laughter) Another example was when I had a very traumatic event, and my favorite game, "Flappy Bird," had been discontinued.

(Laughter) My dilemma was either never update my phone or never play this game again.

(Laughter) I hated both, so I did what made the most sense to me.

I made a real-life version of Flappy Bird.

(Laughter) (Game over) (beep) (music) (Laughter) Some of my friends were really into this game, so I invited them to play.

(Video) Friends: Oh!

(laughs) (Video) Friends: What the hell!

(Laughter) They say it's just as maddening as the real thing.

(Laughter) So I put the video for this work online, and to my surprise, it exploded.

Over 2 million views in just a few days

(Laughter) What was even more interesting was people's comments.

A lot of people wanted to make their own and asked me how to make it.

I felt that this affirmed my idea that technical craftsmanship can be taught by devising assignments.

With the income from the video explosion, I was able to have every student in my class create their own boxed game.

It was quite a challenge for the students, but they learned a lot of new engineering and programming concepts.

Everyone was eager to learn in order to complete the game.

(Laughter) Even before I made the boxed version of Flappy Bird, I had been thinking about using creative engineering assignments in my classroom.

One day in middle school, I was asked to build a robot using a standard craft kit.

Many of the students seemed bored

After a while, some of the students took out paper and started decorating their robots.

And then other students joined in and showed more interest in the assignment.

That's where I started looking for more creative ways to teach students what technology is.

Most of the commercially available tech craft kits in schools are a bit daunting.

It is made of plastic and cannot be customized as desired.

On top of that, it's very expensive, costing hundreds of dollars a kit.

Most class budgets just can't afford it.

I couldn't find anything else so I decided to make my own

I started with paper and cloth

It's something we've all been doing since we were kids. These materials are cheap and ubiquitous.

So what I devised was the task of using cloth and googly eyes to create a glowing creature.

During the work, the students were collaborating, laughing, and discussing the task.

Most notably, the students were using their own ingenuity.

Because of the success of this challenge, I continued to create more craft challenges to challenge my students.

We've also started doing workshops like this outside of school in our communities.

Then I realized something interesting

A lot of people with really different backgrounds started coming in.

In particular, far more women and minorities than I expected -- people you wouldn't normally see in a traditional engineering workshop.

This is the 2016 workforce composition of a large technology company.

only 19% of engineers are women

It's a small number to begin with, just 4% if you're a minority.

We see similar ratios in high school robotics clubs and college engineering classes.

Now, due to a great variety of existing problems, there is a lack of diversity in the engineering population.

Perhaps one of the solutions is to give students the opportunity to come up with challenges and expose them to technology.

That alone won't solve everything, but it may be an opportunity to convey the fun of technology to students who weren't interested in it because of previous teaching methods and preconceived notions.

So how can we change the way we look at technology?

Most of my students find it boring and intimidating, so I design my assignments with these three principles in mind all the time.

The first is to lower the threshold, which is to make it an approachable subject.

Watch this instructional video

The first assignment I gave my students was to build an electrical circuit on paper.

As you can see, it doesn't take long to learn, and it's very easy, even for beginners.

A low threshold means that you can prevent situations where the problem cannot be completed due to lack of funds.

This challenge can be completed for less than a dollar using paper, copper tape, light bulbs and batteries.

The second principle is to keep the ceiling high.

What this means is that we create an environment where great growth can take place, and our students are constantly being challenged.

Even if it starts out as a creature that just glows, you can add microcontrollers, sensors, and so on, and develop it into a program that interacts with its environment.

(Laughter) Finally, the third principle is customization.

This means that you can make your assignment something that is of interest to everyone.

And here's the advantage of using materials that are readily available, because you can customize them very easily using paper or fabric.

Even if you don't like Flappy Bird, you can make your own game.

(Video) Student: Ours is a game about Justin Bieber because he's speeding so the purpose of this game is to keep him from getting caught by the police (laughs) [He's been laughed at enough already. (Video) Student: But he's changed... we're his guards.

(laughs) Thank you.

(applause)

Carlos was a former Marine in the Vietnam War, and he went to the front three times as a volunteer during the war, and each time he was shot.

In 1971, he was discharged from the military after being diagnosed by a doctor, but his body was still full of bullet fragments, enough to trigger a metal detector.

Over the next 42 years, he suffered from nightmares, extreme anxiety in public, loneliness and depression.

Drowning in alcohol in the name of cure

Married and divorced three times

Carlos had PTSD.

I became a psychologist to help traumatized people, and for the last 10 years I've been working with patients who suffer from PTSD, and I've seen veterans like Carlos.

I had no expertise in PTSD

Therefore, the treatment was unknown.

Some veterans were drugged

Some were hospitalized and given standard group therapy, while others were simply told, "Go home and forget about those days."

More recently, dog therapy and wilderness retreats have been tried, many of which may provide temporary relief from stress, but they don't provide long-term relief from PTSD symptoms.

but things have changed

Now, not just the relief of symptoms, but complete cures are available, and many veterans are saved.

The latest scientific research has yielded objective and reproducible results, revealing what the most effective treatments are.

What we now know is that the most effective treatments for PTSD have a lot in common with training soldiers to get out on the battlefield.

Starting a war is our specialty.

War has been fought since the dawn of history

Since then, all sorts of high-performance, destructive weapons have been developed, starting with weapons that use stones and physical strength.

Modern training methods are used to help soldiers master these weapons.

to start a war

We are good at teaching soldiers how to fight.

But if you think about the experience of modern veterans, the training to bring them home isn't working.

Why?

Our ancestors fought on a daily basis, and the battle took place in the very realm of life.

Even in our evolving times, until recently, there was little need to learn how to go home, because we never came back.

Now, fortunately, most of us live in happy societies far from war, and when conflict strikes, especially in the United States, we use technology to train our soldiers to be highly trained, send them to battlefields anywhere on the planet, and then fly them back to their peaceful suburbs when their mission is complete.

But just imagine what it feels like

A veteran told me that one day in Afghanistan, he was caught in a horrific shootout, witnessed carnage and death, and just three days later he carried a cooler to his kid's soccer game.

It is often described as a 'dazzling experience'

(Laughter) This is a term that is often used to describe such experiences.

that's exactly right

While soldiers heading to war spend hours training, it was only recently that we realized that there are many soldiers who need training to return to civilian life.

Like any exercise, repetition is what works best for PTSD.

In the military, you can't just pop a gun to a trainee and say, "Here's the trigger, here's the bullet."

Instead, soldiers are trained in a variety of situations, and they train over and over and over again, and in any situation that's extremely tense, the sense in their muscles allows them to involuntarily pick up their weapons and intercept them.

The same approach can be used in training-based therapy.

The first is cognitive therapy, which is like modifying your state of mind.

The outside world is perceived as a very dangerous environment for soldiers returning from the battlefield.

Trying to fit into a peaceful environment in that state of mind will get you into trouble.

You become concerned about non-existent dangers.

Your family and friends won't believe you

Civil life is not without danger.

Still, you're astronomically less likely to encounter danger than in combat.

So I'm not telling veterans not to be alarmed at all.

Instead, we train veterans to exercise location-specific vigilance.

When you're in a dangerous place, you tend to be more alert.

What about eating out with your family?

much less vigilance

We're going to train them to be completely sober, so they can judge the actual odds of encountering a terrorist bombing in a peaceful America.

With enough experience, you can learn to modify those minds.

The next step is simulative therapy, which is like hands-on training, and it's one of the most immediate treatments that's been proven to work.

Remember Carlos?

he chose this remedy

Carlos' first training was a difficult one, where he had to sit with his back to the door when he went to a supermarket, a mall, or a restaurant.

And it was important to stay in this environment.

At first, Carlos was very apprehensive.

I wanted to sit somewhere where I could look around, where I could think of an escape route, where there was something I could use instead of a weapon.

he wanted to run away, but he didn't

I overcame my fears by recalling my training in the Navy.

Little by little, little by little, little by little, little by little, little by little, little by little, little by little, little by little, little by little -- I finally remembered perfectly how to sit down in public and simply have fun.

As well as these drills, I listened to my combat experience records over and over again.

I listened to it over and over until the memories of the battle stopped making me uneasy.

Thanks to repeated memory tracing, I never dreamed of such an experience.

When I talked to Carlos, who had just finished treatment, for the first time in a year, he said, "Doctor, this is the first time in 43 years that I haven't had a nightmare."

This treatment is not the same as erasing memories.

Veterans don't forget traumatic experiences, but with enough experience, they feel less pain and suffering than they did before.

It's desirable to be in a situation where the shocking experience doesn't shake you like it happened yesterday.

but it's usually hard

As with any exercise, it doesn't work for everyone.

There are also trust issues

Sometimes people say to me, "You have no experience of war, but are you going to heal me?"

it's a valid opinion

But you don't need a war experience to go back to civilian life.

We don't need training to operate on the battlefield, we need training to come home.

In the last 10 years that I've been working, I've listened to all sorts of bad experiences, and every day --

not always easy

There were times when I felt like my heart was about to break and I thought I was tired

But this kind of training-based therapy is so effective that no matter how exhausted this job is, it's even more revitalizing, because you can see people recovering.

I can see my life changing

Carlos now enjoys going out with his grandchildren, something he once couldn't even do with his own children.

What's amazing is that after 43 years of suffering, Carlos regained his life after just 10 weeks of intense training.

When I spoke with Carlos, he said, "I know you can't go back.

At least now I can live a peaceful life as long as I have time left."

"I hope the younger generation doesn't have to wait and get the support they need," he said.

i hope so too

because

Life is short, and if you're lucky enough to survive war and trauma, you owe it to yourself to live it well.

Don't wait for the training you need to live a good life.

The best way to stop people from being hurt by war is not to go to war.

But we haven't reached that stage yet.

Until that time comes, the mental suffering of the younger generations sent to war can be mitigated, it can be mitigated.

The science, the heat and the importance that goes into soldiers going to war must be given at least the same level to the training that brings them home.

they just need help

thank you

(applause)

Chris Anderson: John, it's a scary situation.

Jonathan Haidt: yeah

Chris: I feel like the world is in a situation that we haven't had in a while.

Because of the political conflict we know so well between the left and the right, not only are people at odds with each other,

A deeper groove is forming

What is going on and why is this happening?

Jonathan: It's certainly different than it used to be.

It's a very hopeless feeling

A Pew Research Center study found that our feelings about opposing factions aren't just dislikes, they're intensely disliked, even viewed as a threat to the nation.

The percentage of people who feel disgust has increased steadily, and now exceeds 50% for both camps.

People are frightened, but that's because it feels more extreme than it used to.

Whenever I'm considering social conundrums, I draw on three basic principles of moral psychology, and they seem to help me here as well.

The first thing to remember when thinking about politics is that humans are "clan-centric."

we evolved to be kindred

One of the simplest and greatest insights into human social nature is the Bedouin proverb, "I am against my brother, and I and my brother are against my cousin, and I and my brother and my cousin are against the stranger."

This sense of tribalism has enabled humans to build large-scale societies, cooperate, and compete with each other.

Also, tribalism is what drove us out of the jungle and out of our little pack, but the result was a perpetual struggle.

The question here is, "Which aspects of society are causing the situation to become more difficult, and how can we slow it down?"

Chris: That's a very pessimistic saying.

Does that mean that tribalism is baked into the psyche of almost everyone? Does that mean that tribalism is baked into the psyche of almost everyone?

Jonathan: Yes, because this is the basis of human social cognition.

On the other hand, we can coexist peacefully, and we've invented all sorts of fun that mimics war.

That's sports, that's politics, but all of those things are ways of putting that kind-centered nature into action without hurting anyone.

We are also good at commerce, exploration, and meeting new people.

So we should think that there is good and bad in patriotism. We are not destined to fight, but we cannot achieve world peace.

Chris: The size of the population expands and contracts, doesn't it?

Jonathan: yes

Chris: The size of the group that we consider to be our peers and the size of the group that we consider to be the other change.

And some people think that this process will continue forever.

Jonathan: yes

Chris: We've been extending tribalism for a long time.

Jonathan: In my opinion, perhaps we're reaching a new left-right distinction.

So the traditional left and right came out of the distinction between workers and capitalists, the working class, Marx.

But what we're seeing right now is the schism that's happening in all Western democracies. On one side, there are those who want to stay within the national framework, and those who want to be more regional -- and I don't mean that in a bad way -- or they have a sense of being local, and they care about their city, their region, their country.

On the other hand, there are people who are against regionalism, and whenever I get confused, I think of John Lennon's "Imagine."

"Imagine a world without a country, no one to kill, no reason to die."

These people want more global governance and hate nation-states and borders.

We see this situation all over Europe.

There's this guy who's really good at metaphors -- whose last name is Shakespeare -- and he was in England in an article he wrote 10 years ago.

I used this analogy: "Are we the ones who close the gates or the ones who open the gates?"

In the UK the factions were split between 52% and 48%.

Even in America, opinion is divided on this point.

Chris: I can't believe that people like us who grew up with The Beatles and hippie philosophies that dreamed of one world would be ideal, so there are people who don't like it.

But what you're saying is that there are millions of people who don't think that world is far-fetched, that it's dangerous, that it's wrong, that they're afraid of it.

Jonathan: I think the biggest problem in Europe, especially in America, is immigration, so now is the time to talk about diversity and immigration.

I think it should be carefully considered sociologically.

Once an issue becomes politicized and becomes a favorite of the left or a favorite of the right, even sociologists find it difficult to think logically about it.

Diversity has many advantages

Thanks to that, technological innovation has made remarkable progress

America's economy has grown rapidly

Diversity and immigration have many positive aspects.

But what proponents of globalism miss -- and avoid facing -- is that racial diversity undermines social capital and trust.

Robert Putnam, author of "Bowling Alone," examines databases of social capital in one important study.

Broadly speaking, the more people who feel they are the same, the more trust they have in each other, and the more likely they are to become a welfare state that emphasizes redistribution.

The Scandinavian countries are so great because they have the remnants of small homogenous nations.

This leads to a progressive welfare state and progressive, left-leaning values ​​that manifest themselves in this way: "Open the gates! The world is wonderful.

The Syrian people are suffering and must welcome their entry.”

this is admirable

But -- I was in Sweden this summer, and if the speech in Sweden emphasizes non-discrimination, and people can't talk about the negatives, then we're going to end up with a lot of refugees.

Then social capital will be undermined, the welfare state will be harder to sustain, and we may end up with a society as visibly and racially divided as America is.

So this is a difficult question to talk about.

But this is something that should be considered, especially in Europe, and also in the United States. Chris: Rational people, that is.

So even people who think they're not racist, who think they're moral and sincere, believe that humans are so diverse that when people who are too different mix together, they risk pushing the boundaries of what's acceptable.

Jonathan: Yes, but if it wasn't limited to race, it would be more acceptable.

this is a cultural issue

A political scientist named Karen Stenner did a wonderful study showing that when people are united and feel they are all the same, they tend to be more authoritarian.

These people aren't particularly racist, as long as they don't feel threatened by social or moral order.

But when we experimentally convince them that we're becoming more divided, that we're becoming more and more divergent, they become more racist and homophobic and try to weed out people who are different.

That's part of the reason for the authoritarian reaction.

The Left pursues the Lennon line, the John Lennon line, but they generate an authoritarian response.

In America, we certainly see that with the emerging right.

It's the same in the UK and all over Europe.

But there's also a positive side to it, which is that if regionalists and nationalists are actually right and emphasize cultural commonality, race becomes less important.

So an assimilationist approach to immigration solves most of the problems.

If we're going to emphasize the value of a tolerant welfare state, we need to emphasize that we're all the same.

Chris: So the increase in immigration and the fear that comes with it is part of the current conflict.

Are there other causes?

Jonathan: Another principle of moral psychology is that intuition comes first, strategic thinking comes later.

You've probably heard the terms "motivated reasoning" and "confirmation bias."

There's some very interesting research out there that suggests that our intelligence and our language might evolve not so much to find truth, but to manipulate others and protect our honor.

Humans are very good at justifying themselves

And when it comes to collective interests, and it's not just you, but your team versus the other team, if you look at the evidence and you're wrong, you can't admit it.

So you can't win a political argument.

Because you can't convince people with logic or evidence by arguing, because reason doesn't work that way.

For example, if you use the Internet or Google, you might say, "I heard that President Obama was born in Kenya.

Let's search... 10 million! on second thoughts! "This is what happens

Chris: A lot of people will find that shocking.

Because tech optimists have created social media as a powerful way to bring people together.

But there was an unexpected reaction.

Jonathan: That's right

That's why I'm drawn to the yin and yang of human nature and left-right conflicts, where both sides are right in some ways, but not in others.

In general, the left believes that human nature is good, that if people band together and break down walls, everything will work out.

Right-wing -- I'm talking about social conservatives, not libertarians, but social conservatives in general believe that humans are greedy, sexual, and self-centered, and therefore need regulation and restriction.

They say that if we take down all the walls and allow the world to communicate, pornography and racism will abound.

Chris: Can you explain a little more? That principle of human nature has always existed.

So what has changed that has deepened this sense of division?

Jonathan: You have to understand that there are six to ten different factors at play.

Let's take a look at some of them

In the United States, one of the big culprits -- in both America and Europe, actually -- is World War II.

There's an interesting study by Joe Henrik and others that shows that if your country has experienced war, especially when it was young, 30 years later, it's more cooperative when you test it with "The Commons' Dilemma" or "The Prisoner's Dilemma."

We're kindred-minded, so if I... My parents were teenagers during World War II, and they used to go out looking for scrap aluminum to help out in the war.

everyone was working together

And then these people rose through the ranks in business and politics and became leaders.

they were good at reconciliation and cooperation

And in the '90s, everyone retired

At the end of the '90s, the baby boomers were left.

They spent their youth fighting domestically after 1968.

The impact of losing the World War II generation, the "greatest generation," is pretty big.

this is the first reason

The other is the purifying of the two major political parties in America.

There used to be liberal Republicans and conservative Democrats.

America in the mid-20th century was bipartisan.

But there were a lot of factors that changed the situation, and in the '90s, it became a purely liberal party and a conservative party.

Now people from both parties are so different that they even oppose marriage between children of opposing parties, but in the '60s it wasn't a big deal.

This is the purification of political parties

And the third is the Internet, which, as I said earlier, is a very strong inducer of causal error and disparagement.

Chris: The atmosphere on the internet right now makes me very uneasy.

I did a little Twitter search about this election and I found these two tweets.

One is against the background of discriminatory graffiti, "It's annoying!

The ugly face Trump brought to America

Next to it is "Donation site for criminal Hillary It's annoying!"

I feel uneasy about this feeling of "annoying"

Because it's okay to have arguments, disagreements, and get angry at someone.

Because hate, as you say, is what makes things worse.

Jonathan: Yes. Disgust is something else.

Anger is... I have a child.

We fight 10 times a day, and get along 30 times a day.

It's just a mood change.

But hate is different

Disgust turns the other person into a morally deformed entity, like a nonhuman monstrosity.

Hate is like indelible ink

There's a couple therapy study by John Gottman.

When one partner shows disgust or contempt by looking at their facial expressions, it's a sign that they're going to get divorced soon, but showing anger doesn't predict anything, because anger can actually be a good thing if you manage it well.

This election is unique in this regard.

Donald Trump is often said to be "annoyed"

He's extremely fastidious, so disgust means a lot. It's very important to him, and it's a characteristic of him.

I feel like I don't want to get involved with the other person

That's why you see that kind of situation now, for example, in college.

Increasingly, we see an urge to shut people out of colleges, to silence them, to keep them away.

What I fear is that a whole generation of young people, if they get into politics for the first time and feel aversion to it, will not get involved in politics when they get older.

Chris: What should we do?

How can I get rid of my hatred?

Jonathan: Reason can't solve it

I…

I've spent many years studying disgust and thinking about emotions.

I think the opposite of disgust is actually love.

Love is...

Disgust is a barrier and a boundary

love is breaking down walls

So I think personal relationships are probably the most powerful tool we have.

You might find them disgusting in groups, but when you get in touch with them personally, you realize they're lovable people.

As such experiences pile up, the categories that classify people gradually collapse and change.

The tragedy is that once upon a time, Americans would have been more of a mixture of left and right positions and political beliefs within the region.

But now that moral divisions have intensified, there's plenty of evidence that political likes are coming together.

It's getting harder to find opposition

opponent is far away

It's getting harder to get to know each other

Chris: What do you want to say to the American people and people at large? Chris: What do you want to say to the American people and people at large?

Jonathan: yes

It's important to remember that research by political scientist Alan Abramowitz reveals that American democracy is becoming dominated by something called "negative partisanship."

So everyone thinks they're finding candidates of their own accord, and they're voting for them because they like them.

But with negative campaigns, social media and other fads, the way elections are being played is changing, with both sides making the other the baddest and worst, so voters automatically vote for the candidate they support.

We cast a vote against our opponent, not a vote for ourselves. And let's not forget, people on the left think, "I've always thought Republicans were evil, and now Trump proves it.

So we should be able to tie our view of Trump to all Republicans."

but that's not necessarily the case

People are usually not happy with the candidates they support.

This is the most negatively partisan election in American history.

So you have to separate how you feel about the candidate and how you choose the candidate — how you feel about the voters.

And we also need to realize that, because we live in a morally divided world, and the metaphor I used in my book is that either we're all trapped in a "matrix," or the moral community itself is a matrix, a communal illusion.

If you're in a democratic blue matrix, it's all compelling, and you're convinced that you have all the evidence that the other side is -- primitive, racist, the worst human being in the world.

But the person next door is in a different moral matrix.

Living and watching in another video game is a completely different reality.

Each sees something different as a national threat.

I've tried to understand both sides from a middle ground, and what I've found is that they're both right.

There are many threats to this country, but neither side is structurally able to see everything.

Chris: So you're saying we need a new kind of empathy?

Empathy is traditionally defined as, "I know your pain and your position."

Applying those feelings to the poor and the suffering.

But I don't usually empathize with people I consider strangers or people I find disgusting.

Jonathan: Yes, that's right.

Chris: What happens when you build that kind of empathy?

Jonathan: Sure I...

Empathy is a very hot topic in psychology, and it's a very popular term, especially on the left.

Empathy for favored and discriminated groups is a virtue

It's important that we empathize with groups that we, the left, think are important.

it's easy

But it's when it's hard to empathize that it should be truly celebrated.

Then I think

We've been working on issues of race and legal discrimination for the last 50 years, and those issues have long been top priorities, and they're still important.

But this year, I hope you realize that your life and death are at stake.

The left-right divide is probably the most significant division ever.

We still have issues of race, gender, and LGBT, but left-right conflicts are the most pressing issues for the next 50 years, and they won't just go away.

So there's going to be a lot of institutional reform that's needed, and we're going to consider it, but it's like having a long, boring conversation.

But I think the conversation starts when people realize this tipping point.

So we still need new sympathies

We need to realize that what this country needs is empathy, even if you don't want it. Raise your hands.

If you want to get out of this situation, read Buddha, Christ, Marcus Aurelius.

It's got great advice, how to shake off your fear, how to change your perspective, how to stop seeing other people as your enemy.

This kind of empathy has a hint in the wisdom of the past.

Chris: Lastly, what can we do as individuals to help heal?

Jonathan: Overcoming deep-seated prejudices is quite difficult.

A study shows that political biases are more deeply rooted and stronger than racial biases in America today.

That's why I think you need to make an effort. This is the most important thing.

Make the effort to meet people in person

Everyone has a cousin or brother-in-law who stands against them.

So when this election is over, wait a week or two -- because some of you are probably going to feel terrible -- but wait a few weeks and say you want to get in touch and talk.

And before you act, read "Moving People" by Dale Carnegie. (Laughter) I'm serious.

To learn the technique, you just have to accept the other person and say something like, "There are a lot of things we disagree with, but there's one thing I admire about Uncle Bob."

If you start by understanding the other person, it will work wonders

This is one of the most important things I've learned and incorporated into my relationships.

I still make silly mistakes, but now I'm better at apologizing and justifying people.

If you do that too, the conversation will go really well and be really fun.

Chris: John, I'm really intrigued when you talk to me.

I feel strongly that we are in a situation filled with deep questions about morality and human nature.

your insight really means a lot

Thank you for joining us

Jonathan: Thanks Chris

Jonathan: Thank you everyone.

(applause)

For hundreds of years, economics has studied human behavior, how we make decisions, how we behave individually and collectively, how we exchange value.

We also study institutions and institutions that facilitate human economic activity, such as legal systems, businesses, and markets.

But now there's a new institution in the form of technology that will fundamentally change the way humans transact with each other, and that institution is blockchain.

Now, I'm going to say this quite boldly, but there's just one thing I want you to remember from what I'm talking about today. Blockchain technology is the continuation of a relatively new, yet very human trend.

As humans, we find ways to reduce our anxiety about each other so that we can exchange value with others.

Now, one of the pioneers who delved deeper into the concept of using institutions and institutions in the economy to make it easier to do business by reducing mutual fears was Nobel laureate Douglas North.

He died in late 2015, but he was one of the first to pioneer the theory of "new institutional economics."

The word "institution" here refers only to formal regulations, such as the constitution, and informal constraints, such as bribery.

Institutions like this, which essentially lubricate the wheels of the economy so that they can turn, show that they have evolved along with human history.

If you think back to hunter-gatherer times, economic activity was confined to your village society.

While there were some informal constraints, the pressures of violence and social scrutiny allowed them to buy and sell.

As societies became more complex and trade routes expanded, more formal institutions were created, such as banks, governments and corporations to control currency.

These institutions have helped people do business in a world where social complexity and uncertainty have increased and the reach of individual powers has shrunk significantly.

Finally, in the age of the Internet, the same institutions were brought online.

Platform marketplaces such as Amazon, eBay, and Alibaba have emerged to act as merely speedier versions of institutions to mediate economic activity between people.

As Douglas North put it, institutions have a role to play in alleviating our fears, connecting us and allowing us to exchange any kind of value.

And I think that right now, the way people interact and transact is evolving even more rapidly, because unlike ever, we humans will find ways to reduce our anxiety about the unknown, other than relying on banks, corporations, governments, political and financial institutions, all we need is the power of technology.

So what is blockchain?

It is a technology that uses a distributed database, and it is a mechanism that accumulates records of assets and transaction history within a P2P network.

It's basically a public ledger, where you can see who owns what and who trades what.

Transactions are encrypted and protected, and as this stacks up, the transaction history is trapped in blocks, which are chunks of data, and then the blocks are connected together cryptographically to be protected.

Now you have a ledger that records every transaction on the network—a book that cannot be altered or tampered with.

This ledger is replicated on every computer in the network.

not the app

not even a company

The closest analogy would be Wikipedia

Everything is in full view on Wikipedia

Information is displayed in a patchwork state and is constantly changing and updating

Wikipedia allows you to track changes, and you can create your own wiki pages, because at the end of the day, it's just a database.

Wikipedia is an open platform that stores words and images and accumulates changes to those data.

Blockchain, on the other hand, is an open platform for storing different types of assets.

Assets that can be used to store a history of trustees, owners, locations, etc. using a blockchain include the digital currency bitcoin and other digital assets, such as intellectual property ownership titles.

Certificates, contracts, physical assets, even personally identifiable information.

Of course, there are other minor nuances, but the gist of it is what I just explained.

In other words, it's a public ledger that stores transactions, and because it's replicated, it's very secure and hard to tamper with.

So that's why I said earlier that blockchain would reduce anxiety and that it would certainly radically reshape the way the economy works.

Now, the word "uncertainty" is pretty important in economics. There are three types of uncertainty that we experience in almost every financial transaction we do every day.

Uncertainty here means not knowing who you're dealing with, not being able to see what's going on in the deal, not being able to claim reimbursement in case of an emergency.

First, let's start with the case where we don't know the other party.

Let's say you want to buy a used smartphone on eBay.

The first thing to do is research the seller.

Are you an expert user?

Whether they have a high rating, or whether they have no profile, etc.

Ratings, star ratings, certification checkmarks, and so on, in modern times, having proof of a person's identity helps to reduce anxiety about who they're doing business with.

But the problem with these proofs is that they're so inconsistent.

Count the Profiles You've Created

With blockchain, we can create an open, global platform where we can store information as proof to anyone, from any source.

That way, you can create user-driven profiles that work everywhere.

It's not just a profile, it means that you can choose to disclose certain characteristics that facilitate transactions and interactions, such as having a government-issued identification card or being over the age of 21. All you have to do is encrypt and publish the proof that these are facts and have been approved.

The ubiquity of these profiles, both in the real world and online, will open up a whole new world of human-to-human transactions.

Now, you talked about how blockchain can reduce uncertainty about who you trade with.

The next type of uncertainty is essentially the inability to see what's going on in the conversation.

For example, if you send me the smartphone I mentioned earlier,

I would like some information disclosure.

I want to know if the item I received is the exact item I purchased and I want the details of the delivery route recorded.

Not only electronic products like smartphones, but also various kinds of goods and data, including pharmaceuticals, luxury goods, data and products that you don't want to be tampered with.

The problem that many companies have in common -- especially for manufacturers of complex products like smartphones -- is managing all sorts of vendors in a horizontal supply chain.

There is no shared database between companies involved in manufacturing.

We don't have the same information infrastructure, so it's very difficult to get a detailed picture of how a product evolves.

With blockchain, we can create a common reality between people who don't trust each other.

What this means is that the nodes in the network don't need to know each other or trust each other at all, because each has the authority to monitor and authenticate the chain itself.

According to Wikipedia earlier

Despite being a common database, having multiple readers and multiple authors at the same time, there is only one truth.

This can also be achieved with blockchain

You can create a distributed database that's as efficient as a central one, without any real centralized administration.

All of these vendors and companies can skip the trust step and interact with each other on the same database.

It also reveals a lot more information to the consumer.

As the product itself moves, you can see how digital certificates and tokens move on the blockchain, accumulating value.

It's a whole new world in terms of visibility.

So far, we've been talking about how blockchain reduces uncertainty about the identity of a counterparty and changes the definition of information transparency in long-distance and complex transactions, including those within supply chains.

And the third common uncertainty is the fear of broken promises, which is endless.

What if the smartphone you bought wasn't delivered?

will i get my money back?

With blockchain, you create your own code, or binding contracts between you, and you're guaranteed that those contracts will come to fruition without the need for a third-party executive.

In the case of smartphones, it is like an escrow service.

The money is put in, but the remittance is not performed until it is confirmed that all the conditions have been met.

In this case, it is a condition to receive a mobile phone

Blockchain is one of the most revolutionary ways to reduce uncertainty, because it eliminates the need for agency and agency enforcement to a certain extent.

This means that many economic activities can be collateralized or automated, and require little or no human intervention, as information moves from the real world to the blockchain.

What would surprise Douglas North about this use of technology is that what underpins the work of the blockchain, and what guarantees the security and trust of this system, is the mutual distrust.

So rather than get distracted by the uncertainty we feel and rely on banks, governments, corporations, and other institutions, we can take advantage of all the uncertainty that we collectively have and use it to collaborate and trade more, faster, and more openly.

But it's not the case that blockchain can solve everything, although there are reports that it could end global poverty, it could solve the problem of counterfeit medicines, it could stop deforestation.

The truth is, the technology is still in its infancy, and there's a lot of experimentation, and probably a lot of trial and error, before we can truly understand the use cases for this system in the economy.

A lot of people are working on this, from financial institutions, to tech companies, to startups, to universities.

One of the reasons is that this is more than just economic evolution.

It's also a revolution in computer science.

Blockchain gives us the technological power to record transactions between people -- transactions involving currencies, all kinds of digital assets, physical assets, and even our own personal characteristics -- and it's possible in a whole new way.

In some ways, the blockchain becomes a technology form of institution, an institution that has many of the advantages of the traditional institutions that we're used to, but in a decentralized way.

It does so by transforming the anxiety that uncertainty brings into the comfort of certainty.

I think it's time for all of us to start preparing ourselves, because the world we're about to see is one in which decentralized, autonomous institutions play a pretty important role.

thank you

(Applause) Bruno Giussani: Thank you.

I know blockchain is hot right now, it's got a lot of potential and it's very complicated.

What are your thoughts on the adoption rate estimate?

Bettina Warburg: That's a good question.

Most of what we're researching is routes through companies and governments. The reality is, blockchain is a complex technology.

Even if few people really understand how the Internet works,

We all use it every day. John Sculley's quote is, in a sense, the state of the art. "Technology must be like air or it must be beautiful." Blockchain is in the middle of nowhere right now. It's for a very small number of early adopters who have some understanding of how it works and can explore the technology on their own, and it's good for finding the best use cases -- identity verification, asset tracking, smart contracts -- that can be used at enterprise and government scale.

Bruno: thank you

Bettina: Thank you

(applause)

The beginning of the measurement of time was the observation of cycles in nature, the transition from day to night, the pattern of the changing seasons, which was used to create calendars.

Sundials and mechanical clocks were later invented to measure time more accurately, allowing us to tell the time in a more convenient way.

But what exactly are we measuring?

Does time exist physically? Or does it just exist in our heads?

At first glance, the answer seems obvious. Of course, time exists. Time flows all the time around us, and we can't imagine a world without time.

But it was Einstein who complicated our understanding of the concept of time.

According to Einstein's theory of relativity, time flows for everyone, but it doesn't necessarily flow at the same rate for people in different situations, such as someone traveling near the speed of light or orbiting a supermassive black hole.

Einstein unraveled the elasticity of time by linking time and space to define space-time. Space-time can bend, but it is consistent and predictable.

Einstein's theory seemed to confirm that time is woven into the fabric of the universe.

But one question hasn't been fully answered: Why can we move in any direction in space, but only in one direction in time?

No matter what we do, the past is always behind us

This is called the "arrow of time"

When a drop of food coloring is dropped into a glass of water, we intuitively know that the color will spread from that drop and color the entire glass of water.

Imagine the opposite happening

You can see that the flow of time is reversed

We live in a world where food coloring spreads in water, not in a world where food coloring settles in water.

In physics, this phenomenon is explained by the second law of thermodynamics, which states that entropy, or disorder, increases in any system over time.

The system as a whole universe goes from being regular to being irregular, and the properties of this universe determine the direction of the arrow of time.

If time is such a fundamental property, it should be included in the most basic equation that describes the universe, right?

There are two pillars of equations in physics today.

General relativity explains phenomena on very large scales, while quantum physics explains the world on a very small scale.

One of the greatest goals of theoretical physics in the last half-century has been to reconcile these two equations into one basic "theory of everything."

There have been many attempts, but none have been proven correct, and they treat the concept of time differently.

Curiously, one of the candidates, the Wheeler-DeWitt equation, doesn't involve any notion of time.

Like all currently proposed theories of everything, this equation is speculative.

But as a thought experiment, if this equation, or a similar equation without a concept of time, proves correct, does that mean that, at its most basic level, time doesn't exist?

Is time something of an illusion, caused by the limitations of our perception of the universe?

I don't know yet, but maybe that thinking is wrong.

Instead of questioning whether time exists as a fundamental property, let's see if time is an emergent phenomenon.

Emergent traits are properties that do not exist in the individual individuals that make up the aggregate, but that appear when the aggregate becomes an aggregate.

Water molecules on their own don't have waves, but when they combine to form an ocean, they do.

The reason the images change over time is that they use many still images to create the illusion of continuous, fluid motion.

When images are displayed in rapid succession, the human brain can perceive the passage of time from a sequence of still images.

Each of the images that make up the film does not change or contain a passage of time, but it is a property that is produced by the sequence of these images.

The motion in the film is real, but it's also an illusion.

So is the physics of time equally illusory?

Physicists are still researching these and other questions, and yet definitive answers seem far away.

at least for now

There are now 1.8 billion young people in the world between the ages of 10 and 24.

It's the largest group of people of the same generation in human history.

It's a big challenge to meet their demands.

It's also a great opportunity

because our future depends on them

Every day, we see young people putting their ideas and passions into the fight for change -- social change, political change, change in their communities.

Imagine the advances and inventions they will create in the future.

New medicine, new transportation, new communication, sustainable economy, maybe world peace.

But young people aren't given the opportunities they deserve.

1.8 billion young people stand on the threshold of adulthood

But what about preparation?

Few young people today are ready for adulthood.

What I love most about my job at UNICEF is the opportunity to meet, talk and listen to young people from all over the world.

Everyone talks about their dreams and hopes

They have great dreams and hopes that they will accomplish in life.

On the other hand, I'm afraid to sue

They feel they are facing an impending series of crises.

The demographic crisis, the education crisis, the employment crisis, the violence crisis, the crisis facing girls.

Given these crises, the problem is urgent and must be addressed now.

because young people complain

I worry that I won't get the education I need.

surely

their worries are justified

Around the world, 200 million young people are out of school, a number equal to the population of Brazil.

On the other hand, even young people in school feel they lack the right skills.

Globally, 6 out of 10 children and young people do not reach the minimum levels of reading and mathematics.

It is impossible for any country to thrive if nearly half of its young people are illiterate.

What about the lucky ones who go to secondary school?

Many drop out because they fear they won't be able to acquire the skills that will help them make a living.

Parents may not be able to afford school fees

this is a tragedy

Young people also complain about employment, fearing they won't get a job.

This anxiety is justified

10 million young people reach working age every month

an amazing number

Some go on to higher education, but most of them get a job.

But we can't create this many jobs every month.

As a result, the competition for jobs is fierce.

Put yourself in the shoes of today's young people, who are looking for work, trying to make ends meet and prepare to build their future, but the opportunities aren't there.

Young people sometimes complain that they're not learning the skills they need.

This allegation is justified

We live in a world where change is so rapid that our work cannot keep up with the times.

It's time for the Fourth Industrial Revolution

Young people shy away from farms and the countryside

trying to go to the city

I want to learn future-proof skills for my future job

Digital technology and environmental technology

Seeking opportunities to learn about modern farming

I want to learn about business and entrepreneurship so that I can start my own company.

I want to be a nurse, a radiologist, a pharmacist, a doctor.

I want to acquire all the skills that I will need in the future.

I want to learn about professions like construction or electrical engineering.

These are the professions that the country needs, but jobs have not yet been created.

And young people express fears of violence

home online school community violence

And this is also a valid appeal

I have hundreds of friends on social media, but I can't find anyone I can meet face-to-face when I need to.

they face bullying and harassment

Hundreds of millions of people face exploitation, abuse and violence

Every seven minutes, an adolescent boy or girl is violently murdered somewhere in the world.

And girls, in particular, express anxiety about their future.

And sadly, this fear is justified.

Girls face stigma and discrimination

We are facing life-threatening early pregnancies because of child marriage.

Imagine the population of America

then double it

That's the number of women who are married before their 18th birthday.

650 million people

Many of them became mothers while still children.

1 in 3 women will be physically or sexually abused in their lifetime

It's no wonder girls are worried about the future.

These crises may not be real in your life or around you.

You also probably had the opportunity to get a quality education, marketable skills, and a job.

And you may never have experienced violence, prejudice, or discrimination.

But there are tens of millions of young people who aren't as lucky as you.

They are ringing the alarm bells for the future.

That's why UNICEF and its government and private partners are launching new international programs.

The young people named themselves

Generation Unlimited Also known as Gen-U or Gen you

Young people tell us that it's our time, it's our turn, it's our future.

our goal is very simple

By 2030, we aim for all young people to be in school, in training or in age-appropriate occupations

This goal is urgent, necessary and ambitious.

i think i can achieve

We seek cutting-edge solutions and new ideas

An idea to give young people a chance to win success.

We don't have all the answers, so we're looking to businesses, governments, nonprofits, academia, and innovators to help.

Gen-U is an open platform where people come together to share ideas and solutions, what works, what doesn't work, and most of all, what can work.

I think that if you take these ideas and add a little bit of capital and a good partner and goodwill from politics, you can scale them up to reach tens of millions of people around the world.

We're also doing something new with this project.

co-designing and co-creating with young people.

Young people are using Gen-U to steer and move forward.

In Argentina, there's a program that connects students in rural, remote mountain communities with secondary school teachers they've rarely met.

When students come to the classroom, they connect with local teachers online to urban schools.

There, secondary school teachers provide digital technology instruction and quality instruction, and students don't even have to leave their hometowns.

South Africa has a program called Techno Girls.

These girls live in disadvantaged areas and study STEM fields such as science, technology, engineering and mathematics.

They have an opportunity for job shadowing

Through this opportunity, they can imagine themselves working in engineering, science, or space.

Bangladesh has partners who train tens of thousands of young people, so they can become motorcycle repairers and mobile phone service providers.

On the one hand, this is an opportunity for them to discover the possibility of making a living for themselves.

may be an opportunity to start

And in Vietnam, there's a program that combines young entrepreneurs with the needs of the local community.

In this program, we formed a group to solve traffic problems for people with disabilities in our community.

With mentors and a little bit of money, they built a new app to help the whole community.

I've seen how these programs make a difference

In Lebanon, I visited a program called Girls Got IT or Girls Got It.

In this program, girls learning computer skills and STEM fields have the opportunity to work side-by-side with young professionals, so they can learn first-hand what it's like to be an architect, a designer, a scientist.

When I see girls, they smile, their eyes sparkle, their hearts thump, and they have hopes for the future.

they want to change the world

Together with this program and our mentors, we can make it happen.

But these ideas and programs are just the beginning.

It will only reach a fraction of the young people who need to reach out.

We want to find ways to take these ideas and scale them.

Reach more young people in more places, more regions around the world.

And I want to dream big

Can't we connect every school in every place in the world, no matter how remote, in a mountainous area, in a refugee camp, to the Internet?

Could real-time translation be possible so that young people can receive quality education in their native language anywhere in the world?

And could we combine schooling with the skills needed to get a job locally?

to be able to transition from school to work

What's more, can't each of us help?

Is there a way to support young people in their daily lives and in the workplace?

Young people are looking for apprenticeships, job shadowing and internship opportunities.

can't you help with that?

Young people want work-study programs, where they can learn and earn.

Can't we reach out and help the less fortunate communities around us?

And young people say they want to help other young people.

We want more places and more opinions to come together to help each other.

In HIV centers, in refugee camps, we're trying to end cyberbullying and child marriage.

We need ideas big ones small ones regional ones international ones

this is ultimately our responsibility

Huge numbers of young people are taking over our world.

For them, it is our duty to leave a legacy of hope and opportunity with them.

Young people make up 25% of the world's population

100% responsible for the future

And they're looking for opportunities to succeed and build a better world.

Their cry is our mission

It is the demand of the times.

Now is the time and this is urgent

1.8 billion young people are waiting

thank you

(applause)

(Music) We're a tribe they don't see We live in an industrial reservation We're called the Halusa Nation We've been called Indians We've been called Native Americans We've been called enemies of the whites We've been called savages We've been called belligerent races We've been called many names We're the Halusa Nation Seen We are the Halusa Nation Our DNA is the earth and the sky Our DNA is the past and the future We are the Halusa Nation We are evolution and continuity Halusa Nation (music) Viruses have taken many forms Bears, Elk Antelopes, Elephants, Deer Minerals, Iron, Copper Coltan, Rubber Rubber Coffee, Cotton, Sugar People The germs spread faster than a bullet They cultivated the mountains Protecting the crops and enclosing the livestock People Women and children are separated from men They divided us according to where they belong Arrogant disrespect fills the air Lurking in the cortices that capture space We are not ruled The settlements were on fire The evangelists didn't even try to hide their intentions The pioneers wanted to erase our existence Recycled prayers People This is my body I give to you People This is my blood We are not controlled (Electronic music and singing) I wake up to my brother The settlement was on fire Woke up by my brother The settlement was on fire (music) The settlement was on fire The settlement was on fire Halusa Nation Mankind People see spirits in nature Through senses and perceptions All are connected All things on earth All things in the sky have a spirit All are precious Alien nations stand before them Both nations and citizens pursue material well-being Living in trauma and indifference There is no connection Everything on earth and in the sky exists to be exploited Even they themselves are shaving their minds Selling their souls Nothing is sacred Even they themselves are expendable A li nation Alienation Our ancestors live in our DNA In our genetic memory Evolution of our descendants Humanity is our innate identity Our innate identity is waiting to be recognized as a human Understand To do so we must not just know When we understand the precious without religion we develop We follow our ancestors When religion exists we disappear Into religious paradise and hell (Electronic music and song) Humanity We are human We live on earth (Electronic music and song) Humanity We are human We live on this earth Our bones, flesh and blood Metals, minerals, liquids All of the earth We are the earth We exist We are the sky We are the sun, the moon and the stars The reality of how our ancestors lived We are the children of the earth and the sky We are the Halusa Nation (Applause) (Cheers) (Applause)

In the summer of 1895, the boardwalk on Coney Island was teeming with people looking for a glimpse of the latest marvel of roller coaster technology: the Flip Flap Railway.

It was America's first roller coaster with somersaults, but the thrilling somersaults came at a price.

Many roller coaster riders have had problems with serious whiplash, neck injuries, and even being thrown out, all due to their vaunted somersaults.

Today's roller coasters can be much more exciting without resorting to the "thrill" of being taken to the hospital.

But what exactly do roller coasters do to the human body, and how are they both frightening and safe at the same time?

Gravity is central to the design of any roller coaster.

Unlike cars and trains, most roller coasters run on rails almost entirely on gravitational energy.

As the roller coaster pulls up the first hill, it begins a cleverly engineered cycle that stores potential energy on the uphill and converts it to kinetic energy on the downhill.

This rhythm repeats throughout the course, representing a dance of gravitational energy choreographed by a roller coaster designer.

But there's an important element in this cycle that wasn't always fully considered: you.

When Flip-Flap existed, the most important thing for the designers was to avoid stopping the roller coaster.

Early designers put too much emphasis on that, going downhill with tremendous momentum, and when they got to the finish line, they braked abruptly.

But just as gravity affects vehicles, it also affects passengers.

Under the intense conditions of a roller coaster, the effects of gravity are intensified.

A common unit among jet pilots, astronauts, and roller coaster designers is the G-force.There's a common unit called the G-force.

1G is the familiar force that is attracted by the gravity we feel on the ground, and this is the force that the Earth's gravity pulls on our bodies.

But as the vehicle accelerates and decelerates, passengers feel gravity more or less.

Modern roller coaster designers know that the human body can withstand about 5G, but Flip-Flap and its contemporaries routinely reached about 12G.

At that level of gravity, blood rushes from the brain to the legs, leading to dizziness and temporary memory loss, because it makes it harder for the brain to stay conscious.

When the cells in the retina are deprived of oxygen, their ability to process light is impaired, resulting in darker vision, loss of color, and temporary visual loss.

When you're in a somersault, blood rushes to your head, causing what's called a "redout," a condition where your vision turns crimson.

Conversely, negative G creates weightlessness.

Temporary weightlessness in the body is mostly harmless.

Floating fluid in the inner ear, which is responsible for controlling balance, can cause motion sickness.

But the greater danger -- and the thrill -- comes from what designers call "airtime."

This is typically hips off the seat or being thrown out if you don't take proper precautions.

Modern roller coasters have largely solved this problem with the use of various safety belts and bars, but the ever-changing position of the passenger makes it difficult to determine which parts need to be secured.

Luckily, modern designers know very well what the human body and roller coasters can endure.

The designer manipulates these opposing forces, mitigating the effects of high pressure when there is no pressure at all.

Plus, it eliminates the abrupt changes in speed and direction that were common on thrilling roller coasters in the past, as the abrupt shift from positive to negative G's can cause whiplash, headaches, back and neck pain.

Modern roller coasters are built to be sturdier, with stricter gravity tolerance numbers in mind.

A 5-g load makes your body feel five times heavier than normal, so if you weigh 45 kilos, the roller coaster adds 225 kilos.

When a designer designs a roller coaster strut, he has to factor in the weight of each passenger multiplied by the weight of each passenger.

Roller coasters like this aren't for everyone yet.

Adrenaline rushes, dizziness and motion sickness aren't likely to go away anytime soon.

But today's constrained design, the use of 3D modeling and simulation software, allows us to build things that are safer and more thrilling than ever before.

Accurate knowledge of the limits of the human body has helped us build roller coasters that are faster, higher, and have more loops, and they never jump off the rails.

Hello

thank you

[Regarding the speaker's hypersensitivity

I asked for silent American Sign Language applause at the venue.] This is what I looked like five years ago.

I was in a PhD at Harvard and loved to travel.

And I had just gotten engaged to the love of my life

I was 28 at the time, and like all healthy people, I thought I was invincible.

One day, I developed a fever of over 40 degrees Celsius.

I probably should have gone to the doctor, but I had never had a serious illness before, so I thought it was just a cold, so I stayed home, made chicken soup, and thought that in a few days I would be all right.

But this time it was different

For three weeks after my fever started to go down, I couldn't go out because I was groggy.

I bump into you when I go through the door

I had to walk over the wall to get to the bathroom.

In the spring of that same year, I had many, many infections, and every time I saw a doctor, they told me there was nothing wrong.

No matter how much you check, you can't find anything wrong.

We have only the actual symptoms, which we can explain ourselves, but other people can't.

It may sound strange, but at times like this, people have to find some kind of reason to feel sorry for themselves, and I wondered if it was aging.

This may be what it is like to be over 25 years old

(Laughter) Eventually, neurological symptoms began to appear.

Sometimes when I try to draw a circle, I can only draw half

There were times when I couldn't speak and couldn't move.

I went to all kinds of specialists, from infectious diseases to dermatology to endocrinology to cardiology.

I even went to a psychiatrist

A psychiatrist told me, "He's obviously very ill, but I don't see any mental illness.

It would be nice if the cause could be found in other departments.”

The next day, I was diagnosed with conversion disorder by a neurologist.

I've been told that all of the symptoms I've had -- fever, sore throat, sinusitis, gastrointestinal, neurological, cardiac -- all came from childhood traumas that I don't remember.

They said the symptoms were real, but none of them had a biological origin.

I was an aspiring social scientist

I've studied statistics and probability theory, and I've also studied mathematical models and experimental design.

So I thought I shouldn't blindly reject a neurologist's diagnosis.

My instincts were crazy, but I had learned that truth is often what seems wrong to our intuition, because our desires cloud our eyes.

I thought I should also consider the possibility that the diagnosis was correct.

As a little experiment that day

I walked three kilometers from the neurologist's office to my home, and my legs were cramping with a strange pain that felt like an electric shock.

I thought about this pain and wondered how it was possible that all these symptoms could come from within me.

As soon as I got home and walked through the front door, I collapsed to the floor.

Burning pain in my brain and spinal cord

My neck was so stiff that I couldn't even touch my chin to my chest.

For the next three years, I could barely get out of bed.

How could you have been so misdiagnosed?

I thought it must be a strange disease that has never been seen before.

But if you look online, you'll find thousands of people around the world who have the same symptoms as me, who are just as marginalized and distrusted.

Even those who are willing to work, they say, they just stay in bed after coming home and on the weekends, and then finally come to work on Monday.

In extreme cases, the disease is so severe that they are forced to live in a pitch-black room, where hearing someone's voice or being touched by a loved one becomes excruciating pain.

I was diagnosed with Myalgic Encephalomyelitis (ME)

Some of you may know it as "Chronic Fatigue Syndrome".

For decades, this name has permeated the image of a disease like this one, but some of them are as serious as this one.

The main symptom, common to all patients, is that any use, either of the body or the head, is accompanied by severe wear and tear.

If my husband runs, it's only sore for a few days.

In my case, just walking a few dozen meters would put me in bed for a week.

It's like a prison made just for you.

I know patients who are ballet dancers who can't dance, accountants who can't do math, medical students who never became doctors.

No matter what your career was, you'll never be able to return.

It's been four years since I was diagnosed, and since I left the neurologist's office that day, I've never been back to my pre-health.

An estimated 15 to 30 million people worldwide suffer from the same disease.

In my country, America, there are about 1 million patients.

That's almost double the number of people with multiple sclerosis.

For decades, patients with ME remain as frail as those with congestive heart failure.

25% of people with ME become homebound or bedridden, and 75% to 85% are unable to work even for short periods of time.

And yet there is no treatment and little research.

Why is medicine abandoning a disease so common and so devastating?

The doctor who diagnosed me with conversion disorder at the time had inherited a set of ideas about the female body that have been around for over 2,500 years.

The ancient Roman physician Galen believed that hysteria was caused by the frustration of women with particularly strong sexual desires.

The ancient Greeks thought that when the uterus literally dried up, it would move through the body in search of moisture, pressing against internal organs—yes—and the symptoms would be emotional outbursts, dizziness, and paralysis.

I was told the cure was to get married and become a mother.

This idea remained largely unchanged for thousands of years, but in the 1880s, neurology attempted to reconstruct the theory of hysteria.

Sigmund Freud came to the conclusion that the patient's unconsciousness was what produced the physical symptoms, which manifested themselves when dealing with memories and emotions that were too painful for the conscious mind.

These emotions are subconsciously translated into physical symptoms.

Now we know it can happen to men, but of course women are much more likely to get it.

When I started researching my disease history, I was amazed at how deeply rooted these ideas still were.

In 1934, 198 doctors and nurses on staff at Los Angeles County General Hospital fell seriously ill.

I had muscle weakness, stiffness in my neck and back, fever, all the same symptoms that I had when I was first diagnosed.

Doctors at the time thought it was a new type of polio.

So far, more than 70 outbreaks have been documented around the world, all of which occur after infection and have very similar symptoms.

All the cases were overwhelmingly female, and all the while doctors could find no single etiology and concluded it was probably mass hysteria.

Why has this idea persisted so long?

I suspect it's because of sexism, but doctors are basically trying to help their patients.

By labeling it hysterical because we want to know the answer, we are treating the untreatable, and explaining the unexplainable.

The problem is that this kind of attitude does terrible harm.

In the 1950s, a psychiatrist named Elliott Slater examined a group of 85 patients diagnosed with hysteria.

Nine years later, 12 were dead and 30 were disabled.

Many patients had undiagnosed but undiagnosed conditions of multiple sclerosis, epilepsy, and brain tumors.

In 1980, the official name for hysteria in the United States became conversion disorder.

The neurologist who made this diagnosis to me in 2012 used Freud's words verbatim, and even today, women are two to 10 times more likely to be diagnosed with this name than men.

The problem with theories about hysteria and psychogenic illness is that they're impossible to prove.

The very word psychogenic implies a lack of evidence, and in the case of ME, psychological explanations get in the way of biological research.

Wherever you look in the world, the budgets spent on ME are among the lowest.

If you estimate the annual national expenditure per patient in the United States, AIDS is $2,500, multiple sclerosis is $250, and ME is only $5.

It's like being struck by lightning

It's not just bad luck

The ignorance surrounding this disease was a choice, a choice made by the institutions that were supposed to protect us.

There are many mysteries about ME: why it can be inherited, why it can occur after almost any infection, from enteroviruses to Q fever to EB virus, why women are two or three times more likely to be affected than men.

It's not just about my illness, it's a much bigger problem.

When I first fell, an old friend called me

I soon learned that there were many other women in their late 20s who were suffering from battered bodies.

I was shocked to learn that everyone is having such a hard time gaining understanding.

A woman who had scleroderma, an autoimmune connective tissue disease, said that a woman who had scleroderma, an autoimmune connective tissue disease, was told for years that it was all in her head.

Between the onset of symptoms and the time I was diagnosed, my esophagus was so thoroughly damaged that I would never be able to eat by mouth again.

There was also a woman with ovarian cancer who was told for years that it was just premature menopause.

A friend from college had been misdiagnosed for years as having a brain tumor for an anxiety disorder.

This situation is disturbing, because since the 1950s, the incidence of autoimmune diseases has doubled or tripled.

Forty-five percent of patients initially described as hypochondriac are eventually diagnosed with a well-known autoimmune disease.

Like the ancient hysteria, it depends entirely on gender and who the world believes.

75% of patients with autoimmune diseases are women, and women make up as many as 90% of those with certain diseases.

Although the prevalence is overwhelmingly higher in women, it is not a disease unique to women.

ME affects children, and it affects millions of men.

One patient told me that it was getting better and worse, and that women were told they were exaggerating their symptoms, and men were told to be strong or to be patient.

And men may have a harder time getting diagnosed than women.

my brain has changed

But it's not all bad. Even in this situation, I'm not giving up hope.

After so many diseases were once thought to be psychogenic, science has uncovered the biological mechanisms behind them.

People with epilepsy went from being forced into institutions to being able to measure abnormal electrical activity in their brains with electroencephalography.

Multiple sclerosis, sometimes misdiagnosed as hysterical paralysis, was revealed by CAT scans and MRIs to be a brain lesion.

And stomach ulcers, which until very recently were thought to be simply stress-related, were discovered to be the real culprit, Helicobacter pylori.

While ME has not yet benefited from the science that other diseases have benefited from, the change is beginning.

Researchers in Germany found evidence that the disease is an autoimmune disorder, and evidence in Japan that it is inflammation of the brain.

In the United States, researchers at Stanford University found abnormal energy metabolism that was 16 standard deviations away from normal.

In Norway, there's a phase III clinical trial of an anti-cancer drug that can lead to complete cancer remission in some patients.

Another source of hope is the persistence of patients.

Online, we banded together and shared our stories.

I greedily devoured any kind of research.

I became a test bench myself

I became my own scientist and my own doctor because I had to.

So I gradually recovered to 5 percent over there, 5 percent over there, and finally I was able to go outside on fine days.

I was still forced to make a silly choice between sitting in the garden for 15 minutes or washing my hair.

But it gave me hope that there might be a cure.

My body is sick and that's all

With the right help, maybe one day I'll be fine

I started a united fight with patients around the world.

We've filled the previously empty space with something beautiful, but it's still not enough.

I still don't know if I'll ever be able to run again, or walk indefinitely, or do physical activities that I can only dream about now.

But I'm so grateful to have made it this far.

Recovery is slow, and when you think it's getting better, it gets worse, but it's getting better little by little.

I still remember the days when I was locked up in my bedroom and I didn't see the light of day for months.

I thought I was going to die in my room

But here I am now, with all of you, I think it's a miracle.

What would I have been if I hadn't been so lucky? Had I been sick before the Internet? What if I hadn't met my friends?

I think they probably would have taken their own lives, there were a lot of people like that.

How many lives could have been saved if the diagnosis had been correct decades ago?

How many lives could be saved if we started seriously working on it now?

Even if we find the true cause of this disease, unless we change our social system and culture, we will repeat the same thing with other diseases.

From the experience of living with illness, I learned that science and medicine are fundamentally human endeavors.

Doctors, scientists, and policy makers are all subject to preconceived notions.

Women's health should be considered more nuanced.

The immune system, like the whole body of a woman, is fighting for equality.

Listen to the patient. Be willing to say, "I don't know."

The word "I don't know" is a beautiful thing

The word "I don't know" leads to discovery.

If we can do that—if we can challenge the unknown world that stretches out endlessly—we may be able to approach the uncertain with admiration rather than fear.

thank you

thank you

I'm excited to stand here

America is bigger than Europe in every way

I am also reflected in such a big way!

(laughs) That's great!

TED Talk Where Everyone Brings Great Ideas

So the question is, where do these great ideas come from?

This is somewhat controversial, but here's a story: an average mind like mine has about 50,000 thoughts a day.

That's amazing, but that's until I found out that about 95% of them were repeating the same thoughts as the day before.

(Laughter) For me, most of the time it's boring.

For example, "I need to clean the floor

Oh, I forgot to walk the dog

I especially often say, "Don't eat that cookie."

(Laughter) 95% of the time it's the same thing.

So there's only 5% of room left each day to think about something really new.

In my case even that was useless

One day, I was watching a sports program on TV, and I thought to myself why I couldn't relate to this sport.

Some things make me wonder

this is weird

(Laughter) What's the value of being soft enough to see your heels from this angle?

(Laughter) So here's what it means: you'll never understand a sport like this, because you'll never, at least --

If you try it even once, you'll end up with an unsatisfactory result.

(Laughter) But to be honest,

I was bad at any sport

Now that I'm old enough, all my friends say, "I want to regain the athleticism I had when I was 18."

I always think "fufun"

(Laughter) I'm just as athletic as I was when I was younger.

(Laughter) So the idea came to me: why not get people like me involved in sports?

What the world needs now is an Olympics by people with zero motor nerves

(Laughter) It looks more interesting than the normal Olympics.

There are only 3 basic rules

No drugs, no bribery, no athletic ability.

(Laughter) Maybe, no, maybe not, it's a terrible idea.

I know why you can't relate to watching sports on TV.

Maybe 97% of them are men running, kicking a ball, or looking cool in tight uniforms.

On television -- (Laughter) sometimes it's not cool.

On television -- (Laughter) -- there's so little women's sports on television that young female viewers are allowed to think, when they choose their words, that they can't even leave the house and go to the gym without a penis.

(Laughter) Gender inequality in sports is blatant.

So I came up with a novel idea, but an immediate throwback to old ideas.

The fact is that women have never been equal to men, not only in today's world, but in any country in history.

Even a single country-

We have 196 countries, something that didn't happen during the whole evolutionary process.

Here's a diagram of evolution

(Laughter) We women aren't even depicted.

(Laughter) It's amazing how men alone can evolve so beautifully.

So -- (Laughter) I don't like the way things are, so I'm going to have to do something about it.

but i'm busy

In the midst of his career Three children Caring for his aging mother

I'll be honest, one of the reasons I'm standing here is that TED Talks let me talk for 15 minutes, which is the first time I've ever been given that much. (Laughter) (Applause) Yes, I'm busy.

But anyway, I decided to change the world.

the point is this

Everyone has a "button to put the plan into action"

Pressed when I think, "I need to do something about this."

Buttons pressed for various reasons

Because of unequal conditions, being treated unfairly, sometimes being ill, being handicapped in some way, or being financially disadvantaged.

Speaking of me, I was born gay

I've always known that my family wouldn't be surprised at all by hearing this statement.

Here's a picture of me when I was 4 years old

It's cute, isn't it, but in my heart, I believed I looked like Clint Eastwood.

(Laughter) My "start running" button was pushed when my kids were born, when I had three children with my then-husband.

But I work for a British television station.

Before I had kids, I had a job where I could be seen on a show I hosted, and I love it.

I love my children more

I didn't want to raise my children with secrets.

In 1994, when my youngest son was born, as far as I know, there were no publically gay female celebrities in England.

it's not good to keep secrets

it's like cancer of the soul

So I decided to come out

Everyone warned me that I would lose my job forever, but I believed it would be worth the risk.

So it became a big deal

There was a particularly nasty right-wing media group in the UK that made a lot of noise.

Aroused by their loathing, the restless people began to make noise, and the family was in danger of death, so they had to hide their children and seek police protection.

Believe me, there were many times in the stillness of the night when I was horrified by the seriousness of what I had done.

Finally the commotion subsides

Contrary to everyone's expectations, I was able to continue working, and my kids were really good kids, and they still are.

When my son was six years old, a friend came to visit

I heard a voice from the next room

A friend of mine said, "What's it like to have two moms?"

I pricked up my ears a bit and he said, "That's great, because if one of you gets sick, the other will cook for you." (Laughter)

This is how my gay equality "start button" was pushed, along with so many other people, who campaigned for gay rights over the years, specifically for the right to marry the person I love.

and finally served its purpose

In 2014, the day the law was changed, I got married to the wife I truly love.

(Applause) We didn't do it secretly, we did it in a big way, at the Royal Festival Hall in London.

it was a great ceremony

In a place that can accommodate 2500 people

We invited 150 family members and friends, and announced publicly, "If you want to join us and congratulate us, please come.

Anyone who wants to come is free to participate.”

2500 people came

(Applause) There were all kinds of people: gays, nonsex, Jewish leaders, nuns, married people, dark skinned people, white people, all kinds of people.

I stood on stage and thought, "How wonderful!

I made it

love wins

The law has changed."

And (Applause) And I believed that "execution mode" was over.

And every year since then, we've been hosting an amazing concert in the same hall every year to celebrate International Women's Day.

We have the world's only all-female orchestra, playing songs by forgotten and underappreciated female composers.

I love collecting and sharing inspirational old stories.

I often feel that history is modeled on Mount Rushmore (the sculpture).

It's a magnificent sculpture, but there are no women at all.

In 2015, I gave a talk about women's suffrage, and I'm sure you know the incredible women who fought so hard for women's suffrage in the UK.

Their slogan is "Actions before words"—

We did it brilliantly, and in 1928, women's suffrage came into being.

As I was giving this talk, I realized that my talk was not a history lecture.

that there are still many things left unfinished

For example, across the world, women do not occupy positions of power to the same extent as men.

So let's take a quick look at the top 100 companies listed on the London Stock Exchange in 2016.

How many of the top 100 companies are run by women?

7 companies, so far so good

But what if you learned that 17 companies are run by someone named "John"?

(Laughter) Of the 100 companies listed by FTSE, more are run by John than (Laughter) than the number of women-owned businesses.

"Dave" runs 14 companies

(Laughter) Well, John and Dave must be super smart.

(Laughter) So what's the problem?

We're talking about the troubling situation of the gender pay gap.

All over the world, women don't earn the same income as men.

This status quo will never change unless we have more female executives at the top.

There are a lot of laws, and in 1975 the Equal Pay Act was passed in England.

And yet so many women, when compared to their male counterparts, are effectively forced to work from the beginning of November until the end of the year.

In fact, the World Economic Forum estimates that one day women will finally earn the same wages as men.

It's 2133

Yay!

(Laughter) That's a crazy number.

But for this talk, the day before I left, the forums corrected the numbers.

2133 was a terrible number, so that's a good thing.

How old are you now?

It's 2186

(Laughter) 53 years.

Under the current system, equal pay for grandchildren's grandchildren is not possible.

i'm tired of waiting

I'm tired of waiting for my job

In 2016, she became the first woman to host a prime-time quiz show on British television.

Isn't that amazing? I'm so excited

But -- (Applause) In 2016, we're finally the first.

The history of television is 80 years old!

(Laughter) Maybe it's just television, but isn't it often symbolic in a way?

In 2016, the United Nations was looking for a new ambassador to represent the movement to empower women and achieve gender equality. Who do you think they chose?

It's "Wonder Woman"

An anime character was chosen.

(Laughter) Because there weren't any qualified women.

far too few women in positions of power

It's true in the United States Congress, but it's also true in the British Parliament.

The number of men elected to parliament in 2015 has exceeded the number of women elected to parliament throughout history.

this is the problem

If women don't have seats in parliament -- literally, seats in parliament -- if they're not involved in drafting legislation, the lack of a women's perspective in British law is a given.

The work of women in leadership sets a good example for young people.

In 2016, Britain had its second female prime minister, Theresa May.

On the day I took office, I was given a task, just one thing.

In my first 100 days in office, I want to do just one thing to improve the lives of British women.

but the prime minister did nothing

is zero

I'm doing my best to clean up the mess the men left behind.

Even with women leaders, politicians invariably find problems that are easier to tackle than solving onerous inequalities.

That's why I continue to advocate for gender equality.

So let's take a quick look at the STEM industry.

science, technology engineering, mathematics

It's an important area in all aspects of daily life.

Of all the invisible barriers to women's advancement, those in the STEM industry are the thickest and most brilliantly documented.

What if a cure for cancer or a solution to global warming was in the mind of a young female scientist who was blocked from getting promoted?

Considering these things together, I strongly believe that actions are more important than words.

I spoke to one of my best friends in the UK, Catherine Mayer, a brilliant journalist, and we were very foolish -- maybe because of the wine -- (Laughter) and decided to start a new political party.

There was a problem: full gender equality was only at the ballot box.

We were amateurs, and we didn't know how troublesome it would be to start a political party.

I was thinking, "Men have been doing it for years, it can't be that hard."

(Laughter) I named the party "The Women's Equality Party."

Immediately, people asked, "Why did you choose that party name?"

I replied, "I don't know, but I thought your point was clear."

(Laughter) I didn't want to keep things under wraps.

What a terrible word!

And so many people have said to me, "I'm not a feminist, but..."

Whenever the word "but" comes in, there's always something negative about it.

And I started getting funny questions like, "Are we all going to burn bras?"

of course! Bra is a well-known combustible substance.

(Laughter) So when a woman walks, sparks fly.

(Laughter) Now for a little bit of history, in the women's liberation movement in the 1960s, nobody burned bras.

It was a journalist's fiction

It's great to see that journalism has progressed since then.

So (Laughter) we made our intentions very clear in a TV interview, and immediately the emails started pouring in.

Hundreds at first, then thousands -- from young men to women in their 90s, from wonderful men to hundreds of thousands.

It says something like "Please let me help you

I would like to visit the party headquarters and meet you."

There was no party headquarters, no real political party.

there was nothing

In reality, it was just a close-knit, wonderful group of best friends, 24 hours a day in their pajamas, desperately answering emails.

everyone is busy

I had a decent job and raised children, but women are great at working together, so we split up the work.

We quickly agreed on one basic thing.

The first is to become the only political party in the world with the goal of being unnecessary.

great idea

I wanted to create a one-of-a-kind political party with no particular political leanings.

We wanted leftists, rightists, neutrals and people of all ages to participate.

The only goal is to do something very simple: achieve gender equality in all aspects of life, and then go home and do the chores.

(Laughter) I also wanted to change the way politics was conducted.

In Britain, apart from other countries, there are two major political parties.

It's like a political dinosaur

Their arguments are shameful and poisonous.

In your country's politics, you never yell at each other, do you? (Laughter) I lie.

It would be nice if even one politician said, "The other party seems to be saying good things, too.

For now, let's do what we should do together."

(Applause) And let's get more women into politics.

Let's get more women into politics soon, so we'll be the only political party that offers free parenting services so that candidates can get out of their homes and start working.

(Applause) In less than 10 months, we've opened over 70 political party offices in the UK.

Fielded candidates in London, Scotland and Wales in May 2016

One in 20 voted for our candidate in the London mayoral election.

What's more, the male candidates in the race saw us getting votes, and what's even more amazing is that they, too, have started to talk about the need to address gender inequality.

(Applause) I grew up being told that change is bound to happen.

Always in sight, soon women will be on par with men

But the promised change didn't happen, and it was so disappointing that it led to the formation of a political party.

But today's new idea - a real idea for the 5%.

very good idea

The real problem is that this alone is not enough.

It's not enough to have one equality party in one country.

We need a dramatic change in the global political landscape.

The good thing about the model that we built is that it's location-independent.

You can do it in America, in Australia, in India.

It's like a universal recipe that anyone can cook, and it's good for everyone.

I want you to use it by all means

If you want to know how we did it, I'd be happy to tell you.

What if we could mobilize millions of women around the world to say, "I'm sick of it" to the political squabbles of the past?

What if you had to say, "Stop arguing and get your work done"?

you could literally change the world

that's what i want

(Applause) I-

(Applause) My hope is for my daughters, and my hope is for my sons.

It's an undeniable fact that equality is good for everyone.

Everyone, let's get into execution mode and change the world!

You should be able to do it, that's what you want!

(applause)

i want to try new things

If you are willing to participate, please stand up.

I'll give you some names from now on

If you've never heard of a name or can't say anything about them, just sit down.

I'll ask the last remaining person what they know, okay?

(laughs) Let's go

Eric Garner

Mike Brown

Tamia Rice

Freddie Gray

If you're still standing, look around

It seems that more than half of the people are still standing

let's continue

Michelle Cassot

Tanisha Anderson

Aura Rosser

Megan Hockey Day

If you look again, there are four people still standing, but you can't really guess.

It was a request to leave only the people I really know. You can sit down.

(Laughter) The first group whose names were known were the African Americans killed by police over the last two and a half years.

Another list that you didn't know about is the African Americans who have been killed in the last two years.

The only difference between knowing your name and not knowing it is your gender.

First of all, let me tell you that there is nothing special about this pattern of your perception.

I've done this experiment dozens of times across the United States.

Conducted by a women's rights protection organization

Conducted by a civil rights organization

I did it with my professors I did it with my students

I went to a psychologist I went to a sociologist

I even did it with progressive members of Congress.

Awareness of police violence against black women everywhere is very low.

This fact is surprising

So there are two issues involved here.

Police violence against African-Americans and police violence against women, two issues that have been hotly debated in recent years.

But when you think about who is involved in these problems, who are the victims of these problems, the names of these black women never come to mind.

Now, according to communication experts, if a fact doesn't fit into an existing framework, it's hard to incorporate that new fact into the way we think about a problem.

The names of these women slipped out of our consciousness because we had no framework to see them, no framework to remember them, no framework to keep them in mind.

As a result, reporters don't make headlines, policymakers don't think about them, and politicians aren't encouraged or required to talk to them.

You may ask why frameworks are important.

So the question is, after all, don't the issues that affect blacks and the issues that affect women necessarily involve blacks who are women and women who are black?

The simple answer is that such a wait-and-see approach to social equality doesn't work in most cases.

Without a framework to see how social issues affect every member of our target group, many will fall through the cracks in our movement and continue to suffer from virtual loneliness.

But it doesn't have to remain unframed.

Many years ago, I started using the term "intersectionality" to address the reality that many issues of social equality, such as racism and sexism, often overlap, and that social inequalities are multi-layered.

Intersectionality was born out of a chance meeting with a woman named Emma Degrafenreed.

Emma Degrafenreed was an African-American working wife and mother.

I read Emma's story on a legal opinion page where the judge who wrote the article had actually dismissed Emma's case of racial and gender discrimination by a local car factory.

Emma, ​​like many other African-American women, was looking for a better job for her family and those around her.

She wanted a better life for her children and her family.

But when she applied for the job, she wasn't hired, and she thought she wasn't hired because she was a black woman.

The judge in question dismissed Emma's case on the grounds that her employer employed both African Americans and women.

But the real problem that the judge didn't try to find is what Emma actually wanted to say: when African Americans are hired, they're usually all men in factory jobs and maintenance jobs.

And when women are hired, they're mostly secretarial and teller jobs, and they're all white.

If judges could understand what these hiring policies combined would be, they would have seen through the double discrimination Emma Degrafenreid faced.

But the court didn't admit that the two counts combined led to her case, because if they did, they would be entitled to preferential treatment.

When an African-American man and a white woman are given one chance, she gets two chances.

But of course, neither African American men nor white women need to file a combined racial and gender complaint to talk about the discrimination they experienced.

Isn't it just unfair that the law doesn't protect African-American women simply because they haven't had the exact same experience as white women and African-American men?

Instead of broadening the framework to include African-American women, the court simply gave up on addressing their issues.

As an anti-discrimination researcher, as a feminist, as an anti-racist, this precedent struck me.

I felt unequal and surrounded on all sides

First, black women weren't allowed to work in factories.

Second, the exclusion was further strengthened because the court ruled that the complaint was legally unreasonable.

In addition to that, there was no name for this problem.

Of course, if a problem doesn't have a name, you can't understand it, and if you can't understand it, you can't solve it.

Many years later, I realized that the problem Emma was facing was a framework problem.

The framework that the courts used was a framework for identifying sexism, a framework for identifying racism, and it was partial and distorted.

The challenge I faced was to come up with a different explanation. I wanted to come up with a prism that would make Emma's dilemma easier to understand, a prism that would get her out of the legal cracks, an explanation that would make it easier for the judge to understand her story.

It just occurred to me that a simple intersection analogy might help the judge understand Emma's dilemma.

I imagined this intersection, where each street is a structure of all employees, each organized by race and gender.

The vehicles that pass through that road are recruitment policies and various operations along this road.

Because Emma is both black and female, she stands at the very intersection of these paths, and is simultaneously influenced by the company's gender and race policies.

The law is an ambulance, so to speak, that treats Emma when it turns out that she's injured on a racist road or a sexist road, but not at the intersection.

What do you call being abandoned to take care of yourself after being shoved by multiple forces?

I thought intersectionality was appropriate

African-American women, like other women of color, like other socially excluded peoples around the world, face all sorts of challenges due to intersectionality.

But in the same way intersectionality raises awareness of the lives of black women and exposes the tragic circumstances in which African-American women die.

Police brutality against black women is very real.

The violence that black women face is so bad that it's no surprise to hear that some of the women who met the police didn't survive.

Black women ranging from girls as young as 7 to grannies aged 95 are being killed by police.

killed in the living room killed in the bedroom

killed in car

killed on the street

They were killed in front of their parents, even in front of their children.

shot and killed

trampled and killed

was suffocated

killed by torture

Tasered and killed (electric gun)

killed while calling for help

Killed while alone Killed while with others

Black man killed for shopping Black man killed for driving Black man killed for mental disorder Black man killed for domestic trouble

They even killed me because I'm black and I'm homeless.

While you're talking on your cell phone, you're laughing with your friends, you're sitting in a stolen car, you're making a U-turn in front of the White House, and there's a toddler in the back seat with a seatbelt.

why don't we know

Why is it that when their lives are lost, media attention and social protests don't get as much momentum as when their brothers die?

now is the time to change

what can we do

In 2014, the African-American Policy Forum called for the "Say Her Name" movement in rallies, in demonstrations, in debates, in conferences, everywhere and everywhere where state violence against black people is being discussed.

But just saying her name isn't enough

I have to be willing to do a lot more

We must be willing to testify, not just to confront the often painful reality, but to testify about the daily violence and humiliation that black women face, regardless of skin color, age, gender expression, sexual orientation or disability.

I have an opportunity right now. Please keep in mind that the footage I'm about to show may inspire someone. I want to inspire everyone to testify about this violence.

Listen to Abbie Dobson's amazing voice

Please accept them. Some women have been assaulted, some have died. We have a chance. A chance to reverse the results of this talk's first experiment.

Names are listed at the end of the video

The names of black women keep popping up

Ladies and gentlemen, please call out their names as loudly as you can, randomly and chaotically.

Let's create a cacophony To show our will To hold them up To receive them To testify about them To shine a light on them

(Abby Dobson song) Say, say her name

♪ Say [to break the silence about violence against black women] ♪ Say her name

(audience) Sherry

(audience) Kayla

(singing) ♪ oh ♪ say her name

(audience shouts names) ♪Say, say ♪Say her name

♪Say her name

♪ All the names I'm not supposed to know ♪ [For every woman victim of state violence] ♪ Say her name

(Crenshaw) Janisha Fonville, Kathryn Johnston, Kyla Moore, Michelle Cassou, Lekia Boyi, Sherri Frey, Tarika, Yvette Smith

(song) Say her name

As I said at the beginning, if you can't see the problem, you can't solve the problem.

Together we can stand as witnesses to the women who lost their lives.

But now is the time to move from mourning and mourning to action and change.

this is what we can do

depends on us

Thank you for your participation

thank you

(applause)

i write about food and cooking

I'm serious, but today's topic has become important to me in the last year or two.

It's about food, but it's not about cooking

So let's start with this lovely cow

I'm not a vegetarian (President Nixon's line, right?)

But this (Laughter) may have something in common with "this" this year.

It's not too much of an exaggeration to say

why?

Because only once before has the destiny of each person and the destiny of mankind been so intertwined.

There was a bomb, it's still dangerous

How we proceed from now on is directly linked to our lives and lifespans, and if we could see the world 100 years from now, would it be an unfamiliar sight?

It's kind of a slaughterhouse, and you can't avoid crawling under a desk.

First of all, I think that global warming is dangerous.

All scientists think so, and even President Bush seems to have finally figured it out, so the danger is obvious.

so please listen to this

After energy production, the livestock industry is the second largest emitter of greenhouse gases.

About a fifth of greenhouse gases are produced by farmed animals, more than transportation.

You can joke, "That's because of cow farts!" But methane is 20 times more toxic than carbon dioxide.

Animal husbandry is responsible for soil erosion, water and air pollution, water scarcity and biodiversity loss

there is more

About half of the antibiotics in America aren't going to humans, they're going to animals.

I'm tired of listing things like this, so I'll just say one thing: if you're progressive, if you drive a Prius and buy whole foods, you should go a little vegetarian.

I'm not anti-cow or anti-nuclear, but it depends on how you use it.

There's one more thing to this mystery, and you already know what Earn Cooper said so eloquently yesterday.

There is no doubt that modern so-called "lifestyle diseases" -- diabetes, heart disease, stroke, certain types of cancer -- are more common in America than anywhere else in the world.

This is directly related to western food

The meat, the dairy, the high sugar carbohydrates that we want Everyone in the world drinks a billion cans or bottles of Coca-Cola a day We don't need this, we're driven by our desires to eat high calorie foods

Food like this doesn't prevent disease, it causes it

And global warming was an unexpected phenomenon

I thought the smog was just blocking my vision.

"Well, it might be bad for your lungs, but anyway, it's not that big of a deal."

But the modern health crisis is a little more to blame for the Evil Empire.

So far, the advice I've been given is, "You'll be healthier if you eat more poultry and dairy."

This is different. Not only junk food, but also eating too much animal food and lack of vegetables are also central issues.

I don't have time to talk about the health benefits of vegetables, but the evidence is there to make it clear: it's the vegetables themselves that matter, not the nutrients in them.

It's not beta-carotene, it's the carrot itself.

Clear Evidence That Vegetables Boost Your Health

So far the evidence is absolute

Eating more vegetables and less bad ones helps you live longer

Not bad!

Back to animals and junk food

What do these two have in common?

First, neither is necessary for health promotion.

We don't need animal products, and we don't need white bread and cola.

Second, they are both heavily marketed, thus inflating demand.

"I want to eat hamburgers and candy" is not human instinct.

Third, the production of these things is promoted by government agencies, but on the other hand, it is harming health and the planet.

Let's think about it

If the U.S. government were to acquiesce in promoting an oil-based economy while knowing that the development of more sustainable energy would be inadequate, and that pollution, war, and rising prices would continue to ensue. . .

Incredible, huh?

but this is true

And the same thing with food

Unfortunately, when it comes to promoting diets, even well-meaning government officials try to help and get their hands on them, and they fail.

Are people manipulated by agribusiness lacking power? Officials themselves are people who are manipulated by agribusiness!

When the U.S. Department of Agriculture finally acknowledged that vegetable foods are healthier than animal foods, the over-simplified food pyramid recommended eating five servings of fruits and vegetables a day and more carbohydrates.

What they don't tell you is that there are bad and good carbohydrates, and vegetables and grains should be eaten rather than junk food.

But production lobbyists will never allow this

thanks to

Half of the people who built the food pyramid were involved in agribusiness

So instead of replacing animal foods with vegetable foods, our appetites have swelled even more, and the biggest danger has not changed.

This so-called "low-fat, low-carb diet" won't help.

And a lot of smart people, people who are trying to eat local, organic food, people who are trying to be kind to animals, are still not considered at the heart of the problem.

don't get me wrong

I love animals, and I don't mind taking away their naturalness in mechanical animal husbandry.

But after all, if you kill 10 billion animals a year, there's no such thing as "kind treatment."

It's a real number in America. 10 billion

If you try to tie it all together, you'll have to take birds, cows, pigs, and sheep to the moon five times.

I'm not sure about my numbers, but I'm pretty sure I'm right, and it depends on the size of the animal, but you've got a rough idea.

and this is only in america

Overfeeding this animal causes greenhouse gas emissions and heart disease, so the "kindness" issue is irrelevant.

First, reduce the number of animals you're killing for food, and consider kindness for what's left.

Another twist is the word "low cabo", which the New Oxford American Dictionary gave "Word of the Year" award.

Is true

For those of you who don't know what that means, a "low cabo" is someone who only eats locally grown ingredients. If you live in California, it's fine.

Between the version of the sanctioned food pyramid and the fancy "low-kabo" version, there are ways to improve how you eat.

(smile)

but both are different

The first is populist, the second is too big

The reason why I got here is the history of American food culture.

Let me explain this, I'll explain it quickly from 100 years ago

What was it like 100 years ago?

Everyone was low-kabo! New York had pig farms, and they didn't ship groceries all over the place.

Each family had a cook, usually a mother

These mothers were buying food and cooking

It was like an ideal Europe

There was no such thing as margarine

In fact, when margarine was invented, some states passed laws that made it tint pink, so they could tell if it was butter or fake.

There were no snack foods until the 20s, and no frozen foods until Clarence Birdseye invented them.

There was no restaurant chain

There was a nearby restaurant run by a local, but I never thought about opening a second restaurant.

The feeling of "Let's eat ethnic" has also disappeared

French food was the only fashionable food

By the way, some of you may remember Dan Aykroyd, the Julia Child comedian in the '70s, saw this slide and thought, "I'm going to stab myself!"

(Laughter) Back in the day, even before Julia

just ate

did not claim anything in the meal

There was no marketing, no national brand

vitamins hadn't been invented yet

There were no health functions recognized by the government

Fat, carbs, and protein are not a matter of right and wrong.

it was just food

There were times when I had a lot of ingredients, because the food itself was the ingredients

corn flakes hadn't been invented yet

(Laughter) No pop tarts, no chips, no canned cheese, nothing.

Speaking of goldfish, it was meant to swim

(Laughter) It's hard to imagine. Everyone was farming and eating real food

Again, everyone ate local food

Oranges were a normal Christmas present in New York because they came all the way from Florida.

Since the 1930s, as the American road system has expanded, trucks have replaced trains, allowing more fresh food to be transported.

Orange has become a common sight in New York

The South and West of the United States became agricultural centers Elsewhere former farms turned into suburbs

These effects are well known, they are everywhere

The extinction of family farming is part of this mystery, and there are actually many parts to it, from a lost sense of community to the difficulty of finding naturally delicious tomatoes in the summer.

Finally, California produced too much food to ship fresh and needed to produce canned and frozen foods.

This was the emergence of "convenience"

What was recommended to old feminist housewives as a way to save money on housework

Well, people over the age of 45, how delicious it seems.

(Laughter) (Applause) And there's a Salisbury steak slide.

(Laughs) It's less of a burden on the housework, but it also eliminates the diversity of the diet.

There are many people who have never eaten fresh vegetables until they became adults, other than salads that consist only of raw carrots or lettuce.

I'm not lying, I never ate real spinach and broccoli until I was 19.

"You don't need it! We had a lot of meat!

Is there anything healthier and more filling for the family than steak? "So I thought

But by then the cows were already raised unnaturally

Cows have stomachs to digest grass, but instead of eating grass, they were fed soybeans and corn.

Of course it's a pain to digest, but that's not a problem for producers.

made animals healthier with new drugs

Or rather, it made me live

health is another matter

Thanks to good cooperation between agribusiness and the US Congress, and agricultural subsidies, soybeans, corn and cattle have become an almighty.

chickens soon

It was around this time that the modern bad diet and environmental destruction habits began, something that we only now understand.

Hearing this, the Earth's population doubled between 1950 and 2000.

Meat consumption increased fivefold

Fast food was born in response to the problem that someone must eat this

This solved it

I continued to cook home-cooked meals as usual, but I lost my focus

Since it is easy to obtain at supermarkets, there are fewer home-made breads, desserts, and meals that come with soup.

This isn't particularly delicious, but it was ¼

Most of the mothers were also with us.

Or baked or mashed potatoes Or the dumbest food, "dried rice"

For dessert, it was ice cream or cookies bought at the supermarket.

I can say this only because my mother is not in this world

Thanks to these dishes, I decided that I had to live by myself.

(Laughter) It might not be that bad.

In the '70s, forward-thinking people began to realize the value of locally grown food.

Have a garden, become interested in organic food, know vegetarians or become a vegetarian yourself

And not everyone was a hippie

Some people were eating out at nice restaurants and could cook well themselves.

On the one hand, food production has become industrial. It's industrial!

Perhaps because it was made to fill the quota, like plastic, food has developed magical or toxic powers (or both).

Many people were afraid of greasy foods

Some people thought broccoli was like a god

I don't usually eat broccoli

I was obsessed with yoghurt because yoghurt was as good as broccoli

But in fact, because yogurt sells well, I changed it to something closer to ice cream.

Think of granola bars in the same way.

It looks healthy, but when you look at the ingredients, it's closer to snickers than oatmeal.

Sadly, family dinners have gone into hibernation these days. It may be as good as dead. The time has come for value-added foods.

Take chicken nuggets for example.

Chickens were fed corn, then minced, grown and mixed with more corn material to adhere, then fried in corn oil.

Just chin and it's over. How convenient!

But it's a tragic sight

How miserable home cooking was in the 70's, so greasy and full of condiments like McNuggets and Hot Pockets (everyone has their own favorites) to make them look more delicious than the bland home-cooked food.

At the same time, there were a lot of women entering the workplace, and the men who thought it was a waste of time didn't have time to cook.

Thanks to that, today's family meals have a scene of 'pizza days, eating days, eating properly, and making something just for yourself.'

What is opening this way?

Meat, junk food, cheese, all the bad stuff

That's why I'm making a fuss about eating organic now

this is good

Proof that things can change: Supermarkets are now stocked with organic food, and fast food restaurants are too.

But in its modern form, organic food doesn't solve any problems.

I will ask one

Farm-raised salmon, even if fed organically, are completely different from what they eat naturally, the fish are caged and swimming in their own dirt,

Chilean salmon, killed there, flew about 8,000 km, (how much carbon dioxide does it release into the air?

i don't know)

Of course it's packed in styrofoam, landed somewhere in America, and trucked hundreds of miles away.

This is called organic, but it really isn't

Locabos here, organic eaters, vegetarians

Vegans, gourmets and people interested in good food have something in common.

Even though we're all coming from different backgrounds, we have to use this knowledge and act to change the ingrained thinking about food.

I have to start acting

It's not just about social justice like Arn Kupper said yesterday, it's true, but it's about planetary survival.

So let's get back to it and point to the central problem: the overproduction and overconsumption of meat and junk food.

As I said before, 18 percent of greenhouse gases are emitted by the livestock industry.

How much livestock produce this amount?

That's 70% of the earth's agricultural land, and 30% of the earth's land is occupied, either directly or indirectly, by raising food animals.

This amount is expected to double over the next 40 years.

And if the volume from China stays the same, it shouldn't take 40 years.

There is no good reason to eat so much meat

And I've eaten enough corned beef in my life

The most common reason is "we need nutrition," but we're consuming, on average, twice as much protein as recommended by the U.S. Department of Agriculture, which is on the side of our growers.

But listen, experts who really want to prevent disease recommend that adults eat a little more than half a pound (a quarter kilo) of meat a week.

how much do you eat in a day half a pound

"Isn't it necessary to grow properly and become strong?

"Isn't eating meat essential to your health?

If we eat a lot of fruits and vegetables, we're irreligious, wimpy

become liberal? (laughs) (Some people may think this is not so bad)

But no, even if you're a football player who abuses steroids, the answer is no.

In fact, there is nothing in the world that will meet your basic nutritional needs and prevent you from growing.

You're not eating animal products to get enough nutrition, you're eating them to get weirdly malnourished, and that's embarrassing.

If I suggested that Americans cut the amount of meat they eat in half to keep everyone healthy, that's not enough, but it's a start.

Even if you think this is silly, you have to do this.You should increase your vegetable intake according to what positive progressive people are doing.

I've been writing about food at random for the last thirty years.

During this time I have been eating and recommending all sorts of foods.

I'm not going to stop eating animal products, but I think it's time to stop eating lightly, industrially raising animals for everyone in the world.

Arn Kupper was right

USDA is not on our side

We need to start moving forward on our own. Not only are we advocating for healthier eating, but where it's hard, we also have to improve our own eating habits.

But this is much easier

Eat less meat and junk, eat more vegetables

Simple method, eat properly

eat real food

We can continue to enjoy what we eat and eat healthier.

You can keep looking for your favorite ingredients and talk about your favorite meals.

Reduce calories and carbon footprint

We can take food more seriously, and that will save us.

must choose this road

thank you

(MUSIC) Some 43,000 years ago, a young cave bear died in the hills of what is now Slovenia's northwestern tip.

A thousand years later, a mammoth died in southern Germany.

Hundreds of years later, not far from there, the griffon vulture died.

Little is known about how these animals died, but these different animals from different times and places share a remarkable fate.

After they died, the bones were used to make flutes by hand.

please think about it

Imagine you were a caveman 40,000 years ago.

Learn how to make fire

Make simple tools for hunting

I learned to make clothes out of animal skins to keep me warm in the winter.

What would you like to invent next?

It seems silly to invent the flute, a useless instrument that produces vibrations in the air.

that's exactly what our ancestors did

And this is what happens all the time in the history of invention.

People invent to live, to feed their children, to conquer neighboring villages.

But just as often, new ideas come into the world simply because they're fun.

And what's strange is that these seemingly silly inventions, even if they're fun, often lead to profound changes in science, politics, and society.

Take perhaps the most important invention of our time, the programmable computer.

A common explanation is that computers grew out of military technology, because many of the early computers were designed for wartime code-breaking and rocket ballistic calculations.

But in reality, the origins of modern computers are much more fun, even more musical, than people think.

The principle behind the flute, which is to send air through a tube to make a sound, led to the creation of the first organ more than 2,000 years ago.

Someone had the brilliant idea of ​​making a sound when you pressed a little lever with your fingers, and the first keyboard was invented.

The keyboard evolved from the organ to the clavichord to the harpsichord to the piano, but in the middle of the 19th century many inventors came up with the idea of ​​typing letters instead of notes on the keyboard.

In fact, the first typewriter was called a "harpsichord for writing."

The flute and music led to even greater inventions.

About a thousand years ago, during the height of the Islamic Renaissance, three brothers in Baghdad designed an automatic organ.

I named it "Joseiki"

it was like a giant music box

This organ could be made to play different tunes by pointing pins on a rotating cylinder.

If I wanted the device to play a different tune, all I had to do was replace the cylinder with a different sign.

this was the first of its kind

it was programmable

Conceptually, this was a big leap.

This invention made it possible for the first time to think about hardware and software.

It wasn't the tools, or even the necessity, of war or conquest that gave rise to such powerful concepts.

It came from the strange pleasure of watching a machine play music.

The idea of ​​programmable machines has been kept alive for 700 years, mostly by music.

In the 1700s, musical machines became the toys of the upper classes in Paris.

Using similar encoded cylinders, performers controlled the movements of automatons, early robots.

The most famous of such robots was none other than the automatic flute blower, designed by the brilliant French inventor Jacques de Vaucanson.

Vaucanson was designing a musical robot and had another idea.

If you can program a machine to play a pleasing tone, can you program it to weave a nice pattern on a piece of cloth?

Instead of the pins on the cylinder representing musical notes, they represent threads of different colors.

If you want a new pattern of fabric, just program a new tube.

This was the first programmable loom.

Such cylinders were slow and expensive to make, but half a century later another French inventor, Jacquard, had the brilliant idea of ​​using punched paper cards instead of metal cylinders.

Paper was a lot cheaper and a lot more flexible as a way to program the device.

It was this punch card that inspired Victorian inventor Charles Babbage to create the Analysis Engine, the first truly programmable computer.

Punch cards were used by programmers until the 1970s.

So I want you to think about what made modern computers possible.

Military applications are an important part of history, but the invention of the computer required other elements: music boxes, toy flute players, harpsichord keyboards, colorful patterns on textiles, and this is just a small part of the story.

There are many ideas and technologies born from play that have changed the world. Museums, rubber, probability theory, the insurance industry, and many more.

Necessity is not always the mother of invention.

Playfulness is inherently exploratory, trying to find new possibilities in the world around us.

This search for discovery is why what started as mere fun and entertainment turned into great inventions.

I think this has implications for how we teach kids in schools and how we encourage innovation in the workplace, but this way of thinking about play and joy also gives us insight into what's next.

What if you were living in the year 1750 and envisioned what the big changes would be in 19th and 20th century society? Automated machines, computers, artificial intelligence, and the programmable flute puppets that entertained the upper classes of Paris were probably more hints than anything else at the time.

It may seem like nothing more than entertainment with no serious use, but it was the harbinger of a technological revolution that would change the world.

We can see the future where people enjoy it the most.

It's hard to say what you think

It wasn't until exactly a month ago, when my wife and I had a baby, that we really understood what that meant.

Impressed and

It was a moment of exhilaration and joy, but at the same time it was terrifying and terrifying.

This was especially true the day we brought our baby home for the first time, and my wife and I weren't sure if we were getting enough nutrition from breast milk.

So I wanted to call my pediatrician, but I didn't want to make a bad first impression, and I didn't want people to think I was a nervous, crazy parent.

just worried

waited

When I visited the pediatrician the next day, my son, who was very dehydrated, was given milk immediately.

I'm fine now, and my doctor says I can call him anytime.

I should have just called you back then and told you what I was thinking.

On the other hand, there are times when I say something when I shouldn't, like when I let my twin brother down more than a decade ago.

My brother makes documentaries, and one of his early works was offered a contract by a film distributor.

My brother was so excited that he was about to agree.

But as a negotiation researcher, I argued that we should counter-offer, and I helped craft the perfect offer.

It was completely... completely disrespectful.

The company got very upset, withdrew the offer, and everything fell apart.

Now, I've been asking people all over the world about this assertiveness dilemma: When are you assertive? When can you push your own interests and interests? When can you express your opinion? When can you make ambitious demands?

While the content is wide and varied, the patterns they weave are universal.

Can I speak up when my boss makes a mistake?

Can I directly warn the nasty colleague who always interferes?

Should I punish my friend for his insensitive jokes?

Can I reveal my deepest insecurities to the one I love?

Through research like this, I've come to realize that each person has a range of what they say and do that's acceptable.

Sometimes the push is too hard

that's what happened to my brother

Making a counter-proposal itself was an act outside the scope of my brother's permissibility.

But sometimes the push is too weak

That's the case with my wife and I.

This tolerance that each of us has, and if you act within your tolerance, you'll be rewarded.

Stepping out of that range is punishable in a number of ways.

They are stigmatized, looked down upon, even marginalized.

Sometimes you miss a raise, a promotion, or you lose a deal.

So the first thing you need to know is your tolerance.

The key is that the width of that range isn't constant, and in fact it fluctuates a lot.

Depending on the situation, the range can be widened or narrowed.

It is our own power that most influences decisions about what is acceptable.

Our power controls its extent.

What is this "power"?

it manifests itself in various forms

It comes in the form of choice in negotiations.

In my brother's case, he didn't have room for that, which means he didn't have the strength.

The other company had a lot of options — power.

Weakness can be seen in people who are new to a new country, like immigrants, new members of an organization, people who are experiencing something for the first time -- new parents like my wife and I.

Sometimes you're born in a workplace where one person is your boss and the other is your subordinate.

Sometimes it shows up when one person in a relationship puts more into the other than the other.

The key here is that the greater the force, the greater the tolerance.

There is a wide range of behavior that is permissible.

If there is no power, the width will narrow

can hardly afford

The problem is that narrow tolerances lead to what's called a "low-power double bind."

When it comes to double restraint for weakness, it happens when you say nothing and nobody notices, and when you dare, you get punished.

For many of you, when you hear the word "double bind," you probably think of a story about gender.

The gender double bind is that women who keep quiet don't stand out, and women who speak out get frustrated.

Women, like men, have to speak up, but the problem is that there are barriers that prevent them from doing so.

In my research over the last 20 years, I've discovered that the double bind that was thought to occur only because of women was actually a low-power double bind, caused by the weakness of individual power.

So, regardless of gender, it's often just a manifestation of power differences.

When I look at the differences between men and women individually, and when I look at groups of men and women, I always think, "This is a fundamental biological difference."

After a lot of research, I've learned that what we thought was a female double bind actually comes from power.

The low power double bind was the factor.

This double restraint is a lack of power that limits what you can say and do.

A tight tolerance creates a powerful double bind.

Now that we need a way to increase our tolerance,

Over the last 20 years, my colleagues and I have discovered two factors that contribute to that.

The first is the self-judgment of myself that I seem to have power.

The second is the judgment of others that I seem to have power.

When I feel empowered, I'm confident, fearless, and open-minded.

If other people see me as powerful, I'm given permission to expand my tolerance.

So we need tools to expand that tolerance.

Let's hand over that set of tools to everyone today.

Speaking up is risky, but it's a tool that reduces that risk.

The first tool is an important one discovered in research on negotiation.

In general, women are more modest in their proposals, which makes negotiations worse for women than for men.

But a study by Hannah Riley Bowles and Emily Amanatura found that under certain circumstances, women can be just as bullish as men and achieve similar results.

That situation is when women speak up for others.

When speaking up for others, women know their own boundaries and push them.

speak more confidently

This is sometimes called the "mother bear effect."

Like a mother bear who protects her cubs, she learns to speak up when she speaks for others.

But sometimes you have to speak up for yourself too.

What is that method?

One of the most important tools for speaking up for yourself is something called perspective-taking.

Taking another's point of view is pretty simple, it's about seeing the world through someone else's point of view.

This is one of the most important tools for expanding your tolerance.

When you take the other person's point of view and think about what they really want, you're more likely to get them what you want.

But here's the problem: perspective acquisition is hard.

Let's do a little experiment

Raise your hand like this with your index finger sticking out

Write a capital "E" on your forehead as fast as you can

Yes, there are two ways to write the letter "E", which was originally devised as a perspective-taking test.

I'm going to show you two pictures of a man with an "E" on his forehead, my student Erica Hall.

The one you see on the left is the correct "E".

The "E" I wrote looks like an "E" to other people

It's a perspective-taking "E" because it's an "E" from someone else's point of view.

But the one on the right is the self-focused "E"

Self-focus is common

especially in times of crisis

let's talk about a crisis

A man walked into a bank in Watsonville, California.

The man said, "Give me $2,000 or I'll blow up the bank."

The bank manager didn't hand over the money

I took a step back and thought

Putting myself in the man's shoes made me realize something very important.

The man is demanding a certain amount of money

So I asked the man, "Why two thousand dollars?"

The man replied, "If you don't give me $2,000 now, my friend will be deported."

So the manager said, "Then you'd be better off getting a loan instead of robbing a bank."

(Laughter) "Come on down to my office, let's do some paperwork." (Laughter)

The quick acquisition of the branch manager's point of view calmed the volatile situation.

Incorporating other people's perspectives can make you more ambitious, more assertive, and more comfortable.

There's another way to be assertive and to be liked, and that's to show flexibility.

For example, imagine you're a salesman trying to sell a car.

Giving you two options increases your chances of selling.

For example, Option A is $24,000 with a 5-year warranty.

Option B is $23,000 with a three-year warranty, and so on.

My research has shown that when people are given a choice, they become less guarded and more likely to accept the offer they are given.

This applies not only to salespeople, but to parents as well.

When my niece was four years old, she refused to change clothes and refused any clothes.

But my mother had a brilliant idea.

What if I gave my daughter a choice and let her choose?

Which shirt do you prefer? over here

Which trousers do you prefer? over here

it went wonderfully well

My niece changed her clothes without hesitation.

I've asked people all over the world, "When do you feel free to say what you think?" The most common answer is, "When you have supporters and allies in the audience."

So how do you get someone to stand by your side?

What to do now?

One way is to become a "mother bear"

When you speak up for others, it expands your tolerance, not just for yourself, but for others, and at the same time gives you powerful allies.

Another way to get powerful allies, especially those in power, is to ask for advice.

When you ask others for advice, they like you because you're being respectful and you're showing humility.

It's also very effective in resolving another double bind.

It's the double bind that results from self-promotion.

I mean, if you don't advertise your achievements, no one will notice.

It is said that people do not like you if you show off.

But when you ask for advice on your own achievements, you make yourself more competent and more desirable in the eyes of others.

This method is very powerful and effective even when you know someone is coming to you for help.

There have been many cases in the past where people with less "strength" were referred to me and told in advance that they would come to me for advice.

There are three things I want you to realize here. Number one, I knew I could ask for advice.

Second, I was well aware of the strategic advantages of seeking advice.

Part 3 Even if i knew it It was effective!

I became more open to other people's perspectives, I became more committed to them, and I became more willing to consult them because they asked me for advice.

There are other situations where you can confidently state your opinion, if you have an area of ​​expertise.

Expertise earns trust

If you have a lot of power, you already have trust

It's enough to show some decent evidence.

Because if you don't have power, you don't have trust

you will need good evidence

One way to impress yourself as a professional is to show your passion.

I'd like to ask you all to do something: in the next few days, get a friend to talk to you about something they're passionate about.

I asked people all over the world to do this, and then I asked them, "What did you notice when you saw people talking about their passions?"

the answer was always the same

"My eyes are bright and lively."

"I got a big smile"

"My hand gestures grew so big that I had to dodge them. They seemed to hit me."

"He spoke too fast and his voice was a little hoarse."

(Laughter) "He leaned forward as if to reveal a secret."

And I asked, "What happened to you who heard that?"

The answer was, "My eyes are shining and I'm smiling.

I leaned forward."

When it comes to our passions, we often find ourselves having the courage to speak up, but at the same time we are open to speaking out.

Even in situations where you seem too weak, showing passion can help.

Tears at work are frowned upon by both genders

Lizzie Wolfe's research shows that when strong emotions are expressed in the form of passion, tears are not condemned by men or women.

Finally, I would like to conclude with what my now late father said at his brother's wedding.

This is a picture of that time

My father was a psychologist like me, but his real love and passion was cinema, just like my brother.

The subject of the speech my father wrote for our wedding was about the characters we play in a comedy of life.

“The more lightly you interact with people, the better you will be able to handle things and the better you will be at fulfilling your life.

Those who accept their role and strive to improve themselves will grow greatly

If you do your part well, life will generally be enjoyable.”

My father was trying to say that in this world we all have a role and a freedom to-

And the point of this talk is that the role and the breadth of it are ever-expanding and evolving.

Be brave like a mama bear and humbly ask for advice when you need it.

That's how I got excellent evidence and reassuring companions

Embrace the perspective of others with passion

And if you use this tool -- if you can make it available to everyone -- you will be able to expand your tolerance of what you say and do, and life will generally be more enjoyable.

thank you

(applause)

Let me ask you an important question first.

[Is it ethical to evolve the human body? ] because humans are beginning to acquire all the means they need to evolve themselves.

We can evolve bacteria, plants and animals, and now it's time for us to ask the question: Is it really ethical? Do we want humans to evolve?

To help you think about this question, let's talk about the genealogy of prosthetics: the past, present and future of prosthetics.

This is an iron prosthetic hand used by a German count.

The Earl loved to fight and lost his arm in battle.

But he didn't care, he made a suit of armor and put on a prosthetic hand, the perfect prosthesis.

This is where the concept of "ruling by iron fist" comes from.

Of course, these devices have become more and more convenient, more and more modern.

can even hold a soft-boiled egg

Because while you think you can control everything, great people like Hugh Hare have developed absolutely amazing prosthetic limbs.

Amy Mullins, when she goes out, she'll say, "How tall should I be tonight?"

Hugh will say, "What cliff shall we climb next?"

Who wants to run a marathon? Who wants to ballroom dance?

And in the process of fulfilling these wishes, prosthetics, interestingly enough, were able to be used inside the human body.

A brace that was once worn on the outside of the body is now an artificial knee joint.

It became an artificial hip joint

It's evolved to this point not just because it's comfortable, but because it's essential.

If we regard a heart pacemaker as a kind of prosthetic device, it would be more like, "I don't have legs."

Today, prosthetics have become a symbiotic relationship with the human body.

Four of the smartest people I've ever met -- Ed Boyden, Hugh Hare, Joe Jacobson, Bob Lander -- they work at the MIT Center for Advanced Bioengineering.

Amazingly, this center is now trying to implant braces into the bone.

more skin

Implant it in your muscles

Ed is also doing other research, where he hopes to use light and other mechanisms to connect the brain directly to prosthetic devices.

If this becomes a reality, it will begin to change the fundamental nature of human nature.

For example, the speed at which you react to something is affected by the diameter of the nerve.

If you have a nerve that's extracorporeal or artificial using light or liquid metal, you can make it a thicker nerve.

I'm sure you've already thought about this kind of change.

The next step is

It's called Phonak hearing aids. What's great about this technology is that it's crossed the threshold for assistive devices. Traditionally, prosthetics were for people with disabilities.

You can get "super" hearing acuity

You can pick up sounds from all directions and listen to white noise

You can record it, and you can even embed your phone.

It's both a hearing aid and a phone.

At this point, there will probably be people who want prosthetics on their own.

Thousands of different advances are coming together. Now the question is, how do we want humanity to evolve in the next century?

Let's take a look at a great philosopher, a very bright man, apparently a Yankees fan...

(Laughter) Yogi Berra said, "Of course it's hard to make predictions, especially about the future."

(Laughter) So instead of predicting the future, let's focus on the current work of Tony Atala and others, who are redesigning more than 30 organs.

The ultimate prosthesis is probably not something that attaches metal to the outside.

Maybe using our genes to create parts of the human body that would be much more useful than traditional prosthetics.

In the meantime, Craig Venter and Ham Smith have been developing it.

What we're also working on is reprogramming the cells.

If you can do this, you can change the cells in your organs.

Increased resistance to radiation through changes in cells

Absorb more oxygen

Or maybe your body can get rid of what you don't need more efficiently.

George Church, who has been on the news for the last few weeks, took this programmable cell and injected the entire human genome into it.

If it were possible to inject all human genes into a cell, it would raise the question: Do humans want to 'improve' parts of their genome?

"Do humans want to improve their bodies?"

"How would you like to improve?"

Where does it end moral and where does it immoral?

All of a sudden, what we're doing is a multidimensional chessboard. We're using viruses to alter the regulation of gene expression to attack things like AIDS, and we're using gene therapy to rewrite our genetic code so we can escape from hereditary diseases.

They're more than just a few variations. A few things come together to form a part.

Many people are concerned about these studies.

It sounds scary. There are risks.

So why would we want this kind of research?

Why would we want to radically improve the human body?

British astronomer Lord Leeds gives us some of the answers.

"The universe is 100% malevolent." His favorite saying.

what does that mean?

If you put a human being somewhere in space, if you put him in space, he'll die.

if you put it in the sun it will die

If you put it on the surface of Mercury, it will die.

If you put it near a supernova, it will die.

But actual malice is no more than 80%.

A great physicist once said, "Life is a vortex that creates order against the flow of entropy."

So the universe dissipates energy, but against that flow there are vortices that create biological order.

The problem here is that the vortex disappears.

Also, the vortex moves with the flow.

As vortices change, as the Earth becomes a ball of ice, as the Earth heats up, as by asteroid impacts, as by volcanic eruptions, as by solar flares, as by extinction-level events -- like this election. (Laughter) Sudden mass extinctions are happening again and again.

It's happened five times on Earth so far, which means we humans will eventually go extinct.

Not next week, not next month, maybe November, maybe a thousand years from now.

Given this result, if mass extinctions are normal, natural, normal, recurring events, then it's a moral imperative to diversify species.

Because we can't live on Mars today unless we radically modify the human body.

Right?

A human being is born from a single cell, a mother and a father meet and give birth to a single cell, which eventually becomes 10 trillion cells, one after another.

We don't know if a large change in gravity would change the human body.

But it is certain that if the human body is exposed to a large amount of radiation, we will die.

So if we think about living on Mars, we have to redesign our bodies.

Don't even think about going to Neptune's moons or Jupiter.

Like Nikolai Kardashev, think about human existence in terms of scale.

The first civilization begins by changing the appearance of the human body.

In fact, that's what humans have been doing for thousands of years.

Abdominal plastic surgery and things like that

It's about looking good.Surgery doesn't always seem to be for medical purposes.

(laughs) It's funny, isn't it?

the second civilization is different

This civilization changes the human body from the ground up.

Whether it's injecting growth hormone to make you grow taller, or taking something to make you fatter or thinner, that sort of thing that fundamentally changes how the human body works.

And in order to progress to a "solar system civilization," we have to create a third civilization, which is completely different from what we have today.

If we introduce the Dinococcus radiodurans gene and expose it to radiation, the cells may develop new properties.

You might be able to oxygenate your blood and breathe without using your lungs.

It's a dramatic redesign, and interestingly enough, we've discovered a lot of planets in the last decade.

And there are some things that look like Earth.

The problem is that getting there would take the fastest means of transportation -- Juno, Voyager -- even the nearest solar system, tens of thousands of years.

If you want to walk on the beach of a different star somewhere else, or see the sunset of two suns, you'll need to make a drastic change, because the scale of time and the human body may have to change into something unlike any other.

that's the fourth civilization

We can't even imagine it now, but we're starting to figure out how to get there.

Let me give you two examples

This man's name is Floyd Romesberg, and he's working on the fundamental chemical reactions that make life possible.

All life is made up of a sequence of four ATCG bases, or genes.

Bacteria, plants, animals, humans, cows, all life.

Floyd changed two of the four bases, and that's ATXY.

This gave rise to a parallel system of life that reproduces, reproduces, evolves, and that cannot interbreed with most, or virtually all, life on Earth.

immune to all bacteria

We could also develop plants that are resistant to all viruses.

So why is this so great?

In other words, the current form of humanity is not the only correct answer.

There could be chemical systems that have different chemistry than ours, that are suitable for a completely different planet, where they can create life and produce offspring.

This experiment also has a second implication, since all of our lives are made up of 20 amino acids.

If we replace the two [bases] instead of ATXY and instead use "ATCG + XY", we can increase the original 20 amino acids to 172. If we can use 172 amino acids, we can create completely different forms of life.

The second experiment is really weird, and it's being done in China.

This person has transplanted hundreds of rat heads.

May I?

What's interesting is

Think back to the old heart transplants

In the past, in those surgeries, after the surgery, the heart donor's wife or daughter would be brought in, and the doctor would ask the heart patient, "Do you know this person? Do you love this person?

What do you think of this person? ”

It's funny now

'Cause it's natural that the heart is a muscle But for hundreds of thousands of years, tens of thousands of years saying, "I gave my heart, took my heart, heartbreak"

I thought there was an emotion here. I thought the heart and the emotion would be implanted together.

What about the brain?

The brain transplant experiments in rats suggest two possibilities.

If the surgery is functionally successful, then the brain is a blank slate, which is unlikely.

here is significant

Second possibility The transplanted mouse remembers its lover

It remembers the object of fear, it remembers how to navigate the maze, and if we can demonstrate this, it means that it is possible to transplant memory and consciousness.

A more important question is, if it's transplantable, is the input/output system of brain activity below the neck?

So can we transfer consciousness to other objects? Something completely different from humans, able to exist in space, able to survive for tens of thousands of years, a completely redesigned human body, able to maintain consciousness for very long periods of time.

So let's go back to the original question, "Why would you want to improve people?"

I'll tell you why

Because it's the ultimate selfie

(Laughter) This is the Earth from 10 billion kilometers away.

here we are all

If that little planet dies, all mankind will die too.

And when humans want to improve themselves, ultimately, they want photographs that show that humans live there, and there, and there, so that we can survive extinction.

That's why it's so immoral not to improve humanity, even if it's scary, even if it's difficult, to explore, to survive, to reach places we can't currently imagine, places our grandchildren's grandchildren's grandchildren's grandchildren's grandchildren might one day go.

thank you

(applause)

It's easy to forget that last night, a billion people spent the night in a place without electricity.

1 billion people

2.5 billion people don't have clean fuel to cook, not even to heat their homes.

This is the problem of developing countries

We don't have much sympathy for people like this who live far away.

But even in developed countries, economic stagnation is creating tensions that are having a negative impact on people's lives.

Such economic conditions are ubiquitous, and the affected people have lost their hopes for the future and despair of their current situation.

It was the same with the UK leaving the EU.

In our country, it was the same with the Sanders and Trump campaigns.

Even China, which recently seems to be on the verge of joining the ranks of the developed world, has started laying off many coal mining workers, which shows the challenges facing President Xi. They don't see a bright future.

As a society, as we try to find solutions to the problems of developed and developing countries, the question we need to look at is where we're going, and how we're going to manage the environmental consequences of those decisions.

Humanity has been grappling with this problem for 25 years, since the Rio Declaration and the Kyoto Protocol.

The most recent development is the Paris Agreement and its underlying climate agreement, which has been ratified by countries around the world.

I'm very hopeful about this, because it's an agreement that builds on what each country says it can do, and for many of the participating countries, it's real and it's going to happen.

Unfortunately, a third-party analysis of the consequences of realizing the promises made in the climate treaty reveals the magnitude of the problem that confronts us.

It's an assessment by the U.S. Energy Information Administration that assesses what would happen between now and 2040 if countries met their climate goals set in Paris.

It basically shows the amount of CO2 emissions worldwide over the next 30 years.

We need to focus on and understand three things

First, CO2 emissions are expected to continue increasing over the next 30 years.

To combat climate change, we literally have to reduce our CO2 emissions to zero, because cumulative emissions are the driving force behind global warming.

This is the message that we should stop using fossil fuels.

The second thing to note is that much of the world's economic growth is coming from developing countries -- China, India, as well as countries like South Africa, Indonesia and Brazil -- and in most of these countries, their populations are being pushed to a lower standard of living than the lifestyle that we, the developed nations, have taken for granted.

A final caveat is that about 10 billion tons of carbon is released into the Earth's atmosphere each year, and this diffuses into oceans and land.

In addition to the 550 billion tonnes of carbon that already exist.

Over the next 30 years, we're going to release 850 billion tons of carbon into the atmosphere, and this effect will probably increase the average global surface temperature by two to four degrees, acidify the oceans, and raise sea levels.

Now, this is a prediction caused by human, social activity, but we can't accept this, and something has to change.

On the other hand, we have to understand more about the seriousness of the problem.

Energy choices differ from country to country

Because it depends on the natural resources that each country has

climate of each country

The history of development that we have traced as a country, and

It also depends on the country's position on the earth.

Short daylight hours or located in mid-latitudes

So many of these factors influence the choices that each country makes, and each country makes different choices.

The important thing that needs to be recognized is China's choice.

China chose to use coal and will continue to do so.

America Makes Different Choices

Using natural gas is the result of inventing the technology that we've got to harness shale gas through hydraulic fracturing.

Technology has made alternatives possible

Europe in the OECD has different options

Well-funded Germany can develop renewable energy.

France and Britain are showing interest in nuclear energy.

Eastern Europe is still dependent on natural gas and coal, and this is intricately intertwined with natural gas supplies from Russia.

China has far fewer options and a much harder deal to reach.

If you're wondering why coal is so important to China, you need to look back at what China has done.

Instead of giving electricity to people in China, they attracted people to places with electricity.

Electricity is not promoted in rural areas

urbanization has progressed

They urbanized with low-wage labor and low-cost energy, creating a booming export industry.

If you look at the path that China has taken, we all know that China is achieving dramatic prosperity.

In 1980, 80 percent of the Chinese lived in extreme poverty, earning less than $1.90 per person per day.

By 2000, the proportion of people living in extreme poverty was below 20 percent, which is an achievement, but -- yes, it comes at a small cost to civil liberties, which the West may find difficult to accept.

Anyway, the wealth that was gained made people very well nourished.

Water and sewage are maintained

Diarrheal diseases have plummeted, but at the cost of air pollution.

In 1980 and today, the number one killer in China is indoor air pollution, due to the lack of access to clean cooking and heating fuels.

In fact, it's estimated that even in 2040, 200 million people in China will not have access to clean fuels.

I will continue to have serious problems.

India will continue to burn coal to meet the needs of its people.

According to the U.S. Energy Information Administration's projections for coal use in India, coal will provide almost four times as much energy as renewable energy in India.

They're not without alternatives, but unlike rich countries, where they have free choice, poor countries don't have options.

So how do we stop the CO2 emissions from coal before it's too late?

What can be done to change this impending forecast?

If we have the will, we can stop the prediction from coming true.

First you have to think about the seriousness of the problem.

Between now and 2040, 800 to 1,600 coal-fired power plants will be built around the world.

Between one and three 1-gigawatt-class coal-fired power plants will start up around the world in the next week.

It's happening regardless of our desires, because those who run the country are making decisions that are in the interests of their people, given what they want.

It's inevitable unless there's a better alternative.

For every 100 coal-fired power plants, we use 1-3% of our total capacity to limit global climate change.

Every day I go home and think about global warming, but on the weekends, I can't help but think that someone's going to run a coal-fired power plant and it's been going on for 50 years, robbing us of the possibility of making a difference.

We tend to forget the words of Vinod Khosla, an American venture entrepreneur of Indian descent.

What he said at the beginning of the 21st century was that in order to keep China and India away from fossil fuels, we should develop technology that could pass the Chindia test, which is a combination of China and India.

First of all, it's feasible, which means it's something that's technically feasible and acceptable to the public in these countries.

Secondly, it's a technology that can be scaled up, built in the same short period of time as fossil fuel-powered facilities, with the same benefits, and as a result, the standard of living that we're accustomed to in the developed world.

Third, it should be cost-effective and should not require subsidies or be forced to build.

We need to be able to pay for ourselves on our own investments, which means that for many people, technology becomes unsustainable when they have to rely on foreign countries to accomplish the transition to new technologies, or when they are forced to say, "I'm not going to do business with you."

No alternatives have been found that meet the criteria of the "Chindia test"

Here's a prediction from the U.S. Energy Information Administration

China is building 800 GW of coal, 400 GW of hydro, about 200 GW of nuclear and about 100 GW of renewable power on an intermittent basis.

800 gigawatts of coal-fired power—

They're building it because they know it's cost efficiency better than any other country, they know the need for it.

If we don't give them a better option, by 2040 they're going to be coal-fired.

In order to give you better options, you must pass the "Chindia Test".

Let's take a look at the alternatives available.

The first is the new nuclear technology that I'm going to talk about.

This is a new generation of nuclear power plants that are already in the design phase around the world, and according to the people involved in their development, they could be commissioned by 2025 and upscale by 2030 if people want them.

The second option, which is feasible in the near future, combines utility-scale solar power with existing natural gas power rather than batteries that are still under development as a backup power source.

What are the obstacles to the development of new nuclear power plants?

It's the old rules and the old way of thinking.

We're not using the latest scientific thinking in radiation control to gain public understanding and manage the commissioning of new reactors.

We have the new scientific knowledge we need to better regulate the nuclear industry.

The second is the old idea that it would take 25 years and $2 billion to $5 billion to develop a nuclear power plant.

This is rooted in the thinking of the military in the past that developed nuclear technology.

Modern nuclear power entrepreneurs say they can supply 5 cents a kilowatt-hour, build a 100-gigawatt-class plant in a year, have commissioning by 2025, and scale up by 2030, given the opportunity.

We're just waiting for a miracle to happen

we need choice

If nuclear power companies can't guarantee safety, and if they can't keep costs down, they shouldn't be promoting this.

But what I'm asking you to do is, instead of postponing ideas, send a message to your leaders, send a message to the heads of the NGOs you support, and tell them that you want them to give us options, not dwell on the past.

thank you very much

(applause)

Why is "Black Lives Matter" so popular in America and around the world?

Black Lives Matter is a call to action

This movement is a way for blacks to live freely and reimagine a world where they can live freely.

It's a way to articulate the existence of each of us.

I grew up in a heavily guarded area.

I often saw brothers and sisters being stopped by the police and searched.

I remember my house being raided.

Childishly, I thought, "Why?"

"Why us?"

Black Lives Matter gives the answer to this question

It gives black girls all over the world a new vision that it's okay to fight for them, and it's okay to reach out to local governments for them.

And anti-blackism... (Applause) Anti-blackism isn't just America's problem.

it's happening all over the world

And more than ever, we need the human rights movement to fight systemic racism, whatever the circumstances.

(Applause) Because the reality of the world is that black people suffer from inequality in all kinds of difficult situations, which is the biggest challenge we face.

When it comes to climate change, six of the 10 countries most affected by climate change are actually on the African continent.

People are hit by a series of freak disasters, driven from their ancestral homes and denied the chance to live a normal life.

Hurricane Matthew, more recently, wreaked havoc on many countries, but Haiti was devastating.

Haiti is the poorest country in the Western Hemisphere, and most of its inhabitants are black.

And what we saw was that even before this hurricane, the people of Haiti were facing all sorts of challenges.

They were terrified by the earthquake, terrified by the cholera brought by the peacekeeping forces, a disease that has yet to be eradicated.

it's really unforgivable

If Haiti wasn't a black country, this tragedy wouldn't have happened. We need to face this reality.

But what we hear a lot these days is that, despite all these challenges, African networks are rising up across the continent to demand a fair climate response.

(Applause) Does that mean that when black people are free, everyone is free?

can you tell me what you mean?

yes

I think race and racism in this country is well studied socially, economically and politically, but it's not understood at all.

Americans actually have a gradation of race, from black to white.

It's not that if you're in between, you're not discriminated against, it's that if you're more white, you can live a little better.

And for the more black races, life is more miserable.

The way we approach problems in this country often starts with the trickle-down theory.

In other words, white people speak for us, the theory that when things get better for white people, other races benefit as well.

It doesn't really work

Don't you think we need to address this issue from the ground up, and that addressing the issues of the black community is a revitalizing force?

Let's make it boil rather than trickle down

Let me give you an example

When we talk about the pay gap, we get this story: "For every dollar a man makes, a woman makes only 78 cents."

you all know

But this is a statistic between white men and women.

The reality is that for every dollar a white man makes, a black woman makes only 64 cents.

For Latino women, it drops to 58 cents.

Indigenous women and transgender women get even lower wages.

And again, if you deal with the hardest hits, everyone's chances of benefit increase. It's better than helping those who are not so badly affected and hoping that the benefits go further down the line.

That's why I love the bubbling vibrancy Bubbling like a champagne bubble

(Laughter) Everyone likes champagne, right? You like champagne and freedom, right?

(Laughter) It's the perfect combination, isn't it?

So if this movement you've been doing continues for a few more years, it's hard to imagine, but it's certainly going to have a significant impact.

you know a lot about leadership

What kind of leadership do you want to convey to the audience? Patrice please

I think we should focus on black leadership.

I have learned over the years

(Applause) We've seen thousands of black people complaining about the complete lack of infrastructure and livelihood support.

The job of being a social movement leader is a question of how to make sure that we're not just in front of ourselves, but that we can see the bigger picture.

How can we fight for the good of all, not just the individual?

Also, I think the leadership we're seeing at Black Lives is similar to everyone in this room.

You don't just come here and listen, do you?

Whether it's at work or at home, we think about how we can be leaders, and we believe that this movement is not just for us, it's for everyone.

(Applause) Opal How are you?

I've just learned a lot about letting each other go.

And I've just learned to trust my team.

After a three-month sabbatical, I found a new slogan. Black female leader sabbaticals are rare.

In the process, I've learned that we should be able to communicate and shine by recognizing that each person's unique talents are good for the whole team.

I learned that while I was on vacation, a team started a collaborative project with an organization I was involved with without me.

They successfully launched a new program and raised funds.

When I got back to the team, I had to send a ton of thanks and compliments, because they did an amazing job filling in my void and working with each other to accomplish this.

And what really popped into my head at that moment was the Southern African philosophy of Ubuntu.

"You exist and I exist" "I exist and you exist"

It was there that I had a clear understanding of leadership, that it was only with their help that I could be successful, right?

I have to acknowledge that fact and look at it, and the slogan that I've derived from that is "Keep Calm and Trust Your Team."

And "Keep calm and thank the team."

What I hear about Black Lives Matter more than anything else is good leadership and great concepts, and I think it's because women often talk about leadership because it's an all-encompassing collective.

Alicia you?

I agree…

How many of you have heard that leaders are lonely?

I think there's an element of loneliness in leadership, but I also don't think that's necessarily the case.

We have a few things to do before we get to that stance.

One is to stop treating leaders as heroes.

We're all ordinary people trying to do extraordinary things, and that's why we need the kind of support we just talked about.

Another thing I've learned about leadership is that there's a difference between a leader and a celebrity.

People who try to solve problems can turn into celebrities without realizing it.

Celebrities are whimsical, aren't they?

He should have been popular, but the next day he was told that he had bad taste in clothes, and problems suddenly erupted.

In other words, we should stop praising leaders so that more people become leaders.

Many people fear being a leader, and it has to do with the scrutiny of leaders and the brutality of people.

The final lesson about leadership is this: It's easy to lead when people like you.

But it's hard being a leader when you're faced with tough choices and when you're asked to do the right thing but not the way you like it.

In that respect, we can support our leaders in other ways, by fighting together, but not personally, but politically.

It's good to have non-confrontational discussions, but it's also important to be sharp to build each other up.

It is wonderful

(Applause) So what you're saying is that in your endeavors, you're going to face a cold, painful reality on a daily basis.

What is it about this activity that gives you hope and encouragement?

I have high hopes for the future of black people

Because in this society, black people are deeply ingrained in the image of death.

We see images of dead black people on TV, on Twitter, and on Facebook, but what about the living black people?

Imagine black people living and thriving.

that's what motivates me

I am thrilled to see immigrants

Immigrants around the world are doing their best to live independently and turn adversity into sustenance.

More than 244 million people are currently living outside their home country.

That's a 40 percent increase since 2000.

What these numbers tell us is that inequality around the world is getting worse.

But some of them are determined to find a way to travel, to emigrate and live modestly with their families and loved ones.

And some immigrants are illegal immigrants.

I am an irregular immigrant

They motivated me even more because they were stymied by society, they were kept out of the loop, and their existence was so fragile that even though they were abused, payroll thieves, exploited, and attacked by xenophobic attacks, many of them started to form communities.

And from what I've seen, there's also a growing network of black illegal immigrants who stand up to the establishment and resist the criminalization of illegal immigration.

I feel tremendous strength here, and it inspires me every day.

thank you

What about Alicia?

It's the young who are responsible for the present and the future, but what inspires me is the older, who are changing as they participate in this movement.

As people get older, they become more rigid in their beliefs.

I am no exception

But these are the people who inspire me, people who have their own way of working, who have their own way of looking at the world, and who are brave enough to listen to what our experiences are telling us that we want to live in a just society, we want to live in a just world.

I was moved by the actions of the older people who are committed to this movement.

When you have power and initiative, you say, "We're not handing over the torch, we're helping to light the fire."

(Applause) Nice words, really.

In terms of taking action, I'm honored to be sitting here and listening to all of you talk about being open-minded and embracing change.

If you could ask the audience in this room and the audience around the world one thing, what would it be?

I would like to make two points briefly.

Please call the White House first.

They are being forced out of the camps that the water protectors (the indigenous people who protect the water sources) set up to protect the source of life.

This is intricately related to our movement.

Please urge the White House to stop this immediately.

People who are protesting to protect the water source there are still being arrested one after another.

(Applause) The second thing you can do is participate in something.

become a member

It can be a group, it can be an organization, it doesn't have to be non-profit, you know?

But now there are groups working to establish that "black lives matter, so all lives matter."

Join us, stand up and tell us what you think

let's act together

Do you have anything to add?

Enough? So -- the way to get involved in something is to get started, even if you don't have a place to get involved.

let's start what we're talking about here

connect to someone else i.e. don't leave it out

make the decision to actually start something

That's right, you are the example

Start something and see the results

Thank you very much for your precious story

thank you

(applause)

(Tik Millan) My wife and I met on Facebook and our first conversation lasted three days.

(Laughter) We exchanged more than 3,000 messages, and in those 72 hours, I knew I was going to marry this man.

I didn't think about how much time I was going to spend before we started dating, and I made it clear from the beginning that it was difficult to talk about.

(Laughter) Being a woman felt like walking in shoes full of stones.

Even though I wanted to walk vigorously, I lost my sense of rhythm and lost my balance.

But now I build myself as a man by my own will and live as a man.

(Kim Mi Ran) I am a cisgender and queer woman.

To be "cisgender" means to be and still be a woman with the gender you were assigned at birth.

But that doesn't mean I'm natural and normal, it's just one of the many ways that people express how they exist in this world.

"Queer" is a cultural term, but for me, it means someone who chooses partners in a gender-agnostic way.

I have multiple identities, bisexual, lesbian, and so on, but for me, queer is an umbrella term that encompasses my definition of myself, my dating history, and all those layers.

I am a layer, not a fragment.

For me, Tiku's queerness meant I could trust his approach from the beginning.

Too often, as queer and trans people, we are excluded from institutions and traditions.

So it's also about creating space outside of convention, and the convention of time is no exception.

While exchanging 3,000 messages, the two of us broke down the notion of time and made it queer.

(Laughter) I didn't do anything cool or anything.

So the two of us are united in a fundamentally new way.

You've heard so often the idea of ​​the "Golden Rule," which is that you should treat others the way you would want them to treat you.

The problem with this law is that you make yourself the standard for others, and that's wrong.

We should treat others the way they want to be treated, which means we need mutual validation.

I couldn't assume that the love he wanted was the love I wanted

First of all, I checked everything, and I listened to his fears and concerns, and that's where it all started.

(Tik) I couldn't see the love I wanted

Rejected by the person I loved, I was exhausted and had just groped my way out for a year.

The guy who dumped me looked me straight in the eye and told me I wasn't worthy of love because I was trans.

The public image has been created that love is irrelevant to transgender people.

Reasoned and justified and often endorsed by law

I was on the verge of being imprinted in my mind that I was worthless.

But Kim told me that I was broken and broken, and that I was ideal.

(Laughter) (Kim) He was exactly my ideal person.

(Laughter) There's more than one reason.

We were both poets, writers, creatives, both had a long history of working in the community and both had big dreams of starting a family.

I'm a lifelong traveler, partly because I grew up like an orphan, but partly because he comes from a big family, he's very down to earth.

I often summarize the strengths of the two by saying, "Protect me, I'll let you be wild."

(Laughter) (Tik) I don't live a miserable life of alienation, even if my identity is out of the ordinary.

Being queer and trans creates new forms of existence.

It means loving people for who they are, not how they are put in a mold.

Kim speaks openly about femininity, knowing that modern society is often cruel and violent toward proud and overly independent women.

I didn't marry Kim in the hope that she would support me, or that she would follow me -- (Laughter) (Kim) That's wrong, isn't it?

(Tik) A very complicated human being, her femininity is not something that I can constrain, control, or criticize.

That's the shining talent, the art of compassionate leadership, the way you never forget your empathy.

From the moment we met until now, you've been my hero

(Applause) (Kim) We've always been focused on giving each other freedom.

At the beginning of our relationship, I asked the question, "What is your unfulfilled dream? How can I help you reach it?"

It was a dream of living as a poet, a dream of adopting a child and starting a family together, a life of pride, a life worthy of the unconditional love my mother gave me.

I'm grateful that our relationship started after these conversations, and it didn't start out like trying to figure out how to make it work in the dark.

Thanks to that, we were able to continue to grow despite being extremely different people.

I love everything about my husband, including his pre-transition and future him.

It was this love that allowed us to give our hearts to each other before we had even seen each other.

(Tik) My mother's biggest worry about transitioning was whether someone would love me for who I am.

Was it also the assumption that being transgender meant that you were born with the wrong body and that you couldn't find love or a specific person?

But it's that stereotypical way of thinking that has to change to make room for love.

I've never felt that my body was wrong or that I had the wrong body.

What was denying me my existence was the very idea of ​​limiting gender to only two types.

But when I met Kim, she loved me for who I am.

She ran her fingers over the numb keloid scars left over from a mastectomy.

It is a surgical scar that runs halfway around the upper body from the center of the chest.

He told me that this was a vestige of my strength, a vestige of all the hardships I'd been through, and nothing to be ashamed of.

It was the most queer thing to rush into marrying Kim like that.

(Laughter) It was a total reversal of the conventional order that people should follow in love and relationships, because people like us were never supposed to be blessed by God, never to be recognized under the law.

KM: Well, on May 5th, 2014, just three months after we met online, we got married on the steps of City Hall in Manhattan.

To put it in a safer way, we reinvented our traditions a little bit, but we also took a little bit of our own old traditions and figured out a way that worked for both of us.

I collected wildflowers from Brooklyn and made bouquets and corsages, and added a little lavender and sage to help calm me down, because I was really nervous.

It was made by a friendly female friend who works as a healer.

I hated diamond rings because conflicts and traditions aren't who I am, so my ring is a deep, deep purple, which is also the color of my crown chakra, and has my birthstone embedded in it.

The power of queerness is freedom of choice

Changing my last name wasn't an obligation, it wasn't an exception, but the reason I did it was because I was my father's illegitimate child, an inborn fault, a secret, a burden.

So it was a tremendous liberation to choose the name of the man who chose me first.

(Applause) (Tik) Some were still in disbelief as we announced our marriage to just a few of our family and close friends and exchanged vows.

Of course, I posted all the wedding photos on Facebook, because that's where we met, and of course, on Instagram.

It wasn't long before we realized that our ceremony meant more than just marrying one person to another. It was a picture of what was possible for millions of LGBTQ people, people who had believed the lie that marriage and family were incompatible with who they really were, people who rarely had the opportunity to see themselves in terms of love and happiness.

KM: Yes, our identity is what keeps us alienated, but it's also what encourages us to be ourselves.

Being queer is our cornerstone, being black is our strength

These things make us hopeful, sensitive, easy-going, and adaptable.

It gives us strength and is the endless source from which that strength comes.

That's the strength of being queer

To quote the Ottawa poet Brandon Wint, "Not queer in the sense of being gay, but queer in the sense of breaking the rules.

Queer in the sense of having a certain kind of fluidity and infinity at the same time

Too strange to be conquered, queer in the sense of freedom

Queer in the sense of fearlessly conceiving and pursuing possibilities in the form of love.”

(Tik) People in the community we're in — it's okay this time —

(Laughter) People in our communities, across a wide spectrum of genders, live openly for who they are, under the threat of violence everywhere, and for those who live their lives the way they want to, and that haunts them to the core -- and struggles with anxiety.

Globally, a transgender person is killed every 21 hours.

The number of trans people murdered in the United States this year hit a record high.

Yet our story goes beyond a rigid dichotomy of strength or resilience.

Based on these differences, we expand the meaning of human complexity and create freedom within it.

(Kim) We don't have a typical way of life.

We are truly creating a world that no one has ever seen, building families united by love, not by blood, and guiding others with a kindness that few have given themselves.

Too many of us have experienced being betrayed by those we trust most without the love of our families.

When it comes to us, the expression of love is completely reborn.

It's about creating a place where we can be authentic, not about imposing standards of what masculinity and femininity should be.

TK: We see love and acceptance as tools for revolutionary change.

The point is, if we simply throw out all the stereotypes about who we are and what we are and what our gender and body is, if we try to free ourselves from our deep-seated prejudices, and try to create room for self-initiative and acceptance of who we are, we can make the world we come into a better place to live in.

(Applause) (Kim) We want to mark this moment in history by leaving a mark that we existed.

By making some of my relationship with my husband public, we're witnessing the community, not because we want it to be our own memorial, but because we want to map the future.

Our experience doesn't negate other people's experiences, but it should, and inevitably, have a multifaceted effect on what love and marriage should be.

Tik: We've been speaking out here and there, trying to change people's minds, exploring the possibilities, but we're far from perfect.

We also needed to reflect on ourselves as a mirror.

I wasn't always a good listener, and my ego kept me from moving forward as a couple.

I had to change my subconscious, misogynistic thinking about the value of women's experiences in the world.

I had to rethink what it meant to be in an alliance with my wife.

(Kim) I also had a lot of things to keep in mind.

The meaning of dealing with problems harshly and treating people kindly

I had a big fight while writing the manuscript for this talk.

(Laughter) There are so many different reasons, but it's about the content, about the values, about the actual experience.

Because there is tremendous risk in what we do and how we love.

This fight lasted for two days -- (Laughter) -- and we made up, we made up, and we re-committed ourselves, to each other, to our marriage.

The result is the most passionate part of today's talk.

Tik: I've been forced to redefine what it means to be a man, and I don't get many opportunities to do that.

I had to ask myself: I'm not subject to the pernicious privileges that come with being a man, but I have to take responsibility for what I say and do in my everyday life.

I let my wife do all the emotional heavy lifting for me to pry my mouth open when I want to be a clam and run away.

(Laughter) I'm sorry that I neglected my emotional support by not facing my own vulnerability, especially before and after the tragic miscarriage of my baby last year.

Sometimes we men tend to look for the easy way out.

So my challenge as a trans is to rethink masculinity

It's about redefining what it means to be a man. This isn't measured by the power you wield, the privileges you're given, or the apparent dominance. It's the masculinity that's guided by your own soul, aligned with the femininity that women have.

(Kim) I'm in love

(Applause) This created a space that allowed me to feel free and feminine in a way I never could before.

My husband never sees my sexuality as a threat, he never interferes with what I wear or how I behave.

I do the cooking, but they do a lot more cleaning than I do.

When I'm rushing to leave the house and there's too much to do, she does it all so I can get my hair and makeup done.

(Laughter) Please understand that it's like a piece of armor for me, and I will never look at femininity as silly or superficial, and that's why my experience of gender is getting higher every day.

Tik: I love watching my wife get dressed in the morning.

What she's looking for is clothes that are comfortable, colorful, fit and safe (Laughter).

All I want is to celebrate my wife's beauty and the things that make up her beauty, her individuality and her freedom From long acrylic nails to uncompromising black feminism.

(Applause) (Kim) I love you (Tik) Me too

(Laughter) (Kim) So many queer and trans people came before us, and now the story is not being told.

All too often, we too experience a repeat of the past: being left alone by society.

It's really painful to be passed by as invisible.

That's why we speak out loud in public to show our presence.

The important thing is to develop our potential and have the hope that we are all born with love.

TK: Our work is about the possibility of reshaping time, love and institutions.

We are building the future of diversity

By broadening the scope of gender and sexuality, we envision a world where we are who we are, a world where gender is not imposed on us, but a world where we can make our own decisions, a world where our self is a kaleidoscope of possibilities, unconstrained by the bigotry that masquerades as science and justice.

(Applause) (Kim) I can't lie to you.

It's hard to face bigotry with a smile and an open mind.

In the face of injustice in the world, it's hard to keep believing in the power of people to change radically.

You need a firm and strong faith and a single-mindedness

Last but not least, married life is not easy.

(Laughter) A dizzying pile of filthy socks that you've thrown away, a boring sports show.

And yet, not a day goes by that I'm glad that this is my husband, and not a day goes by that I'm not grateful for the possibilities I've been given, the possibilities to change the way society thinks, to have productive conversations, to create a world where love is for everyone.

I often wonder what the abbreviation that stands for us, LGBTQ2SIA, means.

At first glance, it represents the never-ending evolution of self and society, but it also contains a deep and strong desire that no one be left behind.

We both learned how to love each other, and through all the gender shifts and the soul changes, we vowed to love each other.

This love grew in chat rooms and clubs and bars and community centers.

That's how we learned how to love each other for the long haul.

(Tik & Kim) Thank you

(applause)

This photo is from my Metrocard, when I was studying in Paris for a year in college in the mid-'90s.

My friend told me that I look like a French anarchist (Laughter), but I still look in the mirror every morning and see the same face.

In less than a month of living in Paris, I lost 20 pounds, and that was when I was in the best shape because I ate fresh food and walked everywhere.

I grew up on the outskirts of the city of Atlanta, a region notorious for its sprawling urban sprawl that thrived on highways and automobiles. My experience in Paris fundamentally changed the way I viewed the environment around me.

It's the origin of our social life and our culture, and it has a lot to do with how we live.

When I got back to Atlanta, I was quickly frustrated because I was stuck in traffic just across the loop.

I don't like the lack of muscle, but I don't like the lack of human interaction. Countless people rushed past us, but everyone was just staring ahead and the music was blaring.

I wondered if there was anything I could do about this. Is there anything I can do?

Can't we turn this situation in Atlanta into the kind of city I want to live in?

I went back to graduate school, majoring in architecture and urban planning, where I continued to pursue my interest in infrastructure, and in 1999, I came up with an idea that turned into my dissertation: transforming an abandoned railway line that looped around a city center into a new infrastructure for urban renewal.

was just an idea

I never thought I could really start working on it.

But after graduating, I got a job at an architecture firm, and as I was discussing this idea with my colleagues, they really resonated with me.

So when I talked to more people, more and more people showed interest.

In the summer of 2001, I met Kathy Woolard, who was soon to be elected Speaker of the City Council.

So we built this idea into a city-wide vision: the Atlanta Beltline, a 35-kilometer network of transportation, walking trails and loops of transformation.

I met two or three times a week for the next two and a half years, and so did Kathy, her staff, and a few volunteers.

It has evolved into a wonderful movement that fuses people and ideas.

Community activists, who usually turn to protest, resonated with the Atlanta Beltline, developers saw the city as an opportunity for new business development, and many nonprofits saw the vision as a way to achieve their goals in some way.

Normally these people don't get together and sit at the same table with the same goal.

But then it happened, and it was a little strange, but it also felt very powerful.

The people of Atlanta were moved by a vision, a vision far brighter than what we see out of our car windows, and made possible by the people of Atlanta.

From the beginning, this community was diverse.

All kinds of people were part of this story.

Low-income people also liked it

Their only concern was that when the project was completed, the rent would go up and they would be evicted.

You've heard this before, right?

The Atlanta Beltline promised otherwise, and everyone took ownership of the idea, turning it into a vision that was unimaginable when it started. The list of new parks, art, arboretums and initiatives, including massive subsidies for housing, continues to grow.

We've also established organizations and institutions to bring those ideas to life.

this is important

We're in the early stages of construction right now, but it's progressing well.

Part of the first major boardwalk opened in 2012, and that alone has attracted more than $3 billion in private sector investment.

It's not just changing the way the city looks, it's changing the way we think about the city, changing the expectations we have as citizens living in the city.

About a month ago, I took my kids to the supermarket, and they complained because they didn't want to get in the car.

My child pestered me, "Dad, if you're going anyway, can't you go by bicycle?"

I replied "of course

Because everyone in Atlanta does that

I'm going shopping on my bicycle."

(Laughter) (Applause) Thank you.

Now, kids don't realize how ridiculous this idea is, but I do.

And I know how powerful their expectations are for Atlanta.

These reforms are just like the urban sprawl of the last century, when investments in highways and automobiles fundamentally changed life in America.

No grand conspiracy or anything

Of course, there was a "conspiracy" connotation in it.

it's a cultural force

Millions of people making millions of decisions over a long period of time have not only changed the way we develop cities, but they've changed the way we live our lives.

These changes became the basis for the phenomenon of urban expansion.

We didn't call it "urban expansion" back then.

I said "future"

it was then

The result is highways, roadside shopping malls and residential cul-de-sacs.

It was a radical transformation, but this was the result of cultural momentum.

The important thing is not to separate the creation of the places we actually live in from the events of our times.

Back then, in the second half of the last century, science cured disease and sent humans to the moon, the sexual revolution broke down barriers, and the civil rights marches began to fulfill the promise of a nation.

Television, entertainment, food, travel, business, everything was changing, as the public and private sectors "colluded" to bring us the life we ​​wanted.

For example, the Federal Highway Administration didn't exist before highways.

please think about it

(Laughter) Of course, it's important today to understand and recognize that only certain groups of people benefited from it, and others didn't.

Cultural momentum wasn't evenly distributed.

If you look at the urban sprawl that unfolds before you today with wonder and perhaps loathing, you might feel stuck.

Can't we get out of this unfair negative legacy?

Can't you get out of the traffic jam hell?

Can't we escape from environmental degradation and rampant urban displacement?

Are we stuck in social isolation and political conflict?

Is this an inevitable, permanent result?

Or is it the result of a collective cultural decision that we make ourselves?

If so, is it something we cannot change?

What I've learned from my experience in Atlanta is not an anomaly.

Similar stories are unfolding everywhere, not just old railroads, but also aging urban waterways and disused roads that are being repurposed into new infrastructure in our lives.

Here in New York, in Houston, in Miami, in Detroit, Philadelphia, Seoul, Hong Kong, Singapore, Toronto, Paris, in big cities and small towns around the world, we're leading the way in reimagining and reinventing infrastructure. As a place for boating to revitalize the community, and of course to improve water quality and protect against flooding.

already enriching people's lives

The project also changed the way the outside world looks at Los Angeles.

It's not just about infrastructure

breathing new life into our lives

Local food and urban agriculture, craft beer, artisan and individual "makers," high tech and design -- all point to a major shift in how cities are built.

We're renovating places like this to make them look like this.

and soon this

i'm really excited about this

We are changing the world for the better

Everyone is amazing!

I think it's really epoch-making I really think so

If you look at the history of the phenomenon of urban sprawl, look at the transformative projects that are underway, and understand and forget, that big changes like this don't usually bring equitable benefits.

This cultural impetus has spurred market dynamics into an unstoppable, unavoidable cycle of tax hikes, rising prices and rising rents.

this is an urgent issue

If you think about this, you need to act and speak now.

This is a call to action. Solutions by stopping community progress are not the answer.

Not building parks, transportation networks, supermarkets is not the answer.

Suppressing the quality of the community for affordable pricing is not the answer.

Of course, we need to recognize and consider the financial realities we face.

It's hard, and it's not a problem that will go away on its own.

But we can do it. We believe in Atlanta's goals, and we stand up for the people who made it possible in the first place.

You can't call it a success without including them

I believe so, because the people with whom I have made promises over the years are not abstract "inhabitants."

because they are my friends and neighbors

people I care about

It all started as my thesis, but it's what I've been working on for the past 16 years with countless people, and I want to make it a reality.

Not just in Atlanta, but locally and globally, we need to understand accountability to those whose lives are changed by our actions, because it's about us.

Our own lives are at the center of this debate.

The challenges of cities are not inevitable.

But if you want anything to change, you have to speak up.

We have to make sure that change is good for us.

Doing so requires active participation in the process of shaping change.

thank you

(applause)

In 1987, Tina Lord found herself in a shambles.

Aiming for a palanquin, she married kind-hearted Cord Roberts just before he inherited a huge fortune.

But Cord realizes that Tina likes both himself and his property, so he dumps her.

Maria, Mother of Cord, is overjoyed, but the two fall back in love.

Maria hires Max Holden to hook up with Tina and get her hands on Cord so she doesn't think she's pregnant with him.

Thinking that her husband didn't love her, Tina eloped to Argentina with Max, despite being a married woman.

Cord finally finds out what's going on and rushes after him, but it's too late.

Tina has already been kidnapped and tied to a raft above a waterfall.

thought dead with the baby

Kord is saddened—but for a moment, he's all back on his feet. He's switched to a bright archaeologist named Kate.

Tina shouts "Wait!"

"Is it too late?

I've finally arrived

Here it is, your son."

And ladies and gentlemen, this is the 25-year-old love story of the soap opera "One Life to Live."

(Laughter) Now, if you've ever seen a soap opera, you know that sometimes the stories and characters are exaggerated. Fans can enjoy these exaggerations, but non-fans might find them very melodramatic and vulgar.

You might think that watching melodramas is a waste of time and that there's little to be learned from overblown dramas.

But I think the opposite is true

Melodrama reflects life, it's just exaggerated.

So there are lessons for real life that can be learned from soap operas, and those lessons are as epic and adventurous as soap opera stories.

Now, I've been a melodrama fan since the second grade, when I ran home from the bus stop because I really wanted to see the finale of "General Hospital's biggest climax, Luke and Laura's wedding."

(Applause) So, as you can imagine, my eight years as an assistant casting director on "As the World Turns" was a blast.

My job was to watch soap operas, read soap opera scripts, and audition actors for soap operas.

I mean I'm hardcore

(Laughter) And yes, soap operas are dramas that are bigger and grander than real life.

We mourn and rejoice repeatedly, just like the characters in the drama.

You dive into the unknown, you fight demons, you find unexpected salvation -- you do it over and over again. But like soap operas, you can change the plot, which means you can learn from the characters, who, like bees, arc and deviate from their lives and spend their lives.

And we can use these lessons to live our own lives.

Melodrama teaches us to shake off doubts and to trust in our own abilities: bravery, acceptance of weakness, adaptability, resilience.

And most importantly, it teaches us that it's never too late to change your life.

So let's get started Melodrama Lesson #1 "The word surrender isn't in the dictionary."

(Laughter) Erica Kane from "All My Children" is the daytime version of Scarlett O'Hara.

Now, perhaps Erica's most famous scene in her 41 years on the air is this: Alone in the woods, suddenly confronted by a giant bear.

Erica turned to the bear and said, "I won't let you do this!

do you understand

You said you weren't coming!

I'm Erica Kane and I'm a damn beast! ”

(Laughter) And of course the bear walked away. What this teaches us is that there are bound to be obstacles where we can choose to give in or fight against them.

Pandora's Tim Westergren knows this all too well.

You could call me the "Erika Kane of Silicon Valley."

Tim started a company with his co-founders, but two million dollars in funding

The following year, it hits the bottom

Most people would close the company at this point, but Tim chose to fight.

I've maxed out 11 credit cards and my personal debt is in the six figures, but it's still not enough.

So every two paydays for two years, he stood in front of his employees and asked them to sacrifice their paychecks, and it worked.

More than 50 people deferred their $2 million paychecks, and now, more than a decade later, Pandora is a company worth billions of dollars.

No matter what comes your way, there is a way around it or a way through it. If you believe that the word surrender is not in the dictionary, you can overcome even the most daunting obstacles.

Melodrama Lesson 2: "Abandon your pride, abandon your excessive sense of superiority."

this takes courage

It's about acknowledging your shortcomings and mistakes.

It may even admit that you're not really as special as you think you are.

Stephanie Forrester of "The Bold and the Beautiful" thought she was pretty special.

"A special person like me doesn't need to mingle with lesser people," he reminded Brook, a local girl.

But after nearly 25 years of epic fighting, Stephanie fell ill and accepted Brooke.

The two men make up, nemesis becomes soul mate, Stephanie dies in Brooke's arms, and there's something to be learned here.

let go of pride

life is not yours

It's ours, and our ability to experience joy and love and improve our reality is only gained when we expose our weaknesses and accept responsibility for what we do or don't do, like Howard Schultz, CEO of Starbucks.

When Howard retired in 2000 after a successful stint as CEO, Starbucks expanded too quickly and the stock price plummeted.

One of the first things Howard did when he returned to the team in 2008 was apologize to all 180,000 employees.

yes i apologized

Instead, I asked for help, honesty, and ideas.

And now, Starbucks sales have more than doubled since Howard came back.

So let go of your desire to always be right and safe.

Such greed does not help anyone, it strangles itself above all.

I'm throwing away my pride

Melodrama Lesson 3: "Progress is Real"

Characters don't have to be immutable

On TV, constant = boring and boring = fired.

characters are meant to grow and change

Now, on TV, this big shift can take a somewhat erratic turn, especially when the same person is played by a different actor yesterday than today.

Casting changes happen all the time in soap operas.

For the last 20 years, four actresses have played the same key figure: Carly Benson in "General Hospital."

With the change of actresses, people's lives and personalities have changed.

Carly's essence is always the same, but her personality and story change depending on the actress she plays.

here's something to learn

We can't replace faces in life, but we can progress.

You can choose to go round and round and keep stomping, or to open your mind to opportunity, like Carly, a nursing student turned hotel owner, or Julia Child.

Julia worked as a spy during World War II, and when the war ended, she got married and moved to France, where she decided to try her hand at culinary school.

Julia revolutionized American cuisine with her books and TV shows.

We all have the power to change our lives, the power to progress and adapt.

We make the choices, but sometimes life makes the choices, and sometimes it doesn't even bode well.

You can get an unexpected slap

And then you fall to the floor, you're starved of oxygen and you need CPR.

Thanks to Melodrama Teaching 4 here! "Resurrection is also an ant"

(Laughter) (Applause) In 1983, in "Days of Our Lives," Stefano DiMera died of a heart attack.

(Laughter) But before the tumor can take his life, he's shot by Marlina and falls off the stage to his death.

This has been going on for 30 years

(Laughter) Even when I saw Stefano's body on the screen, I could read what happened next.

As expected of the man called "Phoenix"

Here's what we can learn

Nothing stays the same as long as the show is on or you're breathing.

It is possible to revive

Now, of course, just like life, soap operas come to a denouement at the end.

"As the World Turns" was canceled by CBS in December 2009, with the final episode filming in June 2010.

For those 6 months heading towards "death", I continued to ride a mud boat.

It was the middle of the Great Recession, and millions of people were struggling to find work, but for some reason it felt like everything was going well.

I pulled up my apartment in Brooklyn and took the kids and moved to my husband's parents' house in Alabama.

(Laughter) Three months later, it wasn't working at all.

Around that time, when I watched the final episode air, I realized that dramas weren't the only ones in a desperate situation.

me too

With no job, the only place to live is on the second floor of my mother-in-law's house.

(Laughter) But I knew my life wasn't over yet.

All I had to do was apply everything I learned from soap operas.

I had to be brave like Erica and refuse to give in, so every day I decided to fight.

Like Stephanie, I had to show my weakness and let my pride go.

I had to travel many states and ask for help many times.

Like Carly, I had to adapt, evolve my skills, my mindset, my environment. And like Stefano, I had to be resilient and take back myself and my career.

and finally got called in for an interview.

After 15 years in news and entertainment, nine months of unemployment, I was finally hired for this interview as a casual employee.

At 37, I survived the brink of death.

We all go through seemingly ending situations, but we also have the option of turning them into beginnings.

In a way, like Tina miraculously survived the waterfall, and I hate to see the show end on a cliffhanger. Tina and Cord did get divorced, but by the time it ended airing in 2012, they had remarried three times.

So remember, as long as you're breathing, it's never too late to change your life.

thank you

(applause)

When I was six years old, I received a gift

My first grade teacher came up with a brilliant idea.

He wanted us to experience not only receiving gifts, but also learning the virtues of complimenting each other.

The teacher had the whole class come to the front of the classroom and pile up the gifts they had bought for everyone in the corner of the classroom.

And the teacher said, "Let's stand here and compliment each other.

If you have been praised, please take your gift and return to your seat."

Great idea, right?

No problem

(Laughter) There were 40 of us at the beginning, and every time someone's name came up, I cheered from the bottom of my heart.

And the remaining 20 people, 10 people, 5 people

and three people left

i was one of them

and the compliments stopped

at that point i was crying

The teacher started panicking too.

"Isn't there anyone here to say something nice to these kids?"

(Laughter) "Is nobody there? Then take your gift and go back to your seat.

Be a good boy next year and be praised."

(Laughter) Listen to me and you'll see that I remember this very well.

(Laughter) But which one was the most awkward?

me or the teacher?

The teacher must have realized that what he did to build a team led to the public execution of a six-year-old.

without the funny element

You see someone being put down on TV, it's hilarious.

There was no joyful element in what happened that day.

That's one aspect of me, and I thought, when I die, I don't want to be seen the same way again -- I don't want to be publicly rejected again.

that's one aspect

Fast forward eight years

Bill Gates came to Beijing, where I lived, and gave a speech, and I listened to Gates' message.

I fell in love with this person

i thought i had a dream

That night, I wrote a letter to my family telling them, "By the time I'm 25, I'm going to build the biggest company in the world and buy Microsoft."

(Laughter) The idea of ​​world domination obsessed me.

I actually wrote a letter, not a fiction

Here's the letter. (Laughter) You don't have to read the whole thing.

(Laughter) So —

That's the other side of me, the plotter of world domination.

Two years later, I was given the opportunity to come to America.

I jumped at it, because that's Bill Gates' country.

(Laughter) I thought that was the beginning of my entrepreneurial life.

Then fast forward another 14 years

i was turning 30

I didn't build a company like that.

I didn't even start

I actually worked for a Fortune 500 company as a marketing manager.

I felt stuck and gloomy

Why?

Where has the person who wrote this letter at the age of 14 gone?

It's not because I didn't try

Every time I had a new idea, every time I wanted to do something new, every time I wanted to make a proposal in the workplace, every time I wanted to speak in front of a group of people, there was always this conflict between me at 14 and me at 6.

One me wants to conquer the world, one me wants to change the world, the other me is terrified of rejection.

And each time, the 6-year-old me won.

And even after I started my own company, this fear followed me.

I started my own company when I was 30, and if you want to be Bill Gates, sooner or later you have to start.

When I started my business, I had an opportunity to receive investment, but it was turned down.

Rejection hurt me

The wound was so big that I wanted to stop immediately

But then I thought, "Did Bill Gates ever give up after being turned down once?

Have any successful entrepreneurs stopped because of this?

That should not be"

I had a sudden epiphany here

I can build a better company

You can build a better team and a better product, but one thing is certain: I need to be a better leader.

i need to be a better person

I can't let my life be swayed by my six-year-old self any longer.

I have to ask my 6-year-old self to leave

So I turned to the internet for advice

google is my friend

(Laughter) I searched for "how to overcome the fear of rejection."

The hit was a bunch of psychology articles about the causes of fear and distress.

And then there were a lot of brainstorms, and a spiritual article hit, saying, "Don't take rejection personally, get over it."

I understand without being told

(Laughter) But then why are you so scared?

Then I found this site by chance

Entitled "Rejection Therapy.com" (rejectiontherapy.com)

(Laughter) "Rejection Therapy" is a game invented by a Canadian entrepreneur.

His name is Jason Comley

The basic idea is that you go out for 30 days and ask yourself to be rejected, and by being rejected every day at something, you'll eventually become immune to the pain of rejection.

i like the idea

(Laughter) "Yeah, let's do this.

I'll give you a taste of what it feels like to be rejected for 100 days."

I figured out what to get rejected, and then I created a vlog.

this is what i did

This is how the blog looks like

First day···

(laughs) "Borrow $100 from someone you've never met before."

it was like

I went downstairs and saw a tall man at his desk.

Dressed like a security guard

i approached him

I was just walking, but it was the longest walk of my life. My hair stood on end at my neck, I was sweating, my heart was pounding.

When I got there, I said, "Hi, can I borrow $100?"

(Laughter) And he looks up and says, "No way."

"Why again?"

And I said, "No?

I turned around and ran away

(Laughter) I was so embarrassed.

But I had videotaped myself, and that night I saw myself being rejected, and I realized just how much my fear was.

It's like that kid in the movie "The Sixth Sense."

Like "I can see dead people"

(Laughter) But then you look at the other man,

not particularly intimidating

He was a nice fat guy, and he asked me, "Why?"

So you gave me an opportunity to explain

I should have said a lot

I could have explained, I could have negotiated

did nothing

All I did was run away

I thought, "Wow, that's like a microcosm of my life."

Every time I felt like I was about to be rejected, even for a second, I would run away.

So what do you think?

The next day, no matter what happens, I won't run away anymore

decided to stay

Day 2 "Request a free refill of a hamburger"

(Laughter) I remember when I went to a hamburger place, and after I finished my lunch, I went up to the counter and said, "Would you like a free refill of your hamburger?"

(Laughter) The clerk was confused and said, "A free refill of a hamburger?"

(Laughter) I said, "It's like a hamburger with free drink refills."

The clerk said, "Sorry, but we don't offer free burger refills."

(Laughter) After being rejected, I would normally run away, but I stayed.

And I said, "I love the burgers here, and I love the store, but if there were free refills on the burgers, I'd love it even more."

(Laughter) And the clerk said, "Well, I'll tell the manager. It might happen, but we can't serve it today."

and i left there

By the way, I don't think free refills on hamburgers ever happened.

(Laughter) The store will remain the same.

But I no longer had that life-or-death crisis that I first felt. I just stayed there and kept talking and stopped running away.

I thought, 'Oh my God, I've already learned my lesson

like it

And on the third day "buy Olympic donuts"

This is where my life turned upside down

I went to a Krispy Kreme store

It's a donut shop, mainly a chain in the southeastern United States.

There should be some shops here too

I went into the store and said, "I want a donut shaped like the Olympic rings.

I mean, it's five donuts connected together..." You don't think that's going to work, do you?

But the donut shop took it seriously.

(Laughter) I took out a piece of paper and wrote out the colors and the circles and said, "How can I make this?"

And 15 minutes later, he came out with a box of Olympic-shaped donuts.

i was very impressed

I couldn't believe it

The video has been viewed over 5 million times on YouTube.

People all over the world couldn't believe it.

(Laughter) And that's what got me in the papers and on talk shows and stuff like that.

became famous

I started getting emails from a lot of people saying, "That's great."

But I don't care about fame or notoriety.

All I really wanted was to learn and change myself.

So I turned the rest of the 100-day rejection challenge into an activity -- this research project.

I wanted to know what I could learn

and i learned a lot

I found so many tricks

For example, even if you are refused once, if you don't run away, there is a possibility that you can change "no" to "yes", and the magic word for that is "why?"

One day, I went to a stranger's house with a flower in my hand, knocked on the door, and said, "Hey, can I plant this flower in your backyard?"

(Laughter) And he said, "No."

But before he left, I asked him, "Can you tell me why?"

And he said, 'We have a dog, and he's going to dig up whatever we plant in our backyard.

I don't want your flowers to go to waste

If you want to plant it, ask Connie across the street

because she loves flowers

I did what I was told

I knocked on Connie's house across the street.

Connie was so happy.

(Laughter) And half an hour later, this flower was planted in Connie's backyard.

should look better now

(Laughter) But if I had walked away with the first rejection, I would have probably thought that this person rejected me because they didn't trust me and thought I was weird, or because I looked bad because of how I was dressed.

not actually

My proposal just didn't match the other person's wishes.

And they trusted me and even introduced me, in sales terms.

I turned referrals into customers

And then, another time, I learned that by saying something, you're much more likely to consent.

For example, one day I went to Starbucks and I asked the store manager, "Hey, can I be your greeter at Starbucks?"

"What do you mean by Starbucks greeter?"

"There's someone greeting you at the door of Walmart, right?

The person who walks into the store and says 'Hello' to customers — basically a shoplifting deterrent.

We want to give Starbucks customers the Walmart experience.”

(Laughter) Well, I don't know if it's a very good idea, but it's actually a pretty bad idea.

And he said, "Hmm." With that look on his face, his name was Eric, and he was just wondering.

"I don't know"

So I asked, "Is it weird?"

Then he said, "It's certainly strange."

But as soon as I said that, Eric's demeanor completely changed.

It felt like I had shaken off all my suspicions.

"It's okay, just do it, don't be too weird."

(Laughter) And then for an hour, I was a greeter at Starbucks.

I said "Hello" to all the customers who came to the store and made a toast to Christmas.

By the way, whatever your background, I don't recommend being a greeter.

(Laughter) It was a really boring job.

But then I heard, "Are you weird?"

I put his suspicions into words.

Saying "Are you weird?" showed I wasn't weird —

I mean, like him, I thought being a greeter was weird.

And over and over again, I've learned that if you voice the doubts people might have before they ask you, you'll earn their trust.

You are more likely to be accepted

And just listening to it can lead to the realization of dreams

i learned

I come from a family of four generations of teachers, and my grandmother always said, "Jah, do whatever you want, but it would be great if you could be a teacher."

(Laughter) I wanted to be an entrepreneur, not a teacher.

But it's always been my dream to actually teach something.

So I thought, "Why don't you ask me to teach you a class at the university?"

I was living in Austin at the time, so I went to the University of Texas at Austin and knocked on the professors' doors and asked, "Can I teach your class?"

I didn't get a good response the first two times.

But if you don't run away and keep going, you're honest for the third time, and the professor was very impressed.

"It's the first time I've ever heard someone say that."

I was preparing the class content in PowerPoint.

The professor said, "Oh, you can use this.

Please, if you come back in two months, I'll include you in the curriculum."

And two months later, I was teaching a class.

This is me — it's hard to tell because of the poor quality

sometimes the lighting rejects

(Laughter) But when I left class and walked out, I was crying because I thought, "I just listened to this, and I realized the dream of my life."

I used to think that in order to teach, you had to achieve something, like be a great entrepreneur or get a PhD, but in reality, you could teach just by asking.

And in that picture that you can't see, I was quoting Dr. King.

Because in my research, I found that the people who really changed the world -- the people who changed the way we lived and the way we thought -- were met with violent rejection more than once at first.

People like Martin Luther King, Gandhi, Mandela, and even Jesus Christ.

These people don't limit their potential by rejection

The way I reacted to rejection determined my path.

I faced rejection

You don't have to be one of those great people to learn about rejection.

By running around, I was tormented by rejection all the time.

Then I started to face the rejection

I turned rejection into life's greatest gift.

I started teaching people how to turn rejections into opportunities.

I use blogs, talks, recent books, and even develop techniques to help me overcome my fear of rejection.

When you've experienced rejection in your life, the next time you hit a wall and face failure, think about the possibilities.

please don't run away

Just by facing each other, it may turn into a gift

thank you

(applause)

Our daily life is supported by a world that is not on earth.

look back on these few days

did you watch tv? Did you use GPS? Have you checked the weather forecast or eaten?

Satellites are the reason, both directly and indirectly, that we are able to do so many of these things in our daily lives.

We live with the benefits of these satellites and we take them for granted, but it's important to be concerned about satellites because they leave their mark on the universe for a long time.

Every day people around the world rely on satellite infrastructure for information, entertainment, communications.

Agricultural and environmental monitoring, including internet connectivity and navigation

Satellites also play a role in the operation of the economy and energy markets.

These satellites that we rely on every day also have a lifespan.

There may be things that have run out of propellant, malfunctioned and stopped functioning, or things that have naturally stopped functioning after reaching the end of their lifespan.

At each point, the satellites are effectively space junk, accumulating in orbit around the Earth.

Imagine this, one fine day, you're driving down the highway on business.

My favorite tunes are playing and the windows are open and the cool breeze is blowing through my hair.

it feels good

Everything is going smoothly, and then suddenly the car jerks and stops, in the middle of the highway.

Now I have no choice but to leave the car on the highway.

Maybe we were lucky enough to pull over and not get in the way of traffic.

A few hours ago, a car that was an indispensable and useful machine in daily life

Now it's just a useless hunk of iron, a junk in important transportation networks.

And imagine a global road network littered with broken down cars that are just a nuisance to traffic.

Or imagine a car crash with thousands of tiny pieces of debris strewn everywhere creating new obstacles.

This is the reality of the satellite industry

Deactivated satellites are either left out of orbit for extended periods of time, or moved out of the way as a temporary measure.

There's no international law in space, so cleanup isn't mandatory.

The world's first artificial satellite, Sputnik 1, was launched in 1957, although there were only three satellite launch attempts that year.

In the decades since, dozens of countries have launched thousands of satellites into orbit, and that number will only continue to grow.

Now we put satellites into orbit at different altitudes, depending on what they're used for.

One of the most common locations for this is low earth orbit, which is about 2,000 kilometers above the earth's surface, to take pictures of the surface of the earth.

Because satellites in this orbit are exposed to the Earth's atmosphere, they naturally degrade in orbit, eventually burning up, probably within decades.

Another place where satellites are sent is in geostationary orbit at an altitude of about 35,000 kilometers.

Geostationary satellites at this altitude don't move, they rotate with the earth, and they're used for things like communications and television broadcasting.

Satellites like this in high orbit will last for centuries.

There's also an orbit that's been dubbed the "graveyard orbit," an eerie dumping ground where dead satellites have been moved out of their normal orbits so they don't get in the way of other satellites.

Some 7,000 satellites have been launched since the 1950s, but only about 1,000 of them are currently functioning.In addition to the nonfunctioning satellites, hundreds of thousands of marble-sized pieces of debris and millions of flakes of paint are orbiting the Earth.

These are serious threats not only to space missions, but also to satellites, which are essential to our lives.

Space debris and debris are becoming an increasing concern, and there are national and international efforts to improve technology and limit the amount of debris.

For example, satellites in low-Earth orbit are recommended to be manufactured to be out of orbit within 25 years, but that's a long time coming, especially for satellites that haven't been functioning for years.

We also need to bring a defunct geostationary satellite into graveyard orbit.

But none of the guidelines are mandated by international law, so they will be tested through national mechanisms.

And they're not proactive, looking to the future, or dealing with debris that's already in space.

It's just being done to limit future debris production.

The reality is that space junk is no one's fault.

If you compare this to the situation on Mt. Everest, what's interesting is the new approach to how humans interact with the environment.

Decades after successfully reaching the summit of the world's tallest mountain, humans began to question the tons of garbage left behind by climbers. As you've heard in the news, Nepal is cracking down on climbers and trying to enforce stricter penalties and legal obligations.

The goal, of course, is to encourage climbers to clean up their own trash, either by local nonprofits buying the trash they bring home, or by the expedition itself organizing their own cleanup parties.

Yet many climbers feel they should take action on their own.

There's no easy answer to this, although even well-intentioned efforts to protect nature often run into problems.

It's not that we can't help it, we should do whatever we can to protect the environment on which we live. In a remote orbital environment with inadequate infrastructure, such as Mount Everest, waste disposal is a difficult problem.

But we can't let the waste escalate and create more piles of trash.

The reality is that when a piece of a satellite breaks down in space, the repair possibilities are limited and expensive.

So what if we improved the way satellites are designed and built?

What if, as a standard, all satellites, no matter what country, required the ability to self-deorbit and be reusable.

What if there was actually an international law that mandated the decommissioning of satellites after their endurance life, instead of moving them out of the way as a stopgap measure?

Or maybe we should put a deposit on a company to put a satellite into orbit, and that money will come back when proper satellite disposal is completed, or when we clean up the amount of debris we've been allotted for.

Or maybe satellites should be equipped with technology that accelerates deorbits.

there are bright spots

For example, the UK's TechDemoSat-1, launched in 2014, has technology that uses a small "anchor" to knock the satellite out of orbit.

This works well for this satellite because it's small, but for satellites at higher altitudes and in large orbits, or as large as a school bus, we'll likely have to choose other disposal options.

We could use something like a high-intensity laser, and it might seem crazy if you think about it, but you could also pull it with a net or a rope.

One really cool possibility is an orbiting tow truck or a space mechanic.

Imagine, how wonderful it would be if a robotic arm in something like a space tow truck could repair a broken part of a satellite and put it back into service.

Or what if that same robotic arm could replenish a satellite's propellant? just like we put gas in our cars

Satellites orbiting the Earth could continue to function for hundreds of years if robots maintain and repair them.

Whatever disposal options come up, it's not just a matter of technology,

And it's clear that we need to get things in order with complex space laws and politics.

The bottom line is that we haven't found a sustainable use for space yet.

As we explore and innovate to make life easier and work better, in space exploration we are literally going beyond the boundaries of the earth.

But while pushing boundaries in the name of learning and innovation, our responsibility to the environment never goes away.

Geostationary orbit and low-Earth orbit are undoubtedly congested, and just like no one leaves a broken-down car in the middle of a highway, we can't just keep launching new satellites just because we're doing nothing and it's broken down.

Next time you're looking at the weather on your cell phone or using GPS, you'll be talking about the satellite technology that makes that possible,

And please spread the message that satellites are such a huge hindrance to our planet's environment that we need to mitigate it.

Earth's orbit is a wonderfully beautiful gateway to exploration.

It's up to us how we keep it.

thank you

(applause)

first question

We have two exploration programs in our country.

One is NASA, which explores the great heights, surveying the skies, the places we all want to go to, if we're lucky.

We have Sputnik here, we have the Saturn rocket, and there are other manifestations of space exploration.

In fact, there's another government agency, the Ocean Exploration Program.

That's NOAA, the National Oceanic and Atmospheric Administration.

The next question is: "Why are we ignoring the ocean?"

The reason, or why I ask this question:

If you compare NASA's annual budget for space exploration with NOAA's annual budget, that's 1,600 years of ocean exploration.

why? why are we looking up? Is it heaven?

Because hell is down there? Is it a cultural issue?

Why are you afraid of the sea?

Is the sea just a dark and gloomy place with nothing to gain?

In the next 16 minutes we will travel to 72% of the planet Are you ready?

What I mean is, I want you to immerse yourself in my world.

And the following points-

Just in case I forgot to mention-

Everything I'm about to show you wasn't in your textbooks when you were a student.

Not even in college textbooks

I'm a geoscientist, and my school science books told me that to get an A, I had to write the wrong answer.

Continental migration was made fun of. It was the subject of ridicule.

I learned the fold cycle of Marshall Kay, it's shit.

Shit in modern conditions, but back then it was the law of geology vertical geology.

What we're going to look at is ocean exploration and discovery, mostly by accident.

mostly by chance

I was looking for something and found something else

And all of this I'm going to talk about is a little over 1/10 of the 1% I've seen so far.

here is a map

Here's a map of the Earth after all the water has been removed.

It gives the impression of a map

It's a fake, not a map

I have another version of this in my office and I ask people who come in: "Why is there a mountain here and not there?"

No, only that ship has been there.

Most of the southern hemisphere remains unexplored.

It's amazing that in Captain Cook's time there were more probes on the other side.

Now, let's dive into 72% of the planet, because the Easter Bunny is a bit naive to put all its resources on land, isn't it?

(laughs) That's too funny

You'll be playing a zero-sum game forever

I'm just carrying things from here to there

I am only thinking about enriching the economy

Moreover, 72% of the earth is not yet on the table

I'll talk about it later in my presentation, but 50 percent of the United States is below sea level.

50% of the places that we own, that we have legal control over, that we have at our disposal are below sea level, and the map of Mars knows better than that 50%.

why? Well, I started my quest the hard way

Long ago—I was 17 years old when I started my first expedition, 49 years ago.

By my calculations, I'm 66. I was sailing on a Scripps Institution of Oceanography ship, and I was almost sinking in the rough seas. I was too young, wow! I thought

I was a body surfer, so I thought, "This is a great wave!"

Nearly sunk, but ecstatic with rising adventures. Over the next 49 years, I've made 120 or 121 expeditions -- still going.

In the early days, the only way to reach the seafloor was to dive into a very small submersible and descend to the seafloor.

I've been on every deep sea submersible

Alvin, Seacliff, and Siana, on about eight deep-sea research submersibles.

In fact, at most four or five people have dived to average ocean depth, only four or five out of billions.

It's very difficult to get there physically.

But I was ecstatic, and by the time I graduated, it was the dawn of plate tectonics, and I learned that the largest mountains on Earth are beneath the surface of the ocean.

The 'mid-ocean ridge' stretched out like the seam of a baseball

This is a Mercator projection

If you were to use an equal-area projection, you'd see that the Mid-Ocean Ridge covers 23 percent of the Earth's surface.

Nearly a quarter of the Earth is in one mountain range, and Neil Armstrong and Buzz Aldrin hadn't reached that mountain range when they went to the Moon.

We went to the moon and played a little golf, but we hadn't explored the greatest features of the Earth.

Our interest as geoscientists in this mountain system was not only because of its size, but also because of the role it plays in shaping the Earth's outer surface.

Because at this mid-ocean ridge, the crustal plate splits in two.

And like a living animal being cut open, the molten blood erupts, healing and hardening wounds in the upper mantle, creating new tissue that spreads out to the sides.

But no one had actually been to the actual creation site of the Rift Valley - until 1973 and 1974, when seven of us boarded a small submarine and became the first humans to enter the Great Rift Valley.

we went down to the rift valley

This picture is quite accurate except for one thing - it's black and white

It's pitch black here, because photons don't reach the average seafloor depth of about 4,000 meters, and the rift valley is about 3,000 meters.

Most places on Earth cannot feel the warmth of the sun.

Most places are eternal darkness

Therefore, there is no photosynthesis in the deep sea.

And without photosynthesis there would be no plants, and as a result there would be very little life in this deep sea.

So our first expedition focused on looking at the site of crustal formation, characterizing volcanic activity over a length of more than 67,000 kilometers.

These 67,000 kilometers contain tens of thousands of active volcanoes.

tens of thousands of active volcanoes

There are two orders of magnitude more active volcanoes on the ocean floor than on land.

It's a surprisingly active area, not a dark and boring place, it's extremely active.

It's cracking and spreading

But at that time we were dealing with a specific scientific problem.

I couldn't understand why some mountains were in "stretched state"

In plate tectonics, if the plates were colliding, it would make sense. They would bump into each other, and the outer shell would thicken and bulge.

That's why Mount Everest has seashells.

It wasn't a flood, it was lifted up there

I could understand that the mountain was in compression, but I didn't understand why it was in extension.

I thought it was impossible, but one of my colleagues said, "It looks like a blister. The mid-ocean ridge must be cooling down."

We used a lot of thermal probes, and we figured most of it out, but the only thing that didn't make sense was that the heat was being lost on the ridge, and it was gone somewhere.

It's hot there, but not hot enough

So I came up with several hypotheses: There might be green dwarves there, taking away the heat.

But the only reasonable answer was hot springs

There must be a hot spring in the sea

We've launched a search for the lost heat.

After searching the mountains around the Galapagos Rift Valley, we finally found the missing heat.

It's a huge chimney. It's a huge chimney.

I went there on a deep-sea probe

I put the temperature probe in there, and when I looked, the needle had run out.

Pilot's Amazing Observation: "This is hot"

(Laughter) We realized that the transducers were made of the same material that might have melted, and the exit temperature was 340 degrees Celsius, the temperature at which lead melts.

Here is the actual photo at Juan de Fuca Ridge

It's an incredible chemical pipe organ jutting out from the ocean floor.

All you see here is commodity grade copper, lead, silver, zinc and gold.

So the Easter Bunny is also hiding things on the ocean floor, and a lot of heavy metals have been deposited to create this mountain system.

We're discovering large amounts of commodity-grade ore near this mountain system, but even that's small compared to what we've found.

So many species of life have been found in unlikely places, giant tube worms, three meters long.

I remember using my vodka to preserve it because I didn't have formalin.

I found an unbelievable number of shells on the barren sea floor - big shells.

When cut open, there was no shell anatomy.

No mouth, no intestines, no digestive system

The body of the mussel had been replaced by a completely different bacterium, a bacterium that had become capable of carrying out the equivalent of photosynthesis in the dark through a process called chemosynthesis.

None of them are in textbooks None of them

no such life system was known

I didn't expect

I was looking for the lost heat, and I happened to stumble upon it.

tried to accelerate this exploration process

I wanted to stop the silly trip to and from the surface in a submersible The average depth of the seabed is 4000 meters It takes 2.5 hours to get to work in the morning Another 2.5 hours to get home 5 hours to commute

Time on the seafloor: 3 hours Average distance traveled: 1.6 kilometers

(Laughs) The total length of the ridge is over 67,000 kilometers.

So we developed a new technology for remote presence, where we used robots to create avatars of ourselves on the ocean floor so that we didn't have to ride back and forth.

And we put it into exploration, and we continued to make amazing discoveries with new robotic technology, and we were still navigating the Mid-Ocean Ridge, looking for something else.

Scientists Encounter Incredible Life During Exploration Break

This is a new species that has never been seen before.

And more importantly, they found structures that they couldn't understand.

It doesn't make sense, it's not on top of a magma chamber

Something that shouldn't be there, I called it "Lost City"

The Lost City was made up of three incredible limestone structures and an upside-down pool.

What are you going to do with this? water is upside down

When I went to the bottom and sampled it, the pH was about the same as Drano (sewage pipe cleaning agent).

Despite a pH of 11, chemosynthetic bacteria live in this extreme environment.

Hot water vents create an acidic environment

There's also an alkaline environment that's the exact opposite of pH 11, which is where life lives.

life was much more creative than we ever thought

We had another serendipitous discovery two years ago while exploring off the coast of Santorini, where the beach was sunbathing in droves, but in a nearby caldera they didn't know about, we found an amazing hydrothermal vent, and even a life system.

No one knows that there is such a thing less than four kilometers from the sunbathing area.

Once again we stopped at the water's edge

I was diving off the Gulf of Mexico recently and found a puddle.

bingo! You thought there was air until the fish swam through

It is a salt water pool made of diapir structure of salt.

There was methane nearby. It was the first time I'd seen a methane volcano.

It wasn't lava, it was spitting out huge methane bubbles, and that created a volcano, and it wasn't lava, it was cracks of extruded mud.

There's more than just natural history on the seafloor, it's human history, and we discovered the Titanic.

The deep sea is the largest museum on earth.

It has more history than all the museums on earth put together

But I've only come to see you

I just came to see the state of preservation

Found the battleship Bismarck at 5300m Yorktown too

"Is it really Yorktown?" I was asked.

"Yorktown" was written on the stern.

(Laughter) Recently, ancient history has been found.

How many ancient ships had an unfortunate fate? a million

Discovery continues in unlikely places along ancient trade routes.

This shipwreck sank more than 100 years before Christ was born

This ship carried a prefabricated Roman temple for your home

Ship sunk in 750 B.C., during Homeric times

More recently, in the Black Sea, where I was exploring

Because of the lack of oxygen, this is the largest reservoir of hydrogen sulfide on Earth, and the shipwreck is perfectly preserved.

All organic matter is perfectly preserved. Start mining it.

I predict we'll get a complete corpse, complete with DNA.

Look at the state of preservation You can see the carpenter's advertising stamp Look at the state of the craft

You can still see the beeswax dripping, it was sealed as it fell.

This ship sank 1500 years ago

Fortunately, I was able to convince Congress

start lobbying in parliament

We recently procured a ship from the U.S. Navy

This is the exploration vessel Oceanos in action.

It's the best strategy you can get

It's a strategy to "go to a place where no one has been before on earth".

Saw it yesterday in Seattle OK?

(Laughter) We're going online this summer and we're going to start our expedition.

We have no idea what we'll find by searching with our technology.

But you'll find a completely unknown America

America under the sea

All the blue areas are ours, especially the west truss, we don't have a map yet, we don't have one yet.

I have a map of Venus, but not the western truss.

I have no idea what I'll find in the process of running this

I have no idea

Ancient Phoenician shipwrecks may be found off the coast of Brazil, new rock formations and life may be found

Run like an emergency hospital

We plan to connect it to the Interspace Center we're building at the University of Rhode Island via a broadband satellite link.

Through that link, we operate 24 hours a day, switching between execution units and command units, just like running a nuclear submarine.

If something is discovered, it can be seen in the command center immediately, in seconds

And it's connected to Internet 2, Internet 1 looks like a dirt road on the information highway, Internet 2, and it has 10 gigabits of bandwidth.

You're going into completely uncharted territory.

It's a giant black piece of paper on Earth, and in a few hours you're going to draw a map on it and distribute it to the major universities.

Ninety percent of all oceanographers in this country are in 12 universities, all connected to the Internet2.

you can create a command center there

This is the remote center of the University of Washington

She's talking to the pilot, 8,000 kilometers away and still connected.

The great thing about this system is that you can extend it to your children.

can deliver

I've created a program that kids can follow along on this quest. Where's Jim? Jim Young helped launch a program called The Jason Project. Recently, we've partnered with the Boys and Girls Club of America on a new program to use exploration, the excitement of exploration, to motivate kids and let them know what's ready.

I don't let adults handle my robot

I don't have enough gaming experience

Children without a driver's license operate my robotic system

(Applause) Because I want to create, I want to create the classroom of the future.

There's so much competition, you have to be motivated, that's what you're doing.

By eighth grade, you'll know if you can succeed as an engineer or scientist.

The game isn't over yet, but it'll be over by eighth grade - not the beginning

I'm not just proud of my university

middle school should be proud too

If we have the best middle school in the world, the best kids will come out of the system.

because that's what you want

This girl isn't watching football, she's not basketball

You're watching exploration live, thousands of kilometers away, and you're starting to understand what you're seeing.

If you are surprised and open your mouth, you can send information

It can send a lot of information to the brain It's in full receive mode

(Applause) This is the future engineer, the future scientist, I hope, in the battle for truth.

And my last question Last question Why don't we go out to sea to find out?

Why don't we have a program to live on Mars, a program to colonize the Moon, and a program to colonize our own planet?

I already have the technology

Thank you very much

(applause)

Like many people, I've had multiple careers in my life, and they've been very diverse, but my first job has laid the groundwork for all of my other careers.

I was a home birth midwife all through my twenties.

Working with babies has taught me valuable and sometimes surprising things at 2am in the freezing cold of minus 10 degrees.

Tips for starting a car engine

(Laughter) Like how to revive a father who fainted in front of the blood.

(Laughter) How do you cut the umbilical cord to have a clean belly button?

But it's not these things that stayed with me and guided me when I left midwifery and took another job.

The one thing that stuck with me was the belief that people are born into this world with unique worth.

I gazed into the newborn's face and caught a glimpse of its value, its majestic self-perception, its one-of-a-kind brilliance.

I think the word "soul" is apt for that brilliance, because it's the only English word that comes close to what a baby brings.

Newborns are like snowflakes, no one is the same, no one is the same, a fusion of life, ancestry and mystery.

Eventually, the baby grows up, to find a place in the family, to adapt to the culture, to conform to society and gender, and gradually the little one begins to cover more and more of its soul.

We're born as we are, but (Laughter) we're gradually going through a lot of things that happen as we grow up.

You begin to hide your soulful personality and honesty.

that everyone has experienced

Everyone in the room was once a baby.

But when you become an adult, you spend a very long time feeling internally uncomfortable, as if you have ADD, Honesty Deficit Disorder.

baby is still different baby is still different

A message from a newborn: Don't hide your soul, find the radiance in everyone's soul.

it always exists

I've also learned from women in childbirth.

Their message is to open your heart even in the midst of pain.

A woman's cervix normally looks like this

It's a small, tightly closed muscle at the very bottom of the uterus.

And when it comes time to give birth, it expands from this width to this width.

pain!

Resisting this pain just makes it worse, and it blocks the birth.

The magic that I will never forget is what happens when a woman stops resisting pain and opens up.

As if the cosmic forces noticed it and sent a wave of help

I've never forgotten that message, and now, when I encounter hardships and pain in my life and in my work, of course I resist at first, but I'm reminded of what I learned from moms: open your heart.

stay curious

Asking What Pain Brings

something new is about to be born

There's another big soulful lesson I learned from Albert Einstein.

He had nothing to do with childbirth, but (Laughter) it was a teaching about time.

In his later years, he came to the conclusion that our everyday experiences of life, like hamster wheels, are an illusion.

We run around and around, trying to reach somewhere

But all the while, beneath surface time lies an entirely different dimension, where past, present, and future merge to form the abyss of time.

there is no place to reach

Einstein called this state, this dimension, "mere existence."

It was when he experienced it and felt holy awe that he uttered these words.

I was forced to get off the running wheel when I picked up the baby.

Sometimes for days, hours, with my parents, I was just breathing, just being.

And got a lot of "great fear"

Here are three things I've learned from being a midwife.

One thing, don't hide your soul

2. Be open when faced with difficulties and pain.

3. Sometimes getting off the wheel and stepping into the abyss of time

These lessons have helped me throughout my life, but most recently, they helped me a lot when I did the most important job of my life.

Two years ago, my sister's rare blood cancer recurred, and the only remaining treatment was a bone marrow transplant.

We found a match despite the low match rate, and it was me.

My family consists of four sisters. When my sisters found out I was the perfect genetic match, their reaction was, "Are you the fit? Really?"

(Laughter) "A perfect match for her?"

It seems that it is common for sisters

There are many types of sisterhood relationships.

affection and friendship protection

And jealousy, more competition, rejection and aggression

That's where sisterhood is where we first start laying down the many layers that cover our souls.

When I found out I was my sister's match, I went into research mode.

And what I found was that the premise of a bone marrow transplant is very simple.

After destroying the cancer patient's bone marrow with high-dose chemotherapy, they transplant millions of healthy cells from a donor.

And we'll do everything in our power to get the new cells to settle in the patient.

In addition, I learned that bone marrow transplantation is risky.

Even with the near-lethal dose of chemotherapy and its success, my sister is in more danger.

My cells could attack my sister's body.

My sister's body could reject my cells

This is called rejection or aggression, both of which result in the sister's death.

rejection and attack

Both words are familiar to sisterhood.

My sister and I have a long history of love, but we also have a long history of rejection and aggression, ranging from small misunderstandings to big betrayals.

What we didn't have was deep conversations.

But when I learned about the dangers of rejection and aggression, I knew it was time to change that.

Instead of leaving the bone marrow transplant to the doctors, what if my sister and I later called it a "soul bone marrow transplant"? and

If we don't reject or attack when we face pain caused by each other, listen to the other.

forgive someone

Can you merge with your partner?

So can we get our cells to do the same?

To persuade my skeptical sister, I brought up my parents' scripture, The New Yorker Magazine.

(Laughter) I sent my sister clippings from the manga series, and convinced her that I should take my bone marrow and go to therapy before I transplanted it into her body.

Here it is

"In my head, I won't forgive him for what he did to me."

(Laughter) I told my sister that we must be doing the same thing, sticking to the stories we've made up in our heads and pushing each other away.

I told her that the blood that flowed through her veins after the transplant was my blood, made from my bone marrow cells, and that the nucleus of each cell contained a complete set of my DNA.

"As long as you're alive, I'll be swimming in you," I told my slightly frightened sister.

(Laughter) "Let's clean up our relationship with each other."

When your health is at stake, you take all sorts of risks, like quitting your job, jumping out of a plane, or in my sister's case, agreeing to do some therapy sessions, when we were all depressed to the core.

After years of speculation, prejudice, blame and shame, all that was left was love.

I've been praised for being brave enough to have my bone marrow harvested, but I'm not.

What I feel was brave was another harvest and transplant, a soul quintessence transplant, in stripping our emotions to others and letting go of pride and self-defense, removing layers of superficiality and exposing and sharing our vulnerable souls with each other.

It reminded me of what I learned during my midwifery days: don't hide your soul.

Open Your Heart to Threats and Pain

seek holy fear

This is the harvested bone marrow and me.

It's called "The Harvest." It's kind of like an idyllic farm-to-farm event. (Laughter) It's nothing like that.

My very brave sister who received my bone marrow.

After the transplant, we started spending more time together.

It's like being a little girl again

past and present fused

we have stepped into the abyss of time

I got off the wheel of my work and daily life and went to my sister who was on a solitary island of sickness and healing

We spent many months together in the hospital and in the isolation unit at my sister's house, in the hospital and in the isolation unit at my sister's house.

The fast-paced world doesn't support or even appreciate these efforts.

deemed disruptive to real life or important work

I worry about being overly emotional and spending a lot of money.

But I got paid, and it was done in a currency that our culture forgot.

i was paid for love

I got paid with my soul

I got paid with my sister

My sister said the first year after the transplant was the happiest time of her life.

because she suffered a lot

But she said that life was the sweetest during that time, and she said that it was because we opened our souls and spoke our truths that she became more open and confident and approachable.

She started saying what she felt she should say.

I got to do what I always wanted to do

and it was the same for me

I'm no longer afraid to be candid with people I interact with on a daily basis.

I spoke for myself as I was, and most precious of all was that I was able to discover others as they were.

It wasn't until the final chapter of this story that I realized how my midwifery experience had elevated me.

After my sister had the best year of her life, cancer struck again, and this time there was nothing the doctors could do.

My sister had two months left to live.

I was at her bedside the night before she died.

my sister is small and thin

I could see my neck pulsing

It was my blood, her blood, our blood too.

When my sister died, a part of me died too.

What I wanted to make sense was that by being one with each other, we became more of who we were. Our souls were what we were. By facing the pain of the past and opening our hearts, we finally reached each other's hearts.

I can't count the things my sister left behind, and in closing, I'd like to share with you one of them.

You don't have to wait for a life-and-death situation. You can purify important relationships by giving them the essence of your soul and finding it in them.

Anyone can do it

Like a new breed of paramedic, take the first step bravely. Instead of rejecting and attacking someone, you can take action and make an effort.

It can be a sister, a spouse, a friend or a colleague.

The same is true for all the disconnects and dissonances around us.

The same can be said for the souls of the world.

thank you

(applause)

what is a parent?

What are parents?

it's not an easy question

Now there's adoption, mixed families, surrogacy, and so on.

Many parents face difficult questions and decisions.

Should I tell my child about sperm donation?

When should I tell you?

What kind of words should I use?

Sperm donors are often referred to as "biological fathers," but should we really use the term "father"?

As a philosopher and a social scientist, I've explored what it means to be a parent.

But what I want to share with you today is what I've learned from talking to parents and children.

They know what's most important to their family, even if their family is a little different from other families.

They have their own ingenious way of dealing with difficult problems.

At the same time, I'm going to talk about parental concerns.

We interviewed a couple who underwent fertility treatment with donated sperm at Ghent University Hospital.

In the time course of this treatment, you can see that there were two points in time when we conducted the interviews.

We've also included heterosexual couples, where for some reason the man doesn't have good quality sperm, and we've also included lesbian couples who clearly need sperm from someone else.

I also interviewed children.

I wanted to know how these children perceive the concept of parenthood and family.

I actually asked those questions, but I asked them differently.

I drew an apple tree instead

This allowed me to ask abstract, philosophical questions without intimidating them.

As you can see, the apple tree has no fruit.

This shows my research approach

By using these techniques, we can bring as little meaning and content into the interviews as possible, because that's what we're trying to get out of the children.

I asked the question: If your family were an apple tree, what would it look like?

Then they pick up paper apples for each person they consider family, write their names on them, and stick them wherever they want.

ask more questions

Most children started with their parents and siblings

One kid started with "Boxer," a dead dog that his grandparents had.

At this point, no child mentioned a sperm donor.

I will listen to the story of when I was born there.

"Before you were born, there were only mothers and fathers, or mothers.

Can you tell me the story of when you joined the family? ”

Then he will explain

As one kid said, "My parents didn't have good seeds, but there are some good guys who have extra seeds.

These people bring the seeds to the hospital and put them in big jars.

Mama went there and got two out of the jar, one for me and one for my sister.

Mama put the seed in her belly - I don't know why - and it grew so big that I was born."

yes

Only when the children start talking about donors do I use their words to ask about donors.

I say, "If this was the apple of a good man who had seeds, what would you do with it?"

A boy holds an apple in his hand and thinks

He said, "I won't mix this apple with anything else.

I'm not part of the family.

But don't put it on the ground

Because the ground is cold and hard

This man should be in the tree trunk 'cause he made my family

Without this man, I would be very sad because my family wouldn't exist and I wouldn't be here."

Similarly, parents were creating family stories, stories to tell their children.

One couple took their children to a farm to demonstrate artificial insemination and watched a veterinarian inseminate a cow.

There is that too, right?

It's their way of explaining it, it's a handmade family story.

it is handmade

Another couple made books, one for each child.

It was almost a work of art, and it was about my thoughts and feelings during my fertility treatments.

I had a hospital parking ticket.

These stories are handcrafted, created by finding ways, words and images to tell the story of the family to the child.

These stories are very different, but they all have one thing in common: they're about desperately wanting a child, and the story of how to get that child.

They talked about how special the child was and how much they loved him.

Studies have shown that these children do not have any particular problems.

No child has more problems than other children.

But these parents wanted their stories to justify their decisions.

I want my children to understand why I started a family this way.

Behind this is the fear that children will show dissatisfaction and rejection of their non-blood parent.

This fear is understandable. We live in a heteronormative society, a genetically based society, where we think of a true family as consisting of one mother, one father, and half-blood children.

Now

Let's talk about teenage boys

He was also a sperm donor, but he wasn't participating in the study.

One day, I had a fight with my father, and he yelled, "Can you tell me to do this or do this?

You're not even my father! ”

This is exactly what the parents in the study feared.

The boy quickly repented and reconciled with his father.

But what's really interesting is the father's reaction.

My father said, "This harsh language has nothing to do with not being related by blood.

Because it's adolescence - it's a difficult time

I'm around that age

It will pass in time."

This man teaches us that when something goes wrong, don't immediately blame your family for being different.

These things happen in every family.

And from time to time, all parents wonder, Will I make it as a parent? and

So are these parents

They want the best for their children, too.

But they also wonder: Am I really the parent? and

These fears were with me even before I became a parent.

When I first met with a counselor at the beginning of fertility treatment, my parents gave them a lot of attention because they wanted to do well.

Ten years later, I still remember that advice.

When parents thought about counselors and the advice they received, we discussed that as well.

One lesbian couple said, "Sometimes my son asks me, 'Do I have a father?' And I say, 'I don't have a father.'

The counselor said

Now

You know, that's a pretty unusual answer to a child's question.

For example, if you were asked, "Can milk be produced in a factory?"

I'd say, "No, it's made from cows."

You shouldn't say, "No, milk isn't made in a factory."

So something is wrong, and of course the kids will notice it.

A boy said to me, "I asked my parents a lot of questions, and they both had this weird attitude.

I have a friend at school who was born the same way

When I have something I want to ask, I go ask that child."

you're a clever boy

I closed one case

What his parents didn't realize was that this wasn't what they were thinking or what the counselor was thinking, even though they were talking about the importance of having an open family.

Here's the weird part of the advice

When we offer drugs, we first collect evidence.

conduct experiments and follow-up

Naturally, we want to know how drugs work and how they affect people.

What about your advice?

Expert advice is that it's not enough to be theoretically correct and out of good intentions.

Advice must be backed up by backed up evidence that it actually improves a patient's life.

As a philosopher, I'll give you a paradox. I advise you to stop following advice.

That's right

(Applause) Let's not wrap up with a mistake that happened, because it would be disrespectful to have this kind of family warmth.

Do you remember the story of the book and the story of going to the farm?

When parents do what works for them, great things happen.

As a family member, I want you to remember that, no matter what kind of family you have, what you need is a warm relationship.

you don't have to be an expert to do that

Most of us can do it, we will struggle, and sometimes we need advice.

When that happens, remember three things.

Listen for Helpful Advice for Your Family

You are the expert. You are the one who lives with the family.

And finally, believe in your own abilities and creativity, because you can make your own.

thank you

(applause)

In the spring of 2004, I was a new mom and a young rabbi, and the world was in turmoil.

I'm sure you all remember

Every day we heard horrific news about the Iraq war.

There is a wave of terrorism spreading all over the world

It was as if humanity had spiraled out of control.

I remember the night I read the news about a series of coordinated explosions in the Madrid subway, and I woke up and made my way to the bed where my six-month-old daughter was sleeping sweetly, listening to the rhythm of her breathing and feeling a sense of urgency rushing through my body.

We lived in a time of dramatic change in political, religious, demographic and ideological structures.

I felt threatened by everything

I remember thinking, 'What kind of world did we bring this child into?

"How should I resolve this as a mother and religious leader?"

Of course, we knew that in this rapidly changing world, religion was clearly going to be the main battlefield, and it was already clear that religion was an important part of the problem.

My question was, can religion also be part of the solution?

Throughout history, people have committed horrific crimes and atrocities in the name of religion.

And since the turn of the 21st century, religious extremism has clearly been on the rise again.

Our research shows that over the past 15 to 20 years, hostilities and religious-related violence have increased globally.

But we don't even need research to prove this, because how many of you would be surprised to hear that when you hear the news of an explosion or a shooting, the last thing you say to someone just before they shoot, or just before they throw the bomb, is the name of God.

In this day and age, it shouldn't surprise anyone to hear that someone has taken another's life to prove their love for God.

An example of religious extremism in America is when white anti-abortion Christian extremists attacked Planned Parenthood in Colorado Springs, killing three people.

So is the case of an Islamic State-inspired couple who broke into an office party in San Bernardino and killed 14 people.

And even if religious extremism doesn't lead to violence, religion is used as a point of contention to drive a wedge into political division, ironically leading to the justification of disrespect for women, discrimination against LGBT people, racism, Islamophobia, and antisemitism.

If we're going to worry about the future of religion and faith, we need to take these realities seriously.

We should be clear that this is a religious fiasco.

But the point is, this is not the only problem with religion today.

At the same time, we need a religion that can counter extremism with great force. Religion suffers from a second fatal phenomenon, which I call religious rutiness.

Our organization and our leaders are trapped in a memorized paradigm that is lifeless, visionless, soulless.

explain what this means

One of the great joys of being a rabbi is standing under the canopy with the bride and groom at a Jewish wedding ceremony and helping them declare the sacred love they have found for each other.

If you have an experience, try to remember it, or just imagine it. How is your experience under the canopy on your wedding day different from how you feel six or seven years later on your anniversary?

(Laughter) If you're lucky, it might be the same for 16 or 17 years. I think the average person would probably wake up on the morning of their anniversary and realize they forgot to make a reservation at their favorite restaurant, had their card ready, and just hope they forgot.

Religious ceremonies and ceremonies are designed primarily to be anniversaries and serve as vessels to hold the memories of your first encounter with religion, the divine awakening experience.

The problem is, centuries later, anniversaries are still on the calendar, but love died long ago.

And we just repeat endlessly, aimlessly, meaningless words, standing and sitting as we are told, clinging to tenacious dogmas and perfunctory practices that are utterly alien to modern reality, simply because that's what we've been doing.

Religion is on the decline in America

Throughout, churches, synagogues, and mosques all lament the difficulty of maintaining engagement with younger generations who are not only uninterested in institutions that are at the heart of their traditions, but completely uninterested in religion itself.

What they have to understand is that there is a generation of people who are horrified by the violence of religious extremism, and that there are people who have rejected religion because of the emptiness of religious ruts.

Of course there is a bright side as well.

In the midst of these two crises in religious life, 12 or 13 years ago, I began to see if in some way we could recapture the spirit of the Jewish tradition and make it meaningful and purposeful in a world at war.

I started to wonder what the religious life of the next generation would look like if we took in the power of this generation of great thinkers and thought boldly and powerfully and imaginatively.

We had no money, no place, no plans, but we had email.

I sat down with my friend Melissa and emailed some friends and colleagues.

Basically, it's like, "Before you abandon your religion, why don't we revisit the teachings of Judaism together? See you this Friday night."

I was expecting about 20 people to come.

135 people attended that day.

There were cynics, faith-seekers, atheists, and rabbis.

Many said that night was the first meaningful religious experience of their lives.

And so I made the only rational choice I could make in such a situation, quit my job, and set out to pursue my big dream of rethinking and rebuilding my religion. I call this activity "IKAR," which means "base" or "center of things."

Ikar is not alone in the religious world.

There are leaders of Judaism, Christianity, Islam, and Orthodoxy, by the way, many of them women who want to get back to the heart of our traditions and who firmly believe that now is the time for religion to be part of the solution.

We went back to the sacred religions, and found that all religions contained material that justified violence and fundamentalism, but also contained material that justified empathy, coexistence, and kindness. When someone read a scripture as a lesson of hate or revenge, we could also receive a lesson of love and forgiveness from that same scripture.

I have now learned that communities, including the emerging Jewish communities on the East and West Coasts — mosques for women, black churches in New York and North Carolina, sacred buses of nuns that travel across our country with messages of justice and peace — share the spirit of faith that is now emerging in the form of a resurgent religion in this country.

While the specific texts of faith and religious practices are very different from each of these individual communities, there is a consistent thread that connects them.

I would like to share four principles

First Awakening—Awareness

We now live in an unprecedented world of access to information about the world's tragedies happening in every corner of the planet.

Within 12 hours, 200,000 people saw pictures of Aylan Kurdi's dead body washed up on a Turkish beach.

we all saw this picture

I saw this photo of a five-year-old boy rescued from the rubble of an Aleppo building.

When I see pictures like this, I feel compelled to do something.

There's a Jewish story about a traveler walking down the street who sees a beautiful house on fire and says, "Why does no one care when this beautiful house is on fire?"

We learn to realize that if the world is on fire like this, it is our responsibility to open our hearts and eyes and help put it out.

this is very difficult

Psychologists say that as we learn the world is collapsing, we become more inactive.

This is called mental paralysis

Somewhere we mentally close our hearts

Somewhere along the line, religious leaders forgot that it's our job to make people uncomfortable.

We wake people up, pull them out of their indifference, face their pain, and claim that we dare to do what we don't want to do and see what we don't want to see.

Because we know that social change only happens when -- (Applause) -- we're awake to notice a fire in our house.

The next principle is hope What is hope

Hope is not naive Hope is not an addictive drug

Hope may be the single greatest act against pessimistic politics and a culture of despair.

Hope frees us from the places that hold us back, and at the same time, "You can dream again and think of possibilities. They can't control you."

because it teaches

This summer, I took my 13-year-old daughter, who is a few centimeters taller than me, to hear my friend Otis Moss preach at an African American church south of Chicago, and there I saw hope.

Already that summer, 3,000 people had been shot in Chicago between January and July.

I walked into that church and listened to Pastor Moss preach, and when the sermon was over, this beautiful choir of 100 strong women stood up and began to sing.

"I need you you need me

i love you i need you to live

I knew in that moment that this is what religion should be.

It gives people a sense of purpose, a sense of hope, and restores a sense that they and their dreams are intrinsically important, in a world that they say doesn't matter.

The third principle is strength.

Rabbinic tradition is to walk around with two pieces of paper in your pocket.

One is "I am but dust and ashes"

I am not everything

I can't control everything and I can't do it alone

On the other, "This world was made for me"

It's true that you can't do everything by yourself, but it says that you can always do something.

i can forgive

i can love

i can join

you can protest

i join the conversation

We still hold to religious rituals and attitudes to anchor the paradox between the powerless and the powerful.

In the Jewish community, the only time we're completely on the ground is during the holidays.

This means completely obeying God

Now in our community, when we rise from the ground, we stand with our hands up and say, "I am strong, I am great, I am worthy.

I can't do everything, but I can do something."

In a world that makes us believe we are invisible and powerless, religious societies and rituals remind us that whatever time we have on this planet, whatever talents and blessings we are given, no matter what help is available, we can and must use it to make the world a fairer and more loving place.

The fourth and final principle is that we are related to each other.

A few years ago, a man walking along the coast of Alaska picked up a soccer ball that had Japanese writing on it.

He took a picture of it, posted it on social media, and a Japanese teenager contacted him.

He lost everything in the devastating tsunami that hit Japan, but he was able to recover a soccer ball after it was swept across the Pacific Ocean.

the world has really gotten smaller

It's hard to notice how we, as humans, are connected.

As we know, it's systems of oppression that benefit most from the lies of excessive individualism.

what is this

If a young black man is harassed by the police, I should be fine with it, because my Jewish kids, who look white, probably won't be stopped by the police while driving like a black man.

But no, this is my problem too.

And transphobia, hatred of Islam, and all forms of racism are all our problems.

Anti-Semitism is also our problem

because emma lazzaro was right

(Applause) Emma Lazarus was right when she said that no one is free until everyone is free.

we all live together

And now, somewhere at the intersection of these four principles, awakening and hope, strength and interconnectedness, a multi-religious movement for justice is sprouting up, asserting itself as a counter-trend, arguing that religion can and must be a force for good in our world.

Our hearts are wounded by the religious mistakes of extremism. We deserve more than a rutted, flawed religion.

Now is the time for religious leaders and organizations to lead the spiritual and cultural change that this country and the world crave. A change is called for, towards love and justice, equality and dignity for all.

our children deserve more of the world

thank you

(applause)

science

Hearing those words will bring back boring memories for many of you, memories of high school biology and physics classes.

But if you ask me, my high school classes had very little to do with science.

It was the "what" of science

was the history of what others discovered

As a scientist, I'm most interested in how science advances.

Because science is the perception of processes.

We make observations, and from observations, extrapolate and interpret observations, and from that make predictions that can be demonstrated in experiments and observations.

Let me give you some examples

The first thing humans noticed was that it seemed like the earth was below them, the sky was above them, and the sun and moon were revolving around them.

The human presumed interpretation at the time was that the Earth should be at the center of the universe.

The prediction was, "Everything must be orbiting the Earth."

The first real test of this prediction came when Galileo looked into the night sky with his first telescope, and discovered the planet Jupiter and its four moons.

Galileo used these four moons to track Jupiter's orbit and realized that Jupiter also didn't orbit the Earth, but the Sun.

The prediction has been disproved

This dismissed the theory that the Earth was at the center of the universe.

Another example: "Lord Newton realized that things fell to Earth."

The presumed explanation was gravitational force, predicted that "all things fall toward the earth."

But of course, not everything falls to the ground.

So has the theory of gravity been rejected?

Instead, the theory was revised, and gravitation pulls an object toward the Earth as "unless there is an equal and opposite force."

From here we learned new things

And think about how we started to turn our attention to birds and their wings, and the discoveries that came from thinking like this.

Inferences are disproved, exceptions and anomalies reveal what we didn't know, and lead to new discoveries.

This is how science moves forward and learns new things.

An expression that the media sometimes uses and, even more rarely, scientists sometimes use is to say that something has been "scientifically proven."

As you can see, science doesn't prove anything conclusively that it's forever.

Hopefully, science will continue to have the curiosity to search for the next anomaly, and when we find the next anomaly, when we find the next anomaly, we will not forget the humility to notice it, just like we did when we discovered the moons of Jupiter.

Now let's switch gears for a moment.

The caduceus, the symbol of medicine, has many different meanings for different people, but in the general discussion of medicine it turns into a technical problem.

A debate in Congress and in insurance company boards is how we pay for health care.

Ethicists and epidemiologists have racked their brains on how best to distribute care, and hospitals and doctors have become utterly preoccupied with how best to deliver care safely, using protocols and checklists.

all of the above is good

But they all have, on some level, the premise that medical textbooks are finished products.

When we measure the quality of medical care, we first use the time it takes to receive medical care.

This is not surprising, because in today's climate, medical facilities start by focusing on AUTOBACS-like responsiveness.

(Laughter) Fresh out of medical school, the only problem for me was that I didn't have that nifty little device that auto mechanics have that you can plug into your car and figure out exactly what's wrong -- because medical textbooks are incomplete.

medicine is science

Medicine is an awareness of processes.

We make observations, extrapolate interpretations of those observations, and make demonstrable predictions.

Most predictions in medicine are tested against human populations.

If you recall your boring biology class, the properties of a population are those that describe a Gaussian curve, a normal distribution, around a mean.

So in medicine, we make predictions based on putative interpretations, and then test them in human populations.

What I mean by that is that the knowledge and expertise that we've come to know in medicine is collectively acquired, and we're only allowed to apply it until we find the next peculiar case or exception, and we learn about something we don't really know, the moons of Jupiter.

Now, as a surgeon, I treat patients with sarcoma.

Sarcoma is a very rare case of malignant tumor

It is a cancer [malignant tumor] that develops in muscles and bones.

All of these patients are singular cases, exceptional cases.

None of the surgeries I've performed on sarcoma patients have been based on the most reliable population-based evidence in medicine, randomized controlled clinical trials.

Some people tell us to think outside the box, but there is no box for sarcoma.

When you're immersed in the uncertainty, the unknown, the exception, the idiosyncratic case related to sarcoma, you easily acquire two values ​​that I consider to be the most important to all science: humility and curiosity.

If I'm humble and curious, when a patient asks a question and I don't know the answer, I'll ask my colleague, who may know another similar case.

It will also build an international cooperation system.

Patients will start talking to each other through chat rooms and support groups.

It's through this kind of humble and curious communication that we try and learn new things.

Take one of my patients, who had a malignant tumor around his knee.

Through communication of humble curiosity and international cooperation, I learned that when I had to remove a cancerous [sarcoma] knee, I could give the heel the role of the knee.

Now with the prosthesis, the patient can run, jump and play.

This opportunity for treatment is due to international cooperation.

Patients found it desirable because they personally contacted other patients who had undergone the same treatment.

So the exceptions and singular cases in medicine can make us realize what we don't know and lead us to new ways of thinking.

Now, very importantly, all the new ways of thinking that come from the singular cases and exceptions in medicine don't just apply to the singular cases and exceptions.

It's not just how to manage sarcoma patients that we learn from sarcoma patients.

Sometimes the idiosyncratic cases and exceptions teach us important things about the general population.

Like a solitary tree out of a forest, singular cases and exceptions grab our attention and lead us to a larger understanding of what a tree is.

We often argue that you can't see the forest for the trees, but sometimes you lose a tree in the forest.

But a single, prominent tree makes these relationships that define a tree, the relationships that arise between the tree's trunk, roots, and branches, much clearer.

Even if the trunk of the tree is crooked, and even if the tree has a very extraordinary relationship between the trunk, the roots and the branches, the tree nevertheless catches our attention, and we can observe it, and then examine it in the general population.

I said sarcoma was rare.

About 1% of all malignant tumors

As you probably know, cancer [malignancy] is considered a genetic disease.

By genetic disease, what we mean is that when an oncogene is activated in a cancer cell, or when a tumor suppressor gene is deactivated, cancer results.

You might think that we learned about oncogenes and tumor suppressor genes from common cancers -- breast cancer, prostate cancer, lung cancer -- but that's not the case.

We first learned about oncogenes and tumor suppressor genes from only 1% of cancers [malignant tumors] called sarcomas.

In 1966, Dr. Peyton Routh was awarded the Nobel Prize — for discovering that chickens carry contagious sarcoma.

Thirty years later, Harold Varmus and Michael Bishop uncovered the identity of the contagious factor.

It was a virus with genes. It was a virus with genes. It was an oncogene called src.

I'm not going to say that src is the most important of the oncogenes.

Nor am I saying that src is the most frequently activated oncogene in all cancers.

src was the first discovered oncogene

It was this anomalous and singular event, src, that caught our attention, and it led us to the next big thing in biology.

Now, TP53 is the most important tumor suppressor gene.

TP53 is the most frequently inactivated tumor suppressor gene, found in almost all types of cancer.

But we didn't learn that from common cancer.

What we learned was that Lee and Fraumeni looked at several families and noticed that these families developed sarcoma at an unusually high rate.

I said that sarcoma is rare.

If sarcoma, which is diagnosed in only one in a million people, is diagnosed in two people in one family, it is occurring too often in that family.

The fact that sarcoma is rare is what draws our attention and leads us to new ideas.

Now, many of you might say, and it makes sense, "Yeah, Kevin, that's great, but I'm not talking about wings."

"You're not talking about the satellites that hover around a planet called Jupiter, are you?"

"This is human

This peculiar case or exception may lead to scientific progress, but this will be human."

And all I can say is that I know it all too well

I've had conversations with patients with this rare and life-threatening disease.

I am writing about that conversation.

This dialogue is terribly difficult

Dialogue is full of bad words, like "I have bad news" and "I can't help you."

Sometimes these conversations boil down to one word: "The end of life."

Silence can be uncomfortable

The silent parts of medicine can be as important as the words we use in these conversations.

What is the unknown?

What kind of experiments are you doing now?

Let's demonstrate

Look at this phrase on the screen it's 'no where'

Note the position of the spaces

Let's move "no where" by one space. "now here" means exactly the opposite. Just move one space.

On that unforgettable night, I entered a patient's hospital room.

I had a long operation that day, but I still wanted to see the patient.

The patient is a boy and was diagnosed with osteosarcoma a few days ago.

He and his mother had been seen by a chemotherapy doctor earlier in the day, and the boy had been admitted to the hospital to begin chemotherapy.

When I arrived at the child's hospital room near midnight

The child was asleep, but I noticed that the mother was reading something with a flashlight by the child's bed.

Mom went out into the hallway and talked to me for a few minutes.

It turns out that what she was reading was the protocol that the chemotherapy doctor had given her that day.

mother memorized it

And I said, "Dr. Jones, you said you can't always cure this type of cancer. You can't always cure this type of cancer. But I feel like I could learn this protocol and do it.

It's a very difficult treatment, but I feel like I can do it that way.

I quit my job and live with my parents

I want to keep my child safe."

i didn't tell her

I didn't interrupt her to correct her thoughts.

She relied on the protocol for treatment, but even if she followed all the instructions, she wasn't guaranteed to save her son's life.

but i didn't say

I didn't fill in the blanks that weren't written

But after a year and a half, her son died of cancer [osteosarcoma] despite treatment.

Should I have told my mother?

Now, many of you may say, "So what?

i am not sarcoma

I don't have sarcoma in my family either

Then everything will be fine, and maybe it's nothing to do with my family."

it might be the best

sarcoma may not matter in your life

However, the parts of your life that are not written down in medicine are important to your life.

I have a guilty secret that I didn't tell you

I said that medicine makes predictions about populations and tests them, but there's something I'm not saying, and there's something that medicine often doesn't tell you: every time you meet medicine, every time you meet medicine, you know that you're certainly in the population, but what neither you nor your doctor knows is which part of the population you belong to.

So every encounter with medicine is an experiment.

To be a patient is to be a test subject.

Good results and bad results

If the treatment goes well, we're on track, we're quick to act, we're arrogant and we speak confidently.

But when things go wrong, sometimes you need something different.

A colleague removed a tumor from a patient's leg.

he had concerns about this tumor

I said that this tumor might be a high-risk type of tumor that recurs in the same site.

But in his conversations with his patients, he was very self-assured about exactly what they might want.

"We've removed all the tumors, so it's going well," he said.

The patient and her husband were very pleased.

My husband and I went out for a celebratory dinner and opened a bottle of champagne.

The only problem was that after a couple of weeks, the patient started noticing a new nodule in the same spot.

It turned out that the tumor was left behind and hadn't completely healed.

But what happened at that stage really got my attention.

That colleague came to me and said, "Kevin, can you take care of this patient for me?"

"Why? You know what to do as much as I do

You didn't treat me wrong," I said.

Then my colleague said, "Please, I want you to take care of this patient for me."

He was embarrassed, not because of the treatment, but because of the overconfident conversations he had with patients.

So I performed a more invasive surgical procedure, and then had a completely different conversation with the patient.

"We've probably removed all the tumor, so it's probably going well, but our treatment is also an experiment.

Please take care here and see for yourself

I will also pay attention to this

And let's see together if this surgery was effective in removing the cancer [sarcoma]."

You can take it, but I don't think this patient would have celebrated with her husband with champagne after talking to me.

But this patient then became a scientist, not just a test subject.

So I encourage all of you to look for humility and curiosity in your doctors.

20 billion people visit a doctor each year, and that person becomes a patient.

You or someone dear to you will soon become that patient.

how do you talk to the doctor

what would you say to the doctor

What will your doctor tell you?

Doctors can't tell you what they don't know. Doctors will say they don't know when they don't know what's being asked, if they just ask.

So join the conversation

thank you

(applause)

I want to talk a little bit about where technology is headed.

New technologies keep coming and you'll be amazed at what they bring.

But the truth is that most technologies are much more predictable than you might think, because there's always a tilt to how technology works.

These currents come from the very physical and chemical properties of wires, switches, and electrons, and they create the same patterns over and over again.

It's this pattern that creates the flow and the tilt.

You can think of this like gravity.

Imagine raindrops falling into a valley

The path that a single raindrop takes into a valley is unpredictable.

We don't know where we're going, but the general direction is inevitable, and it's going down and down.

There's this kind of flow and inevitability imprinted in the mechanics of technology, so you can guess how things are going in general.

So in a big way, I would say that the arrival of the phone was inevitable, but the iPhone was not.

The Internet Was Inevitable, But Twitter Wasn't

There are various trends going on at the same time right now, but I think the most important one among them is the trend of making everything smart.

I call this "cognition," but it's also known as artificial intelligence (AI).

I believe that this is going to be one of the most impactful developments, trends, directions, drivers in society in the next 20 years.

Of course it has already started

We already have AI, and AI is working invisibly. In hospital administration buildings, AI is diagnosing X-ray images better than a human doctor.

Law firms also use AI to comb through legal evidence, and they do better than human paralegals.

AI is also used to control the airplane that you boarded when you came to the venue.

Human pilots only fly for seven or eight minutes, and the rest is controlled by AI.

Of course, Netflix and Amazon have AI running behind the scenes to make recommendations.

Is it like this now?

And then, as you know, a more advanced example of this is AlphaGo's victory over the world's top Go player.

but that's not all

Playing video games is also playing against AI.

And more recently, Google trained an AI to learn how to play video games.

We've already taught you how to play video games, but learning how to play video games yourself is the next step.

This is "artificial intelligence"

We are now trying to make this artificial intelligence smarter and smarter.

There are three aspects of this big trend that are not well recognized, and if you understand these three things, you'll have a much better understanding of AI.

AI will also become easier to accept.If you don't accept AI, you can't steer AI.

It is only by accepting the big trend that practical things can move forward.

So let's talk about these three aspects.

The first is that our own intelligence has very little understanding of what intelligence is.

We tend to think of intelligence in a one-dimensional way, like a sound that keeps getting louder and louder.

Intelligence quotient (IQ) is just that.

It started with a simple, low IQ like a mouse, then a chimpanzee, then a dumb person, then higher, then an average person like me, then a genius, and so on.

Intelligence, as measured by this IQ alone, is only getting higher.

this is completely wrong

This is not intelligence, at least not human intelligence.

Intelligence is more like a harmony of sounds, a collection of sounds played by different cognitive functions.

Humans have a wide variety of intelligences

We all have probably 100 different types of intelligence, such as deductive thinking, emotional intelligence, spatial intelligence, and so on, and each of us has a different level of intelligence.

And animals are animals, and they have yet another set of intelligences -- a set of different intelligences, and they may even have the same functions that we do.

Animals can think just like humans, but they have a different set of intelligence, so there are situations where animals are better than humans.

other intelligence may be lower

We're going to design our machines in the same way, so that some kinds of intelligence are much higher than humans, but we don't need many others, so they're still far below humans.

This is how we're trying to artificially patch together different intelligences to give AI a more varied artificial cognitive ability.

And it's going to become more specialized.

Computers are already smarter than humans at math, GPS is smarter at spatial navigation, and Google and Bing are smarter than humans at long-term memory.

We're trying to take all these different thoughts and now put them in cars.

For self-driving cars, but also because it doesn't drive like a human.

I don't think like a human-

that's the miso

No more distractions, no more worrying about forgetting to turn off the stove, no more wishing I had majored in accounting.

just drive

(Laughter) You just drive, right?

Maybe they'll sell it with a marketing slogan like this: "Zero consciousness."

The car is unconscious, so it doesn't care about the things I just talked about, it doesn't get distracted.

So what we're trying to do is create as many kinds of thinking as possible.

We're going to fill this space with all kinds of thoughts.

In the realm of business and science, there are real problems that are too difficult for the human mind alone to handle.

So when that happens, we do it in two steps: we create new kinds of thinking, and we work side by side to solve very big problems, like dark energy and quantum gravity.

So we're trying to create an unknown intelligence.

You could even call it an "artificial alien," in a way.

It should help you think different, because thinking different is what drives creation, wealth, and the new economy.

The second aspect is that we are using AI to drive the next industrial revolution.

The first industrial revolution happened because of the invention of what we might call "artificial power."

Before that, in the Agricultural Revolution, if you wanted to build anything, you had to use either human muscle or animal power.

I couldn't do anything else

The big innovation in the industrial revolution was the use of steam and fossil fuels to create this artificial power, and then you could do anything with it.

So now, while driving down the highway, you can flip a switch and have 250 horsepower at your command. It's 250 horsepower.

This artificial power is also delivered to every home, factory and farm through the power grid, and anyone can buy that artificial power just by plugging something in.

This also led to a new source of innovation, where on farms, hand pumps were combined with this artificial power, or electricity, to create electric pumps.

In the midst of thousands and tens of thousands of such changes, that formula gave birth to the Industrial Revolution.

Everything around us, this development we enjoy, is the product of that combination.

And now we're trying to do the same thing with AI.

AI can be delivered through networks, so pick up that electric pump.

Add artificial intelligence to that and you have a smart pump.

Millions of such changes would be the next industrial revolution.

A car on the highway had 250 horsepower, plus 250 brain power.

become a self-driving car

AI will be the new commodity, the new public resource

AI will circulate in a network called the "cloud", just like how electricity spread.

And everything that was once electrified is now cognitive.

So what I'm trying to say is that the formula for 10,000 startups that's coming up is pretty simple, it's just adding AI to something.

This formula is exactly what we're trying to do

That's what we're about to start the next industrial revolution.

By the way, if you log into Google at this moment, you can buy AI and process 100 times for 6 yen.

it's already available

Now, the third aspect is what the robot can do by giving this AI a body.

Robots will become bots, and they'll be doing a lot of the work that we've been doing.

Because jobs are collections of tasks, our jobs will be redefined, because some tasks will be done by robots.

But with the introduction of robots, there's going to be new categories, and there's going to be a lot of new jobs that I didn't realize I needed before.

There will be new jobs, new jobs that will be needed by robots, just as many of the new jobs created by automation we didn't think we needed before, but now we need them.

Robots will create more jobs than they take from humans, and the point is that much of the work we give them will be defined in terms of efficiency and productivity.

If a task, whether it's manual work or mental work, can translate into efficiency and productivity, it's done by bots.

Productivity belongs to robots

We are good at wasting time

(Laughter) We're very good at being inefficient.

Science is inefficient to begin with.

You move forward by failing one after another

We make progress because we do tests and experiments and it doesn't go well, and without that, we don't make progress.

Science is built on itself not being very efficient.

Innovation is also inherently inefficient, because you build prototypes and try things that don't work, that don't work.

Exploration is inherently inefficient.

Art is also inefficient

Relationships are not efficient

We are drawn to these things because they are inefficient.

Efficiency belongs to robots

I think we're going to be working with these AIs in the future, because they think differently than humans do.

When Deep Blue beat the world chess champion, people thought it was the end of chess.

But the fact is that the current chess world champion is not an AI.

not even human

A team of humans and AI

It's neither doctors nor AIs who are best at medical diagnosis, but teams of both.

We'll be working with these AIs in the future, and in the future, how well we get along with bots will determine our salaries.

And that's the third aspect, which is that robots aren't against us, they're cooperating because they're used by everyone, unlike us.

We work together instead of against each other

Well, what will happen in the future?

Twenty-five years from now, if someone were to look back and see us talk about AI, they'd say, "That's not AI. The Internet is nothing compared to what we'll be using 25 years from now."

There are currently no AI experts

There's a lot of money flowing into AI, trillions of dollars being poured into it.

It's only just begun It's been an hour since everything started

1 hour after internet started

It's been an hour since the coming future started

Twenty years from now, the most popular products that everyone will use -- AI-powered products haven't even been invented yet.

That means you're still in time.

thank you

(Laughter) (Applause)

My journey began in the Bronx, New York, in a one-bedroom apartment with two sisters and an immigrant mother.

I was on good terms with my neighbors.

everyone was alive

All of a sudden, we were doing meringues (dances), chatting with neighbors on the doorsteps of our apartments, playing dominoes, and having lively conversations.

That was my hometown.

it was not simple

In fact, everyone in school knew where we lived, because that's where people come to buy marijuana and drugs.

In the drug trade, there's also conflict, and sometimes we'd fall asleep to the sound of gunfire.

I had an anxious childhood, anxiety for my own safety.

my mother felt the same

We feared that the violence we saw on a daily basis would threaten our lives. Living in poverty means that our neighbors in the same neighborhood might hurt us.

We had all grown up in the Bronx, but my mom was so apprehensive that she immediately decided to drive to Connecticut. (Laughter) She put me in a boarding school with a full scholarship.

Never underestimate the power of a mother determined to protect her child.

(Cheers) (Applause) For the first time in my life at boarding school, I was able to sleep peacefully.

I left my dorm room unlocked, walked barefoot on the lawn, and looked up at the star-filled night sky.

I was happy with my first experience

But there are also other first experiences

I immediately felt that it wasn't my place.

When I realized I wasn't speaking properly, my teacher made me practice how to pronounce certain words correctly in front of the class over and over again in order to explain how to speak properly.

One day, my teacher instructed me in the hallway to say, "Earth King."

the teacher says it out loud

"Dina ain't 'Axing' it's like she's running around with an ax

You look stupid."

Now, you can imagine the cynicism of my classmates at this point.

One time, when I walked into a classmate's dorm room, she was wary of her valuables around me.

I wondered to myself why I should care about such things.

And then this happened, and another classmate walked into my room and yelled, "No!" because I had hair grease on my scalp.

It's emotionally hurtful when young people are not able to be who they are and have people twist who they are so they can be accepted by others.

it's a kind of violence

Ultimately, my story became a classic success story.

I went to boarding school, went to college in New England, studied abroad in Chile, and then returned to the Bronx to become a middle school teacher.

I received a Truman Scholarship, a Fulbright Scholarship, and a Soros Fellowship.

still going on

(Laughter) But I'll stop.

(Laughter) I got my PhD from Columbia University.

(Cheers) (Applause) And then I got a job at Yale University.

(Applause) I'm proud of what I've accomplished so far in my life.

I've always had imposter syndrome

Just because I existed as a "symbol of equality" didn't mean that I was valued for who I really was, but that anyone could have been better.

Or that you were the exception and had to leave your loved ones behind—

That's the price that I and many other black people pay to learn.

(Applause) I'm always watching myself.

Are your pants too tight?

Should you wear your hair up or an afro?

Should I defend myself, or should I just say "She's mad" and be misunderstood?

Why did I have to leave the Bronx for a better education?

Why did I have to endure the trauma of erasing myself as a black girl from the Bronx raised by an Antigua-born mother in the process of getting a better education?

So when I think about current education reform initiatives, I can't help but ask, what are students of color learning about themselves?

A 30-year study has found that students of color are three times more likely to be suspended or expelled than white students, and receive harsher penalties for the same offenses.

We know this by the absence of their lives and stories in the learning process.

In a children's library review of nearly 4,000 books, only 3 percent were African-American.

They're also realizing the reality of the lack of teachers who are in the same position as they are.

An analysis of data from the National Center for Education Statistics found that 45 percent of middle-aged to high school students across the nation are of color.

Young people of color are paying a heavy price for the education system's message that they must be controlled and have to leave their identities behind in order to succeed.

Every student has the right to a safe education without deception.

(Applause) It is possible to create classrooms that are emotionally and physically safe and academically successful.

When I went back to the Bronx and started teaching, I did it in my classroom.

What was it like?

I put my students' lives, their histories, their identities at the center of my teaching.

I did everything so that they knew that they were being supported by everyone around them to be their best selves.

We can't control our unstable home environment, our fear of finding the next meal, our noisy neighborhoods that keep us from sleeping, but we create loving classrooms that make us proud of who we are and make us feel that we matter.

Now, every time I hear or say the word "asking," I feel like I'm back in high school.

Remember "ass" and "king" and put them together, and try to speak in a way that people in power want to hear.

There's a better way to not force children of color in a dilemma, and that's to keep them connected to their families, hometowns, and communities, and to teach them to trust their instincts and have faith in their own creative genius.

thank you

(applause)

When people find out that I'm writing a book on time management, they make two assumptions.

Part 1 I'm always on time No such thing

I have four small children, and sometimes it's tempting to blame them for being late, but sometimes it's never their fault.

I was late for a talk on time management.

(Laughter) We used to take time out on the spot to savor that sarcasm.

Myth #2 I use a lot of tricks and tricks to carve out little bits of time here and there.

Sometimes magazines ask me to tell stories like that, like how you find extra time in your day.

If you gradually reduce the amount of time you spend on your daily activities, it will accumulate and you will have time to devote to the important things.

To me, this whole premise is completely questionable, but I always like to ask what people were thinking before they called me.

What I found particularly interesting was that I didn't have to wait for an oncoming car to go shopping, so I only went to the store on the side of the turn (laughs).

I watch my favorite TV programs by recording them and fast forward the commercials.

Now, every half hour, you'll save eight minutes, and every two hours you watch TV, you'll have 32 minutes to exercise.

(laughs) It's true.

Find 32 minutes to exercise Do you know another way?

Don't watch TV for two hours a day, right?

(Laughter) Anyway, the idea is that if you save time here and there and add it all up, you can finally do what you want.

But after studying how successful people spend their time, and looking at their schedules by the hour, it's quite the opposite.

The life we ​​want is not built by saving time.

If you live the way you want, you will automatically save time.

let me explain

In a recent project, I used a time diary to observe the lives of 1,001 very busy women.

They're busy people who have tough jobs, some of them are entrepreneurs, they're taking care of their children, they're caring for their parents, they're even involved in community affairs.

I asked them to keep track of how they used their time for a week, figured out how long they worked and slept, interviewed them about how they did it, and wrote a book about it.

One of the women who showed me her timelog was out Wednesday night running errands.

When I got home, my water heater was broken, and by then it was leaking all over my basement.

If you've been through this, you know it's a devastating and horrifying flood.

So she did a quick cleanup that night, and the next day she had a plumber come in and the next day she had her ruined rug professionally cleaned.

It's all recorded in her timelog.

It ended up taking seven hours that week.

it's 7 hours

It's like finding an extra hour in your day.

But if I had asked her earlier in the week, "Can I have seven hours of training for a triathlon?"

"Could you spare seven hours to consult with promising people?"

I'm sure she would have given the same answer as most of us, "No way, can't you see I'm busy?"

But when the basement was flooded and she needed seven hours, she found seven hours.

What this shows is that time is very elastic.

You can't increase your time, but you can increase your time to match what you decide to do.

So the trick to time management is to treat your priorities like a broken water heater.

The best way to explain this is in the words of one of the busiest people I interviewed.

He was busy because he had a small company with 12 employees and was raising six children in his spare time.

I reached out to her for an interview, to find out how she "gets it all."

It was one Thursday morning when I called to talk to her, but she wasn't there.

that may be the case

But the reason she wasn't there was because I was out hiking.It was a beautiful spring morning and I wanted to go hiking.

Of course, I was even more intrigued, and when I finally caught her, she explained,

"Okay Laura, everything I do, all the time I spend is my choice."

So instead of saying, "I don't have time to do x or y or z," she says, "I'm not going to do x or y or z because it's not a priority."

"I don't have time" often means "not a priority."

Come to think of it, that's a more accurate representation

It's not true when you say, "I don't have time to dust the blinds."

If I get 10 million yen to dust off the blinds, I'll do it fast.

(Laughter) It doesn't happen, but it's not a matter of lack of time, I know you don't want to do it.

This way of thinking reminds us that time is a choice.

Of course, making the wrong choice can have disastrous consequences, and I'll admit that.

But we are smart creatures, and in the long run we have the power to fill our lives with things of value.

Then how?

How can you treat your priorities like that water heater failure?

First you have to decide what your priorities are.

Let me give you two ways to help you think about this.

Part 1: On the job side As the end of the year approaches, many people will surely be evaluated or evaluated.

Looking back on the achievements and “growth opportunities” of the past year

Retrospectives are useful for that purpose, but they're much more effective when you do them with an eye to the future.

Please think that now is the end of next year

You look back on your accomplishments It's been a very productive year professionally.

Name 3-5 things you did for that amazing result

This is how I can now look back on next year's achievements.

You can use this in your personal life too.

Many of you, like me, will receive a card in December with colorful folded papers, something like "Year-end report from the family."

(Laughter) It's kind of a clumsy piece of literature, and it tells you how wonderful, how brilliant, how busy everyone was in that family.

But letters like that are useful. They tell friends and relatives something important they've done in their personal life over the past year.

That year is over, it's gone, so think of it as the end of next year.

Name 3-5 things you did that made the year great

I can write next year's year-end greetings like this now.

don't send

(Laughter) Please, don't send it.

but you are free to write

Now, through performance reviews and year-end greetings, we have six to 10 goals to work on next year.

Then we need to break this down into actionable steps.

If you want to write a family history

First, you can read a few other people's family histories to get an idea of ​​how to write them.

Then you could come up with some questions to ask your relatives and make an interview appointment.

If you want to run a 5km marathon

Find and register for races, plan your workouts, and unearth athletic shoes from the back of your closet.

And -- and this is the big thing -- treat your priorities like that hot water heater failure, put it on your schedule first.

In order to do it, you need to think well in advance about how you want to spend your week.

I've found that the best time for this task is Friday afternoon.

Friday afternoon is what economists would call a "low opportunity cost" time.

Most people don't think on Friday afternoons like this: "Oh, I'm making big strides in my personal and professional life right now!"

(Laughter) But you have to think about what your priorities are.

Take a moment on Friday afternoon to create a priority list in three categories: work, relationships, and yourself.

By creating a three-category list, you can be conscious of what you need to work on in each of those three categories.

We think about work, not about relationships, not about ourselves.

Just make a short list, about 2-3 items each.

Then look over your schedule for the next week and figure out where you can put each item.

When to do it is up to you

For some people this is a complicated issue

Because some people's lives are harder than others.

Finding time for poetry classes can be difficult when you have several children.

I understand that

I don't want to underestimate anyone's hard work

But I think the numbers I'm about to tell you are encouraging.

There are 168 hours in a week

24 hours x 7 = 168 hours

I have plenty of time

If you work full-time, you'll have 40 hours a week, 8 hours of sleep a day, 56 hours a week, and the other 72 hours for other things.

I have plenty of time

If you work 50 hours a week, you might have a side job.

You still have 62 hours to do other things.

If you work 60 hours a week

52 hours left you can do other things

If you work more than 60 hours a week —

Are you sure about that?

(Laughter) In one study, people's estimated work hours per week were compared to their journal entries.

Those who said they worked more than 75 hours a week had an error of about 25 hours.

(Laughter) You can tell if the error is positive or negative, right?

Anyway, there are 168 hours in a week, and I'm sure you can find time for the things that matter.

If you want more time to spend with your kids, if you want to study more for your next exam, if you want to exercise for three hours and do volunteer work for two hours, you can do it.

You can do it even if you work more than full time

I have plenty of time, it's great, think about it

It doesn't take that long to do great things.

But what do we usually do if we have a little time?

You pull out your smartphone

and start deleting emails

Or I'm just hanging out around the house or watching TV.

But even for a short amount of time, it can show great power.

You can also use a little time for a little pleasure.

You can spend your commute on the bus reading something nice.

When I used to take two buses and the subway to work every morning, I would go to the library on weekends to find something to read.

It made the commute, well, mostly fun.

Work breaks can be used for meditation and prayer.

If you're too busy with work to have dinner with your family, it might be a good idea to have breakfast together instead.

The point is to look at the totality of your time and find the time to do the important things.

i sincerely believe

"I have time"

No matter how busy I am, I have time for the important things

If you just focus on what's important, you can build the life you want in the time allotted.

thank you

(applause)

This is a tuberculosis ward, and when this picture was taken in the late 1800s, one in seven people died from tuberculosis.

the cause was completely unknown

I had a hypothesis, but it was that I got this disease because of my constitution.

And tuberculosis was a glorified disease.

Also known as "labor cough," it was a disease of poets, artists, and intellectuals.

Some people really thought that tuberculosis increases sensitivity and inspires creativity.

In the 1950s, the discovery of tuberculosis as a highly contagious bacterial infection made it less romantic, but it opened up the possibility of developing drugs to treat it.

Then a new drug, iproniazid, was discovered. Doctors administered this drug with high hopes of a cure, and patients became cheerful.

Patients became more social and active.

One report said the patient was "dancing in the hallway."

Unfortunately, it's not necessarily a sign of recovery.

many people died

Another report describes an "unnatural euphoria" in patients.

This is how the world's first antidepressant was discovered.

Accidental discoveries are not uncommon in science, but they require more than just luck.

To discover, you must be able to recognize the object.

What I'm about to tell you is my first-hand experience as a neuroscientist, and that experience was accompanied by the opposite of accidental luck: inevitable luck.

But before that, let me give you a little more background.

Since the 1950s, fortunately, other drugs have been developed to treat tuberculosis.

In any other country, or at least in the United States, TB sanatoriums have closed, and now few people fear TB.

On the other hand, much of what happened with infectious diseases in the early 1900s applies to mental illness today.

All around us, we have mood disorders like depression, post-traumatic stress disorder, and PTSD.

One in four adults in the United States suffers from a mental illness, so even if you don't have one yourself or someone in your family, it's likely that someone you know has had it, even if you don't say it out loud.

Depression is now the leading cause of disability worldwide, surpassing HIV/AIDS, malaria, diabetes and war.

And like tuberculosis in the 1950s, we still don't know what causes it.

Once it develops, it becomes chronic, lifelong, and there is no known cure.

The second antidepressant, also discovered by chance in the 1950s, was developed as an antihistamine and can make people go into a manic state -- imipramine.

Whether it's the tuberculosis ward example or the antihistamine drug, it's been essential to realize that a drug designed to do one thing, say, to treat tuberculosis, or to suppress allergic reactions, can be used for something completely different, like treating depression.

And repurposing drugs like this is actually quite difficult.

When doctors first saw iproniazid's mood-enhancing effects, they simply didn't realize it that way.

Physicians were so accustomed to thinking of the drug as a tuberculosis drug that they simply listed its effects as just a side effect, a harmful side effect.

As you can see, many of the patients documented in 1954 experienced excessive euphoria.

And doctors feared that this euphoria might impede recovery from tuberculosis.

So the use of iproniazid was only recommended when the patient was severely ill and emotionally stable, which is, of course, the exact opposite of using it as an antidepressant.

Physicians were so accustomed to looking at drugs through the lens of one disease, tuberculosis, that they overlooked the greater possibilities for other diseases.

But in all fairness, I can't say it's just the doctor's fault.

"Functional fixation" has an effect as a bias.

This refers to the tendency to perceive an object only in terms of its habitual usage or function.

Another problem is mental set

It's kind of like our preconceived vision for how to solve the problem.

And this makes repurposing so difficult, which is why people with the ability to repurpose anything became the main characters of television dramas.

(Laughter) [MacGyver] Both iproniazid and imipramine were so powerful that they put me in a manic state and made me dance in the hallway.

Of course, this is noticeable

I'm wondering if I've overlooked something

Iproniazid and imipramine are not just examples of repurposing,

They have two things in common that are very important.

First, both have serious side effects.

These include hepatotoxicity, weight gain of over 20 kilograms, and suicidal thoughts.

Second, they both increase the amount of serotonin, which is a kind of chemical signal or neurotransmitter in the brain.

One or the other might not have been so critical, but the combination of the two dictated the need to develop safer drugs, and serotonin appeared to be a strong lead.

So, drugs that act more directly on the serotonergic nervous system, called selective serotonin reuptake inhibitors, or SSRIs for short, were developed, the most famous of which is Prozac.

This was 30 years ago, and since then, research has focused solely on optimizing drugs.

SSRIs are better than their predecessors, but they still have side effects, such as weight gain, insomnia, and suicidal thoughts, and they take a long time to come to fruition, four to six weeks in many patients.

It's also about when it works

There are many patients for whom these drugs do not work.

So, as of 2016, there is still no effective treatment for any mood disorder, only medications that control symptoms. This is like using painkillers instead of antibiotics for an infection.

Painkillers may help the symptoms, but they do nothing to treat the underlying disease.

It was the flexibility of our thinking that allowed us to recognize that iproniazid and imipramine could be repurposed in this way, which led to the serotonin hypothesis, which, ironically, in turn made us stick to it.

This is the brain signal serotonin depicted in the SSRI commercial.

I will tell you just in case, but this is an image

In science, to remove bias, we use double-blind trials to remove statistical bias about the results.

But bias sneaks into research subjects and research methods.

For the past 30 years, we've focused on serotonin and often ignored the rest.

There's no cure yet, but what if depression wasn't just about serotonin?

What if that wasn't even the main factor?

And when that happens, no matter how much time, money, and effort you put into it, you're never going to find a cure.

In the last few years, doctors discovered perhaps the first really new antidepressant since an SSRI, Calypsol, which is fast-acting, works within hours or a day, and doesn't affect serotonin.

It acts on another neurotransmitter, glutamate.

And this is also repurposed

It was originally used as an anesthetic in surgical procedures.

But while other drugs were immediately recognized, it took 20 years for Calypsol to prove to be an antidepressant, even though as an antidepressant it's probably better than others.

Maybe calypsol was too good an antidepressant to be understood.

I didn't see the mania that was the sign of the effect.

In 2013, at Columbia University, I was working with my colleague Dr. Christine Ann Denny to study the effects of calypsol as an antidepressant in mice.

Calypsol has a very short half-life and is cleared from the body within hours.

It was still in the pilot test stage.

We were saving money by injecting mice and a week later doing another experiment.

One of the experiments I was doing was stressing mice and using it as a model of depression.

At first it didn't seem to work

So maybe I should have stopped there

But after years of experimenting with this model of depression, something is wrong with the data.

I didn't quite get it

So we went back and reanalyzed the data in terms of whether or not they had been injected with Calypsol a week earlier.

and the result was

Look at the far left. When you put a mouse into this new environment, this box, it excitedly walks around and explores its surroundings. The pink line represents the actual distance that the mouse walked.

And then we put another mouse in the pencil holder so that the two can interact.

Just in case, this is also an image

A normal mouse searches the surroundings

I will also interact

let's see what happens

As a model of depression, when mice are stressed, like the box in the middle, they don't interact and they don't explore their surroundings.

It's usually hidden in the back corner behind the cup.

But the mouse on the right, which received a single injection of calypsol, explored and interacted.

It looks as if they weren't given any stress, but that's impossible.

Now, I could have stopped here, but Christine has been using calypsol as an anesthetic for some time, and she's been aware for years that this drug has strange effects on cells and certain behaviors, and it seems that the effects last for a few weeks after administration.

We thought it wasn't impossible, but we were very skeptical.

So what scientists do when they don't know for sure is to re-run.

I remember working in the animal lab, moving rats from box to box, and Christine sitting on the floor with a computer on her lap, out of sight of the rats, analyzing the data in real time.

And then, in the lab, I remember the two of us screaming, although it's not really good, the experiment worked.

The rats in question -- in many ways, are protected from stress, or exhibit an unnatural sense of euphoria.

we were so excited

It just seemed to go too well, and I started to have doubts.

I re-tested

And then we tested it in a PTSD model, and then we tested it in a physiological model where we administered stress hormones.

Have students experiment in class

On the other side of the world, we also had our French collaborators experiment.

And the same results were confirmed in each experiment.

Apparently, one injection of calypsol seemed to protect me from stress for weeks.

We published our results just over a year ago, but since then, various laboratories have confirmed their effectiveness.

Now, we don't know what causes depression, but what we do know is that 80 percent of cases are triggered by stress. Depression and PTSD are two different illnesses, but this is what they have in common.

Traumatic stress, such as intense combat, natural disasters, community violence or sexual assault, can cause PTSD, but not everyone exposed to stress develops a mood disorder.

The ability to recover from stress and not develop depression or PTSD is called stress resilience, and it varies from person to person.

Stress resilience is like a passive trait.

We used to think of it as a state of lack of susceptibility and risk factors for mood disorders.

What if it could be worn?

Maybe we can enhance our stress tolerance like wearing armor.

What we stumbled upon was the first drug to increase stress tolerance.

As I said earlier, a small dose of this drug can last for weeks, which is something you don't see with antidepressants.

On the other hand, this is a bit like the effect of an immune vaccine.

With immunization vaccines, it's not the vaccine that protects you when you actually get exposed to the bacteria weeks, months, years after you get the shot.

Your own immune system builds resistance and resistance, fights off bacteria, and keeps you from getting infected.

The usual treatment is that when you're exposed to bacteria, you get infected, and you get sick, you take, say, antibiotics to treat it, and those drugs actually kill the bacteria.

Also, you're going to be taking something to relieve your symptoms, like the pain relievers I mentioned earlier, but you have to keep taking it because it doesn't treat the infection that's causing it, and you only feel good while it's working.

In the case of depression and PTSD, which are caused by exposure to stress, palliative care is the only treatment.

Antidepressants only suppress the symptoms, and you basically have to keep taking them for as long as the illness lasts, often for the rest of your life.

We call this tolerance-enhancing drug, calypsol, a "paravaccine," or akin to a vaccine, because it appears to have the potential to protect against stress, and may even protect mice from developing depression and PTSD.

Also, not all antidepressants are paravaccines.

I also tried Prozac, but it didn't help.

If the results of the experiment were to apply to humans, it could help protect people at risk for stress-related conditions like depression and PTSD.

Paramedics, firefighters, refugees, prisoners and guards, soldiers, everyone.

The prevalence of these diseases is that the global burden of disease was estimated at $2.5 trillion in 2010, but because these are chronic diseases, the costs add up and are expected to reach $6 trillion in just 15 years.

As I said earlier, our biases can make drug repurposing difficult.

In fact, another name for calypsol is ketamine, and another name is Special K — a club drug and a narcotic.

It is still used as an anesthetic around the world today.

Used by children and on the battlefield

The reason this drug is used in many emerging countries is because it has the advantage of not restricting breathing.

It is also on the World Health Organization's list of essential medicines

If we had discovered ketamine as a paravaccine from the beginning, it would have been easier to develop, but now we have to break free from entrenched thinking.

Fortunately, this isn't the only compound we've discovered that has prophylactic, paravaccine efficacy, but the other drugs or compounds we've discovered are all newly discovered and must go through the FDA approval process before they can be administered to humans.

It will take years to complete

If you want to get your hands on it sooner, there's already ketamine with FDA clearance.

There are generic drugs and they are widely available.

So it can be manufactured at a fraction of the cost and in a fraction of the time.

But the reality is that more than functional fixation and mental set-up, there's something else that's holding back drug diversion: policy.

When a drug's patent expires and it becomes generic and non-exclusive, there is less incentive to manufacture such a drug, because it is not profitable.

This applies to any drug, not just ketamine.

Yet the whole idea of ​​using drugs to prevent rather than treat mental illness is completely new to psychiatry.

Twenty years from now, 50 years from now, 100 years from now, we'll look back on the current depression and PTSD landscape like we look back on tuberculosis sanatoria as relics of the past.

This could be a sign that we can end the epidemic of mental illness.

But one great science scientist once said, "It's fools who think they're certain --

A wise man keeps on guessing."

[MacGyver] Thank you

(applause)

Tell my daughters about this year I must have woken up wanting coffee But all I saw were corpses strewn across the pages of the morning paper Our sisters, our spouses and our babies printed on the waterlogged pages

Tell me about the past year and tell my dear daughter that I'm sure she'll ask me that I came too late

The year I got my freedom, but I didn't get it completely

The way you use your body is still regulated by law When you think you've stroked your delicate folds, you grab it without thinking of consent There's no law to regulate the men who enforced the law

We dodge, we wait, we hide, we wait, we are trained to wait still

forced to keep quiet

Still tell my daughters about this time of the war It's been like this for years This year is still the same as it was 20 years ago We wiped away our tears Covered our coffins with flags We fled from crime scene clubs We cried out pathetic cries in the streets We traced the outlines of the fallen We lay on the concrete weeping "we are important" we chant the names of those who disappeared

women shed tears this year

I'm sure it brought tears to my eyes

At the same time we were ready

In those years when I let go of my resistance and gave in with courage I glared at the barrel of a gun Singing a crane car soaring into the sky Crouching and dodging Wearing a hijab Grabbing money Collecting death threats I realized I was a patriot and said, "I've turned 35, I need to brace myself and find a comrade."

This year we were women Not someone's daughter-in-law or garnishment Not rude gender Not compromised We were women

tell my daughters

Gone are the days of being obedient and insignificant

Some took this unity seriously

Some had children, some didn't. No one doubted that having children determined a real, proper, true woman.

If your daughter asks you about this year, whether your daughter is a child or heir to your triumph From the comfort of history, on the verge of becoming a woman, she'll ask with wonder and devotion Even if she doesn't understand your sacrifice, she'll ask with curiosity, sanctifying your judgment, "Where have you been?

did you fight? was scary? Or were you scared?

What did you write on the wall of regret?

What did you do for women that year when that time came?

What bones did the path that opened for me take?

Have you done enough? were you okay mama?

Is mom a hero? "and

Your daughter will ask you questions that are hard to answer.

Without noticing your raised eyebrows or the weight of your fists

I didn't even ask what you said

The daughter you've already sacrificed enough to raise will want to know what you brought, what benefits you bestowed, what light you kept burning?

Were you asleep the night the victim was taken, or did you wake up?

What did you lose by what happened?

What did you do with your prerogative in the year you said your time was up?

Have you swallowed the suffering of others?

Did you look away from the flames, or did you stare at them?

Did you know your skill or did you treat it as a responsibility?

Were you deceived by contempt, such as "despicable" or "unworthy"?

Did you teach with an open heart or with a firm fist?

where were you

Tell my daughter the truth, take your life

Declare, "Daughter, I was there, and the moment it was thrust into your face like a knife, I threw it back and carved a place for you."

Tell me honestly how you lived under unfavorable conditions

Say you were brave Always follow your courage Even on days when you were the only one you could rely on

Tell my daughter that she too, like you, like your mother and her mother and her sisters, was born in the same legendary age as always.

Tell my daughter that she was born at this time she was meant to be born Just in time to lead her onward

(applause)

let me ask you one thing

How much weapons-grade nuclear material would it take to completely destroy San Francisco?

Do any of you think that's about the size of this suitcase?

OK. So who do you think is as good as this minibus?

I understand

In fact, given the right conditions, a supply of highly enriched uranium the size of your morning latte is enough to kill 100,000 people in an instant.

Hundreds of thousands of people will suffer severe radiation sickness, and perhaps parts of the city will be uninhabitable for years, if not decades.

But what's scarier than that nuclear latte is that modern nuclear weapons are hundreds of times more powerful than the bombs dropped on Hiroshima and Nagasaki.

Even the use of dozens of nuclear weapons in a limited nuclear war could end all life on Earth.

So what you should know is that over 15,000 nuclear weapons are concentrated in the hands of just nine countries.

If you live in a city or near a military installation, the weapon is probably right for you.

Or if you live in a rural area where nuclear weapons are stored, then maybe you're good at them.

We now have approximately 1,800 weapons on standby, ready to launch within 15 minutes of an executive order.

Well, you're probably a little bit depressed. -Some of you may have mental fatigue.

So I'd like to change gears for a moment and tell you a little bit about my imaginary friend, Jazmine.

Jazmin is 25 years old, and he's part of a generation that's politically and socially active on a level we haven't seen in 50 years.

She and her friends see themselves as change agents, leaders and activists.

I call them the "Possible Generation"

The issues that matter to us, which we strongly protest against, do not include nuclear weapons, which, come to think of it, should be because Jazmine was born in 1991, after the Cold War.

So while I was growing up, I didn't hear much about nuclear weapons.

I didn't have to do evacuation drills under my desk at school.

For Jazmin, Fall Shelter is just an android app.

Nuclear weapons only help win the game

It's a shame, because the power of possible generations is needed to make important decisions about nuclear weapons.

For example, is it better to reduce nuclear weapons globally from now on, or spend billions, or trillions of dollars, to keep modernizing them, to keep them around for the 21st century, and for Jazmine, who is my age, to teach his children, or his grandchildren, the dangers of a nuclear holocaust?

On top of that, if you care about cyber threats, and if you've read stories about the Stuxnet virus, or had your emails, Yahoo accounts, or even your phone hacked even once, then you can imagine how modernized nuclear weapons could trigger a whole new wave of damage to the world in an age of cyber warfare.

Now, if you care about money, a trillion dollars could feed, educate, and employ more people, all of which would reduce the odds of nuclear war.

So -- (Applause) This is really important right now, because nuclear weapons are fragile things.

We have evidence that terrorists are trying to acquire nuclear weapons.

Just last spring, four retirees and two taxi drivers were arrested in the Republic of Georgia while trying to sell nuclear material for $200 million.

And the reason this is important is that, while there have been dozens of accidents involving nuclear weapons, we probably haven't even heard of most of them.

Here in the United States, we've dropped atomic bombs twice in the two states of North and South Carolina.

Once, an atomic bomb fell from an Air Force plane, but luckily the core was stored elsewhere on the plane, so it didn't explode.

Once again, it started when the weapon hit the ground, and five of the detonation switches malfunctioned.

Luckily the 6th was safe

If that still doesn't get your attention, there's the 1995 Blackblunt scandal.

Russian radar engineers detected what they thought was a US nuclear missile heading into Russian airspace.

It was later discovered that this was a Norwegian rocket collecting data on the Northern Lights.

But at that time, Russian President Boris Yeltsin was five minutes away from launching a retaliatory nuclear strike against the United States.

So most of the world's nuclear-weapon states have pledged to eliminate nuclear weapons.

But think about this: The Nuclear Non-Proliferation Treaty, the most widely ratified arms control treaty in history, has 190 signatories, and it doesn't set a deadline by which the member states must dismantle their nuclear weapons.

When President Kennedy sent humans to the moon and back to Earth, he didn't say, "Do it when you want."

he set a deadline

The challenge he set would have been unbelievable a few years earlier.

And that challenge has moved scientists and marketers, astronauts and school teachers.

he gave us a target

But with that goal, he wanted us to -- and what most people don't know -- as an ally, he wanted to partner with our greatest enemy in the Cold War, the Soviet Union.

Because Kennedy's dream of the Apollo program included working with the Soviet Union, not confronting it.

And Nikita Khrushchev of the Soviet Union seems to agree with this.

But before that cooperation could materialize, Kennedy was assassinated, and that part of the dream was postponed.

But the promise of joint innovation between the two nuclear superpowers hasn't completely disappeared.

Because in 1991, the year that Jazmin was born and the Soviet Union collapsed, the two nations set out on a plan that, in retrospect, was literally unimaginable in retrospect: the United States would provide Russia with the much-needed funding of the time, to secure its potentially runaway nuclear material and to employ unemployed Russian nuclear scientists.

They worked with American scientists to convert weapons-grade uranium into nuclear fuel.

It was called "megatons to megawatts."

The result, over the next 20 years, was a bilateral program in which one in ten American light bulbs was lit by a former Russian nuclear warhead.

The two countries joined forces to do something truly daring.

But fortunately, countries around the world can now do just as boldly.

Some experts say it will take 30 years to abolish nuclear weapons and cut off the supply of materials to produce them.

We need a renaissance of sorts, the kind of innovation that, for better or worse, was the foundation of the Manhattan Project and the "Megatons to Megawatts" program that created nuclear weapons.

Design constraints are also required

This is the foundation for creativity, the cornerstone of international cooperation: deadlines in the sense of coercion mechanisms and perspectives that call for action.

It will take until 2045

In fact, 2045 is the 100th anniversary of the birth of nuclear weapons in New Mexico.

But it's also an important day for other reasons.

It is also predicted that the day of the emergence of the singularity, a new moment in human history, will blur the line between artificial intelligence and human intelligence, blur the distinction between computer processing and consciousness, and advance technology to solve the biggest problems of the 21st century -- hunger, energy, poverty, etc. -- and usher in an era of abundance.

Everyone can go to space, and humanity will become a multiplanetary species.

But even those who believe in the dream the most say they still don't know how to get there.

But the values ​​behind the dream and the willingness to ask "how?"

Inspired a generation of innovators

About co-design, using creative problem-solving methods to go backwards from the future we want.

overcome various obstacles

We're also redefining what we think is possible.

But the biggest problem is this: the dream of an age of abundance and the 20th-century theory of mutually assured destruction are incompatible.

It must lay the foundation for the 22nd century.

A strategy for "mutually assured prosperity" or at least "mutually assured survival" must be

Now I meet daily with true pioneers trying to solve the nuclear threat.

As you can see, many of them are young women doing incredibly interesting things, like Marina Robinson Snowden here, who's developing new and better ways to detect nuclear warheads that will help overcome the critical hurdles to international disarmament.

Melissa Hannum is using satellite imagery to analyze what is happening at remote nuclear sites.

And Beatrice Fehn, who is in Europe, is working in international courts to make nuclear weapons illegal, and just last week won a big victory at the UN.

(Applause) And yet, even in this culture where we talk about grandiose challenges like Apollo, very few of the "Possible Generation" and those who lead them will fight against nuclear weapons.

It seems that there is a taboo

I remember one thing Kennedy said, and it certainly meant that humans can be as big as the solutions to their own problems.

He said there is no problem in the way of mankind that mankind cannot solve.

i believe it too

I think many of you believe that too.

I think the "Possible Generation" will believe that too.

So it's time to commit to a deadline for the abolition of nuclear weapons.

Let's end the chapter on nuclear weapons on its 100th anniversary.

Because by 2045, billions of people will be held hostage by the threat of nuclear annihilation.

100 years is enough

With a century of economic development and advances in military strategy, we should be able to better manage the world's conflicts.

If there's one of humanity's grandest challenges to support, it's this.

Now, in the face of real threats, such as North Korea's recent nuclear test despite sanctions, there is no consensus among rational people whether they should retain some nuclear arsenal to deter aggression.

It's a matter of determining the magic number

is it 1000?

is it 100? Ten?

And this is also a question. Who will manage them?

I think we can all agree that 15,000 would be more of a threat than hope to Jazmine's generation.

It's time to pledge our imaginations to create a world free of nuclear confinement. Let's go backwards from the future we aspire to and invest in the creative solutions we've created.

As a multidisciplinary leader, let's commit to how we'll use our resources to solve this old problem in a new way, to ask, "How?"

How can we keep a promise like this -- a promise to provide better security for Jazmine's generation?

I sincerely hope that you will join us.

thank you

(Applause) Thank you.

(applause)

What if I could make a designer baby?

What if you, who wants children, and I, a scientist, decide to team up?

Or what if we thought, "That's not good," but the vast majority of our family, friends, and co-workers decided otherwise?

Let's fast forward and look 15 years into the future.

Let's assume we're in 2030. You have children.

You have a daughter named Marian, and in the world of 2030, she's called "Natural" because she hasn't undergone any genetic manipulation.

Many people around you don't like the fact that you and your spouse made that decision on purpose.

They think you're technophobic or technophobic.

Marian's best friend, Jenna, who lives next door, is completely different.

It is a designer baby that has undergone numerous "upgrades" through genetic manipulation.

yes upgrade

These "enhancements" are brought about by a new genetic engineering technology with a strange name -- a technology called CRISPR. It sounds like "crisp" (fresh).

Jenna's parents hired scientists for millions of dollars to use CRISPR technology on batches of fertilized eggs.

And they used genetic testing to predict that the little embryo would be the best, Jenna's.

And Jenna actually became a real person,

I'm sitting on the carpet in the living room playing with your daughter Marian.

The children's families have known each other for years, and now it's becoming clear to you that Jenna stands out.

Jenna is very intelligent

I can honestly say I'm smarter than you, even though I'm only five years old.

She's beautiful, she's tall, she's athletic, and the list goes on and on.

And that's how "genetically modified kids" like this Jenna are born.

So far they're healthier than their parents and your generation They're healthier than their parents and your generation

Low health maintenance costs

Resistant to AIDS, genetic diseases, etc.

These are wonderful things, but you can't help but feel restless. Intuitively, Jenna senses that something isn't right.

You just happened to read a study in the newspaper earlier this week that found that these designer babies tended to be more aggressive and narcissistic.

What's even more disturbing is the story I just heard from Jenna's family.

Because of her high intelligence, Jenna went to a special school and received a different education than Marian, which has confused your family.

Marian kept crying, and when you kissed her goodnight in bed last night, she asked, "Daddy Jenna, are you no longer friends?"

Now, I've told you a fantasy story about the year 2030, and I'm sure some of you have probably felt like you're in a science fiction world.

It's like reading a science fiction novel

Or like a Halloween story

But this is a possible future, just 15 years into the future.

I work in stem cells and genetics, and I can see the potential impact of this new CRISPR technology.

We're facing a future like this, where many things will depend on the decisions we make today.

If you still feel like this is a sci-fi fantasy story, keep in mind that this year something happened that rocked the scientific community, and it's still not even known.

Just a few months ago, Chinese researchers reported that they had created gene-edited human fertilized eggs.

this is the first time in history

They did it using this CRISPR technology.

It wasn't a complete success, but I think it's opened Pandora's box.

I think there will be people who will take this technology and try to create designer babies.

Before I continue— some might say, "Paul, wait a minute.

Isn't that against the law?

You can't be so selfish about making a designer baby."

That opinion is correct in a sense.

Some countries can't do that.

In many countries, including my own country, the United States, there are still no laws about this, so in theory it's fine.

There was another related development this year, not far from Vienna, in England.

Britain is by nature the most strict country when it comes to genetic manipulation of humans.

Genetic manipulation of human embryos was illegal there, too, but just a few months ago they made an exception to that rule.

A new law was passed, and if it was for the noble cause of preventing rare genetic diseases, it could be made for the noble purpose.

But I feel that these events are pushing us towards accepting human gene editing.

We've been talking about CRISPR —

What exactly is CRISPR?

Imagine the genetically engineered crops that we all know so well, genetically engineered tomatoes and wheat, and stuff like that. CRISPR technology is similar to the technology that makes those crops, but it's amazingly advanced, cheaper, faster, and much more achievable.

What is it like?

It's like a Swiss army knife for genes.

So let's say this is a Swiss Army knife with tools built in. One is like a magnifying glass, or like a GPS to our DNA, so we can focus on one thing.

Now we have tools like scissors that can snip genes on the fly.

And then the pen can literally rewrite the genetic code at that location.

It's really that simple

This technology came out only three years ago, but it took the industry by storm.

The technology is developing so fast, and it's incredibly exciting for scientists. I'm one of those scientists who's fascinated by it, and I'm using it in my own lab.

This technology is now spreading all over the world.

appeared just three years ago

Today, literally thousands of labs own it, each doing important research.

Most of them don't care about designer babies

We study disease and other important scientific topics.

A lot of good research has been done on CRISPR technology.

As a scientist, I think it's pretty amazing that what used to take years and millions of dollars to genetically modify can now be done in weeks and thousands of dollars.

And for some people, it's use is not scientific.

they are not motivated by the purpose of science

Driven by ideology and the pursuit of profit

They're going to try to produce designer babies.

Why should we be concerned about this?

As Darwin said, a few centuries ago, evolution and genetics had a huge impact on humankind and made us who we are.

Some people think that things like social evolution doom the world, and some think eugenics.

Now imagine that each of these forces of thought has the impetus of CRISPR, a very powerful and pervasive technology, on their side.

In fact, let's go back a century and think about how eugenics thought affected the last century.

My father Peter Nofler was born here in Vienna.

He was a Viennese born here in 1929.

The world was so different when my grandparents had my father.

Vienna was different

so is america

the world was different

At that time, eugenics was gaining momentum (the Nazi persecution of Jews), and my grandparents realized very early on that they were on the "bad side" of the eugenics equation.

So they left Vienna, their home, and their relatives left this place where they had lived for generations, because of the persecution of eugenics.

And they survived, but their hearts were weary, and I don't know if my father forgot Vienna.

1938 - he left when he was eight

Now, I feel that another eugenics trend is rearing its head.

It's supposed to be more empathetic, more gentlemanly, more positive eugenics, and different from eugenics in the past.

I believe that even if the focus is on "improving" people, it could have negative consequences, and my deepest fear is that the prominent proponents of this new eugenics view CRISPR as the ticket to making it happen.

I admit it's not that I don't understand it. Eugenics: Making Better People.

but that's a hard question

What do we mean by "better" when we talk about humans?

But it's also true that many of us think humans need a little bit of improvement.

Look at the politicians compared to here in my country, the United States - no, let's not talk about that now.

Maybe even just looking in the mirror -- you'll get an idea of ​​how to "improve."

I'd rather have more hair than this bald head.

Some people want to be taller, or if their weight is like that, if their face looks like this.

If you can do gene editing, you can make these transformations, and you can make these adjustments to your own children.

But these risks are inherent

We talked about eugenics, but there are also individual risks.

If we move away from the idea of ​​improving humans and simply try to make them healthier by using genetic engineering, this technology is so new and so powerful that we might accidentally cause disease instead.

this can easily happen

The other risk is that all the legitimate and important genetic modification research that's going on in the lab — research that has nothing to do with designer babies — is going to be thrown into chaos by a tiny fraction of designer baby development, and the whole academic field will suffer.

I don't think it's possible that governments will eventually become unenthusiastic about gene editing.

Gene-edited Jenna is healthier, but if there is a generation where healthcare costs are lower than they are today, governments may encourage the public to encourage genetic modification.

For example, China's one-child policy

This is believed to have prevented 400 million births.

So it would be realistic for governments to promote genetic engineering.

If designer babies become mainstream in this digital age, what if viral videos and social media treat designer babies as "fashionable" or like celebrities like Kardashian?

(Laughter) Can we really control those trends?

i think i'm out of control

So today, it's Halloween and we're talking about genetic engineering, but there's one character that deserves to be associated with Halloween more than anyone else: Frankenstein.

There are many stories about Franken.

Putting this into the context of this story, on a day like this, on Halloween, if parents were to be able to genetically dress up their children, would this be a Frankenstein 2.0 situation?

No, it's not going to be that extreme.

But what happens when we start hacking human genes is completely unpredictable.

it will be dangerous

If we look back at history, we see examples of revolutionary science and technology developing out of control and permeating society.

For example, in vitro fertilization

Almost exactly 40 years ago, the world's first "test tube baby", Louise Brown, was born.

Many parents now have children like this.

But think about it, in the space of 40 years, new technology has produced 5 million babies like this, which is incredible, and gene-editing technology and designer babies could do the same thing.

Based on the decisions we make in the next few months, if the first designer baby is born in the next few years, we could have millions of genetically engineered babies within a few decades.

What's a little bit special about this is that if you or I decide to have a designer baby, those babies will also inherit the gene editing.

that's the big difference

Based on these things What should we do next?

It will be held in Washington D.C. about a month from now.

This very question is being raised at a conference held by the National Academy of Sciences.

What is the way forward for human gene-editing technology?

I need a grace period at this point

this should be banned

We shouldn't allow the creation of gene-edited humans, because it's too dangerous and too unpredictable.

And— (Applause) Thank you.

(Applause) Let me also say that, as a scientist, I'm a little scared to say this in public, because science usually shy away from self-imposing regulations.

I think we should ban this now, but there are many people who are not only against it, but the exact opposite.

They're like, "Okay, let's go full speed, let's make a designer baby."

There's a good chance that the December meeting, and the meetings scheduled for the next few months, won't adopt the grace period.

And I think part of the problem is that people don't realize that there's a revolution going on in this movement and the application of gene-editing technology to humans.

No one is telling everyone, "This is a very revolutionary thing, and it could affect you personally!"

One of my goals is to change that, to educate the public and raise awareness and get people to start talking about this.

I hope that you will be able to participate and take part in these meetings and have your voice heard.

Now, if we go back to the hypothetical world of 2030, we really don't have much time left, because the technology that is affected by the decisions we make today will spread like wildfire in the next few months, next year, or so.

Let's say we're back in the reality of 2030.

I'm in the park and the kids are on the swings

Is the child a conventional, natural child, or have we decided to have a designer baby?

Let's say we choose a child who is untouched, conventional and natural.

hair messed up like mine

I'm drowning

I'm not the smartest kid by world standards.

You're so cute, you're falling in love And on the swing next to you is your best friend, the genetically modified Kid.

The genetically modified kid swings higher, looks better, is a better student in school, and doesn't have to wipe down.

How do you feel about this? What choice would you make?

thank you

(applause)

Just take a look around, and if you see the most suspicious person -- (Laughter) point to him and let me know.

(laughs) You really can't do that.

(Laughter) I'm an organizational psychologist, so I spend a lot of time in the companies I visit, and paranoia is everywhere.

Paranoia originates from the "taker"

I am selfish in my dealings with others.

I am a person with a mindset of "What should I do for you?"

Opposite is "giver"

I'm a person who usually thinks "What should I do for you" when interacting with others?

Think about your style here.

There are times when we "give" and times when we "take"

The standard for how to treat most people in general is their style, and it's actually just a little test.

You can see whether you are a giver or a taker [narcissist diagnosis test]

[Step 1: Think about yourself for a minute] (Laughter) [Step 2: People who get to this step are not narcissists.] (Laughter) The only thing I'm going to talk about today that isn't based on data, I'm pretty sure that the longer it takes you to look at this illustration and start laughing, the more likely you are to be a taker.

(Laughter) Not all takers are narcissists.

Sometimes I'm just a burnt out giver who's fed up

There's another type of taker that I won't touch on here today, called a "psychopath."

(Laughter) I was intrigued to find out just how many people with these extremes exist, and I did a survey of over 30,000 people across cultures around the world and across industries.

It turns out that most people fall somewhere in the middle, between "give" and "take."

"Match" is a style that balances profit and loss.

Compensatory people who want to maintain an even balance between "gives" and "takes" -- that is, "If you do something for me, I'll do something for you."

Sounds like a safe way to live

But is that the most effective and productive way to live?

The answer is pretty definitive...

"Maybe"

(Laughter) I've observed thousands of people in dozens of corporate organizations.

Let engineers measure their productivity

[From "Restructuring Man"] (Laughter) I looked at the medical student report card [From "Grey's Anatomy"] I also looked at salesman sales [From "The Office"]

(Laughter) And surprisingly, the givers were the worst performers in their respective professions.

The slowest engineers were the ones who did more than they were asked to do.

I was so overwhelmed with other people's work that I ran out of time and energy, and I didn't finish my work.

The worst performers in medical school were those who resonated the most with statements like, "I want to do something for people."

(Laughter) Similarly in sales, the lowest sales were the most generous salespeople.

So I actually reached out to a salesperson who had a very high Giver Index and asked them.

Why are you so bad at sales?

The answer I received was, "Customers are very important to me, so I definitely don't want to sell inferior products."

(Laughter) Now for a second, people who thought they were more givers than takers and matchers.

please raise your hand

I'm sure there would have been more hands raised before we talked about the data we have today.

But the truth is, it's not that simple. Givers are often self-sacrificing people who also make improvements in their organizations.

There's plenty of evidence to back it up. Numerous studies have looked at the frequency of "giving" in teams and organizations, and organizations where people help each other, share knowledge, and care for each other more often outperform on every measure you can measure: higher profit margins, higher customer satisfaction, higher employee retention, and even lower operating costs.

But givers spend so much of their time helping others and improving their teams that their own work doesn't go as planned.

So I want to talk to you about what it takes to create an environment where givers can thrive.

I thought, if the top performers are givers, who are the top performers?

First of all, don't worry, I'm not a taker.

Takers grow quickly in most professions but fall quickly

The matchers will trip you up

Because matchers believe in a just world and "an eye for an eye" is their motto.

Because when I meet a taker, I feel like it's my mission to punish him to the fullest.

(Laughter) That's how judgment falls.

because most people are matchers

The taker will end up paying the price.

So logically, the top performers should be matchers.

that's the difference

In every job category and in every organization I've observed, it's the givers who are at the top of the list.

Check out this data collection of hundreds of salespeople's sales records.

Giver's results are extreme

While most of the people at the bottom of sales are givers at the top, engineers' productivity follows the same pattern.

It was the same with my medical grades, the top and bottom of the list were all givers.

Every measure of success I've seen has been the same.

So the question arises: how can we create a society where more givers succeed?

Here's how to do it -- and I'll give you tips that can be used not only by businesses, but also by nonprofits, schools, and governments.

do you want to hear?

(cheers) I was going to say it anyway, but I appreciate your enthusiasm.

(Laughter) The first critical condition is recognizing that the givers are the organization's most valuable asset, and that they will burn out if they are not careful.

It is an existence that must be especially protected

I learned a lot about this from Fortune magazine's list of the most connected people in the world.

It's a man, not a cat

(Laughter) His name is Adam Rifkin.

He's started a number of businesses that have been very successful, and he's spent a lot of his time helping people.

Rifkin's secret weapon is "Five Minutes of Kindness."

"You don't have to emulate Mother Teresa or Gandhi to be a giver.

You just have to find small ways to add great value to other people's lives."

For example, something as simple as mediating between people who would be nice to meet would be fine.

Share your knowledge and give your honest opinion

It can be as simple as declaring something really basic, like, "Okay, now let's see if we can celebrate someone whose work is under-recognised."

These five minutes of kindness are essential for givers to set social boundaries and protect themselves.

The second point is that in order to create an environment in which givers can thrive, we first need a groundwork in which it is normal to rely on others, a culture in which everyone frequently asks for help.

Some people may find this illustration to be troubling.

[So you're always forced to be the giver in any relationship?] (Laughter) Successful givers recognize that it's okay for them to be on the receiving end.

If you run an organization, you can encourage this.

We need to create an environment in which it is easy to ask people for things.

When we observed the hospital together with some people,

Helping each other was common among nurses on one floor, and almost non-existent on other floors.

On the floor where mutual help is natural and natural, what really stood out was that there was only one nurse who was just there to help other nurses in the same department.

Here's what a nurse in that environment said: "It's not embarrassing or weak to rely on others, it's actually encouraged."

Mutual aid isn't just about protecting the giver's success and well-being.

It's also very important to increase the number of people who act like givers, because data shows that between 75% and 90% of all giving in organizations starts with a request.

most people can't do this

The reason is that I don't want to be seen as incompetent, I don't know who to ask, I don't want to be a burden, etc.

In an organization where no one asks for help, you end up with a lot of frustrated givers who are willing to help if only they know who they can help.

But the most important thing to create an environment where givers thrive is to think carefully about who you bring on your team.

At first, I thought, if you want to build a culture of productive giving, you should have givers.

But surprisingly, it turned out to be a mistake. It turns out that one taker does two to three times as much harm as one giver does.

For example, one rotten apple ruins a whole barrel, but one good egg doesn't make a whole box of eggs better.

(laughs)

Anyway, just get one taker on the team and the givers will start stinging.

"Because I'm surrounded by foxes and raccoon dogs

It's a loss just to do your best."

But having a giver on your team doesn't suddenly start a chain of kindness.

Instead, it's usually more like, "Well done, I'll let this guy do all the work."

Effective recruiting and team building isn't about hiring givers, it's about getting rid of takers.

If all goes well, only givers and matchers will remain.

Because there is no exploitation, the giver feels safe and kind.

The nice thing about matchers is their ability to fit in.

So how do you expose the taker before it's too late?

The truth is, we're pretty bad at spotting takers, especially when we're meeting them for the first time.

I get distracted by certain personality traits.

It's called "social", and it's one of the big components of personality in many cultures.

A sociable person is warm and friendly, highly likable and polite

(Laughter) In fact, there was a call for a new national slogan in Canada, fill in the following blank: "If you're Canadian."

Naturally, if you thought that "maple syrup" or "ice hockey" would be chosen,

The new slogan for the country won Canadian votes -- it wasn't a hoax -- it was "If you're Canadian, you're flexible."

(Laughter) If someone in the room is very personable, or slightly Canadian, you'll know what I mean.

It's absurd to compare yourself to anything, trying to please others and always adapting to others.

People who are rude don't make that kind of effort

You're critical, you're skeptical, you're tricky, and you're far more likely to become a lawyer than most people around you.

(Laughter) This is not a joke, it's a proven empirical fact.

(Laughter) Now, I've always assumed that nice people are givers and bad people are takers.

When I collected the data, I was stunned. There was absolutely no correlation between these traits, because the truth is that being nice or being unfriendly is a facet: whether you feel good about being around people.

Gives and takes, on the other hand, are more intrinsically motivated, reflecting a person's values ​​and intentions toward others.

If you really want to know how to accurately assess a person, I'm sure everyone in the consulting industry here has itchy hands.

(Laughter) Good givers are easy to spot because they say yes to everything. [Ned Flanders]

It's easy to find "unfriendly takers," though it might be called a slightly different name.

[Darth Sidious] (Laughter) The other two are often forgotten.

One is the "bad giver"

On the surface they are surly and difficult to deal with, but on the inside they really care about the well-being of others. [Gregory House]

As an engineer puts it, "Isn't it kind of like an unfriendly giver with a terrible user interface but a masterpiece as an operating system?"

(Laughter) Do you understand this?

(Laughter) Inhospitable givers are the most underrated people in an organization because they dare to give critical opinions that no one wants to hear, but that everyone needs to hear.

We should do a better job of evaluating these people. We shouldn't just say things like, "This guy is disgusting, he must be a selfish taker."

Another type that we tend to forget is the deadly "friendly taker," the so-called impostor type.

Outwardly, he looks nice, but behind his back, he's a terrible person.

[Stewie Griffin] (Laughter) My favorite way to spot this type of person in an interview is to ask a question: "Name four people whose careers have improved dramatically because of you."

Taker gives four names, but all of them are names of people who are more influential than he is, because Taker is good at flattering above and oppressing below.

Givers often name people below them, people who aren't very influential or useless.

The reality is that you can tell a lot about a person's character by the way they treat restaurant workers and taxi drivers.

So if we can do a good job of keeping takers out of our organizations, creating an environment where it's safe to ask for help, preventing givers from burning out, and creating a culture where it's okay to be ambitious in pursuing our own goals while helping others, we can change the way we think about success.

People will start to realize that it's not all about being competitive, it's about the contribution itself.

I believe that the most meaningful form of success is helping others succeed.

If we can spread this mindset, we can turn paranoia upside down.

I have a name

It's called "pronoia"

Pronoia is a form of delusion in which people around you conspire for your well-being—

(Laughter) It's the assumption that it's very popular in my absence.

The great thing about giver culture is that this is not an illusion, it's reality.

I hope we can all help create a world where givers thrive.

thank you

(applause)

Growing up in Kenya, I always wanted to study biochemistry.

I wanted to see the impact of diseases such as malaria, which have high prevalence, and develop medicines that would cure those who were sick.

I worked really hard and got a scholarship to go to America, where I became a cancer researcher, and I was very happy.

It's the most rewarding job for anyone who wants to cure disease.

Ten years later, I returned to Kenya to do it.

I had just completed my PhD and was well prepared to fight this terrible disease, which in Kenya is almost a death sentence.

But instead of settling down in a pharmaceutical company or a hospital, I was drawn into curing a different kind of patient in a different kind of laboratory, whose illness was so serious that it affected the entire nation, and I needed him to get well sooner rather than later.

That patient is our government.

(Laughter) Many of you may think that there are many unhealthy governments today.

(Laughter) (Applause) Kenya was no exception.

When we returned to Kenya in 2014, youth unemployment was 17%.

In addition, Nairobi, a business-centered city, was ranked 177th in livability in the World Living Environment Survey.

it was a tough situation

The health of an economy is proportional to the health of the entities that compose it.

So when government, the most important actor, is weak and unhealthy, it undermines everyone and everything.

People put a band-aid on the injured area to temporarily stop the pain.

Some of you may be on this list, but African countries are also doing bandaid-type projects, building alternative schools, hospitals, wells, etc., because governments don't or can't provide these facilities and services to their citizens.

we know this is a temporary solution

There are some things that band-aids can't fix, like providing an environment where businesses feel secure that they have an equal chance to start and run a business successfully.

There are systems in place to protect assets created through business.

What I'm trying to say is that only governments can create the conditions necessary for a thriving economy.

The economy thrives when it's quick and easy to start a business.

Business owners create new revenue streams, create new jobs, join the economy, pay more taxes, and finance public works.

new business is good for everyone

A very important indicator of economic growth is the World Bank's Ease of Doing Business Ranking, which measures the ease of doing business in countries around the world.

As you can imagine, it's almost impossible to do business in a country with an ailing government.

The President of Kenya knows this, and in 2014 he visited the Institute and asked us to partner with him to help boost Kenya's economic growth.

His ambitious goal was to get Kenya into the top 50 in the recent World Bank rankings.

In 2014, when he came to the Institute, Kenya was ranked 136th out of 189 countries.

A difficult task awaited us

luckily he visited the right place

We're not just a band-aid team.

We're a team of computer scientists, mathematicians, engineers, and cancer researchers, and we knew that in order to treat a disease in a system as large as a government, we would have to go through the body, going from organ to tissue, down to individual cells, so that we could make proper diagnoses.

Under the direction of the president himself, we set out in the purest scientific way: collecting data, gathering all the data we could get, forming hypotheses, creating solutions, and so on and so on.

We've reached out to hundreds of people who work in government agencies -- people who work in tax authorities, land management agencies, utility companies, and business registries -- and we've watched them interact with customers, and we've documented these processes, mostly by hand.

I also went back through all the paperwork they'd made, trying to understand and diagnose which function had actually gone awry and ended up ranked 136th by the World Bank.

what was the result?

At the time, in Kenya it took a business owner 72 days to register a property, while in New Zealand it took just one day, second in the World Bank's ranking.

Whereas in Kenya it takes 158 days to install new electricity,

In Korea, it ends in 18 days.

And it took 125 days in Kenya to get a building permit and start building.

In Singapore, No. 1 in the world, it takes only 26 days.

Going to court in Kenya to settle a dispute over the performance of a contract is ridiculous, because this process alone takes 465 days.

Worse, 40% of the lawsuit is taken in fees: attorney fees, enforcement fees, court costs.

I know what you're thinking, if there's this kind of inefficiency in African countries, there must be corruption.

The institutions that run the business are corrupt to the core.

I actually thought so too

When I set out on this job, I thought I would find a lot of corruption, and I would literally die or be killed in the course of this job.

(Laughter) But as we delved into the matter, there was no corruption in the traditional sense, no bad guys lurking in the dark, glaring at when to bribe their peers.

But what was there was a sense of helplessness.

The government was sick because government officials felt helpless.

They felt they were powerless to bring about change.

When people feel stuck and helpless, they stop seeing their role in the big system.

You start thinking that your job has nothing to do with driving change.

When this happens, work slows down, mistakes are made, and inefficiencies are created.

Now imagine that you have to proceed with a procedure, you have no other choice, and this procedure is inefficient, complex, and extremely slow.

what should I do?

Perhaps you'd start by finding someone you can outsource, and they'll handle the process for you.

If that doesn't work, you might consider paying someone to handle it "unofficially," especially if you thought no one would notice.

Not out of malice or selfishness, just to make sure you get what you need.

But unfortunately, this is where corruption begins.

When this practice gets under control, it spreads throughout the system, and before you know it, the whole institution is sick.

With that in mind, we've decided to start by ensuring that all of the stakeholders who work together towards our goals share a vision.

So I've talked to people one by one, from clerks whose sole job is to remove staples from stacks of applications, to law drafters in the Ministry of Justice, to people who deal with business owners who come to use government services.

We made sure they understood how their day-to-day actions impacted the country's ability to create jobs and attract investment.

No job was trivial, everyone's role mattered.

What happened then?

A group of government officials, excited and motivated to make a difference, came together to form a group and expand.

We worked with them to implement reforms that impacted how the country delivered its services.

result?

In just two years, Kenya's ranking has risen from 136th to 92nd.

(Applause) And in recognition of the significant reforms achieved in such a short period of time, Kenya has been named among the world's top three global reformers for the second year in a row.

(Applause.) Is Kenya all right?

no

we still have some serious work to do

I think of these two years like a weight loss program.

(Laughter) Those hard months of grueling workouts in the gym, and when you first weigh yourself, and you're nine pounds lighter.

I can't stop myself anymore

Now, some of you may be thinking that this story is not for you.

i'm not from kenya

you don't want to be an entrepreneur

But think with me

When was the last time you used government services?

You may have gone to apply for a driver's license, or you may have gone to file a final tax return.

In this political, global economy, I know it's tempting to give up on government reform.

Government is so inefficient, so corrupt, so hopeless, it's easy to give in to the facts and beliefs.

We can't just hand over the vital jobs of government to other sectors and hang in there, and we can't just give up and get lost.

But just because the system is sick doesn't mean it's dying.

We can't give up, because it's an effort to get our government right.

At the end of the day, what makes government healthy is healthy cells -- you and I -- you and I need to be grounded and fired up together, never feeling helpless, and sometimes believing that what we need is to create space for healthy cells to grow and thrive.

thank you

(applause)

One physics problem has bothered me a lot since I was a kid.

It's about questions that scientists have been asking for 100 years and still haven't been able to answer.

How do we unify the smallest matter in nature, the elementary particles belonging to the quantum world, and the largest matter in nature, the planets, stars, and galaxies, which are bound by gravity?

When I was a kid, I tried to answer this question

We played around with microscopes and electromagnets, read books about micro-world forces and quantum mechanics, and were amazed at how well the descriptions in the books matched our experimental results.

And then I looked at celestial bodies, and I also learned that gravity is pretty well understood, and I was convinced that there must be a beautiful theory that unifies these two systems.

but there is no such thing

According to the book, there's a lot of research going on in these two areas separately, but when you try to combine them mathematically, it just doesn't work.

For 100 years, no attempt to solve this fundamental physics bankruptcy has been experimentally supported.

Now that I've grown up a little bit, I was a curious, skeptical child, and this situation didn't make sense to me at all.

Yes I am still a skeptical child

Now let's jump back to December of 2015, when the world of physics that I was at the center of was in the midst of a tumultuous upheaval.

It all started with the discovery of interesting data at CERN, the European Organization for Nuclear Research, that signaled new particles and hinted at the potential for surprising answers to long-standing problems.

I think I'm still a skeptical kid, but now I'm also a particle hunter.

I'm a physicist working at CERN's Large Hadron Collider, the largest experimental facility in operation.

It's a 27-kilometre tunnel straddling the French-Swiss border, buried 100 meters underground.

Inside this tunnel, we use superconducting magnets that are colder than outer space to accelerate protons to near the speed of light, colliding them millions of times per second, and capturing the particles produced by those collisions in search of new, undiscovered elementary particles.

The design and construction of this facility is the result of decades of hard work by physicists from around the world who, in the summer of 2015, were working tirelessly towards the commissioning of the Large Hadron Collider (LHC) for the most energetic collider experiment in human history.

High energies are important, because in the world of elementary particles, energy equals mass, and mass is just a number given by nature.

To discover new particles, we need to reach higher numbers.

So we need bigger colliders that produce higher energies, and the largest collider that produces the highest energies in the world is CERN's LHC.

They collide protons trillions of times and collect that data over many months.

Then the new particles might show up as bumps on the graph of the data, small deviations from the predicted values, clusters of data points that give bumps to the smooth line.

For example, the hump on this graph is the result of several months of data accumulating in 2012, which led to the discovery of the Higgs boson, one of the boson particles, and the Nobel prize for confirming its existence.

The massive increase in energy in 2015 gave us the greatest chance ever to discover new particles, new answers to long-standing problems, because they're about twice as energetic as the Higgs boson.

Many of my colleagues had staked their entire research lives on this moment, and frankly, as a curious kid, my whole life was waiting for this moment.

2015 was just that

LHC restarted in June 2015

My colleagues and I were breathless, and we finally saw the first proton collision at this highest energy.

There was applause, toasts and blessings

It was a milestone for the scientific community, and we didn't know what we would discover from this newly observed data.

After a few weeks, I found bumps on the graph.

It wasn't very big, but it was a bump big enough to raise an eyebrow.

If we divide eyebrow-raising stages into 10 stages, and 10 is new particle discovery, this time it's about 4. (Laughter)

I spent hours, days, weeks discussing this tiny hump in secret with my colleagues, combing through the data to see if it would stand up to scrutiny.

For months, I was obsessed with research. I didn't go home, I slept in the lab. I ate candy bars and drank a bucket of coffee.

And a few months later, we announced this little bump to the world with a very clear message: this little bump is interesting, but inconclusive, and we're going to take more data and watch it carefully.

We tried to stay calm about this bump.

Either way, the announcement spread around the world.

The media picked up

This bump was said to be reminiscent of the bump that appeared during the process of discovering the Higgs boson.

And my fellow theoretical physicists, who are some of my favorite people, have written 500 papers on this bump.

(Laughter) The particle physics community was in a state of upheaval.

Why is this hump so big that thousands of physicists have lost their cool?

This slight hump was unique

What Cobb suggests is that we've been observing a certain type of collision more than we expected, and the product of that collision is just two photons, two particles of light.

this is rare

Particle collisions are not car collisions

follow another rule

Quantum theory applies when two particles collide at speeds approaching the speed of light.

In the world of quantum theory, two particles can form a new particle, but that particle's lifetime is a fraction of a second, and it splits into other particles that can be detected.

If you think about it in terms of car crashes, at the moment of collision, the two cars disappear and a bicycle appears in its place (Laughter).

(Laughter) Hopefully, but not exactly.

this experiment is very expensive

It's extremely rare that only two photons are detected.

Because photons have special properties among subatomic particles, the possibilities for new particles that produce only two photons, like the mysterious bicycle, are very limited.

But one of those options is pretty high energy, and it has to do with that long-standing problem that's been bothering me since I was a kid: gravity.

Gravity may seem like a very strong force, but it's actually an incredibly weak force compared to other forces in nature.

I can easily beat gravity by just jumping, but I can't take a proton out of my hand.

How strong is gravity compared to other forces in nature?

1/10 to the 39th power

39 zeros after the decimal point

Worse, the other forces in nature can be fully explained by what we call the Standard Model, which is the best current theory that can explain nature at its smallest scale, and frankly, one of humanity's greatest achievements.

Impossible

Does that mean most of the gravity has disappeared?

We feel a little bit of gravity, but where's the rest?

nobody knows

Now, there's a hypothesis that offers a bold explanation.

We are also in three-dimensional space with you in the back.

I hope you can accept this

(Laughter) All known particles exist in three dimensions.

In fact, the existence of a particle means that the energy at that location in three-dimensional space is in a higher state than the base, and the space fluctuates locally.

More importantly, the mathematics we use to describe this physics assumes that the number of dimensions is three.

But mathematics is mathematics, and you can try different mathematical treatments.

For a very long time, there was a lot of thinking about the extra dimensions of space, but it was just an abstract mathematical concept.

So if you look around -- look behind you -- there are clearly only three dimensions in space.

What if it wasn't real?

What if the missing part of gravity leaks into an extra dimension of space that we can't see?

If we can see this extra dimension of space, and gravity is as strong as any other force, but we can feel only a small cross-section of gravity, what if we think of gravity as a very weak force?

If this hypothesis is true, then we have to extend the standard model of elementary particles so that we can include the extra-dimensional particles, the higher-order particles of gravity -- the special gravitons that exist in the extra dimensions of space.

From your point of view

You're probably thinking, "How in the world are we going to try this crazy science fiction idea when we're stuck in three-dimensional space?"

(Laughter) If it's colliding hard enough, it shakes up the extra dimensions of the space it's supposed to be in, creating a higher-dimensional graviton that immediately pops back into the three-dimensional space where the LHC resides and splits into two photons, two particles of light.

The extra-dimensional graviton hypothesized here is one of the hypothetical new particles that can have the special quantum feature of being able to produce a small bump with two photons.

The possibility of unraveling the mysteries of gravity and discovering extra dimensions of space - now you know why thousands of physics geeks lost their cool over the tiny bumps of two photons in the data.

A discovery that rewrites textbooks

Now, remember, the message sent out by the experimental physicists doing this work at the time was very clear: "We need more data."

As the data accumulates, we'll see if this little hump turns into a nice, crisp Nobel Prize (Laughter), or if the new data fills in the hump and turns it into a smooth line.

We kept taking data, and over the course of several months, we collected five times as much data, and this little hump became a smooth line.

The media reported "great disappointment," "vanishing hope," and "disappointment" for particle physicists.

With all this coverage, people probably thought we closed the LHC and went home.

(Laughter) But we don't do that.

Why?

Even if we didn't discover a new particle, it really didn't -- why are we talking about it here?

Why don't you just drop your shoulders in embarrassment and go home?

particle physicists are exploring

It's like we're the only ones making maps.

Leaving the LHC, let me explain in simple terms, you're an astronaut and you land on a planet in the far reaches of space.

Suppose you're looking for an alien

What should we do first?

Soon you'll orbit the planet, you'll land on it, and you'll scan it for any large, noticeable signs of life and report it to your Earth station.

we are at this stage

I just reported that I did the first survey at the LHC looking for distinct large new particles, and there were none.

We saw a strange, alien hump on a mountain in the distance, but when we got closer, it turned out to be a rock.

So what do we do? Give up and fly away?

Absolutely not. You're the worst scientist to do that.

Instead, spend the next two decades exploring, mapping the planet in great detail, probing the sand with sophisticated instruments, digging under every stone, and drilling holes in the ground.

A new particle may appear immediately as a large, well-defined hump, or it may take years of data collection before it appears.

Humanity has just begun its very high-energy search at the LHC, and we have much more to explore.

What if, after 10 or 20 years, we still haven't found a new particle?

Build a larger experimental facility

(Laughter) I'm going to experiment with higher energies.

experiment with higher energies

Plans are already underway to build a 100-kilometer tunnel that will be able to smash particles with 10 times the energy of the LHC.

We can't decide where nature hid the new particles.

just decided to keep exploring

What if you can't find new particles in 100 km tunnels, 500 km tunnels, or 10,000 km colliders floating in space between the Earth and the Moon?

Maybe we're doing particle physics wrong.

(Laughter) I guess we'll have to rethink.

We're going to need more money, more technology, more know-how than we have right now.

Some parts of the LHC are already incorporating artificial intelligence and machine learning techniques.

But what about that ultimate question?

What if even artificial intelligence can't help us answer our questions?

What if these problems that have been unsolved for centuries are doomed to be unsolvable in the near future?

What if the problems that have haunted me since childhood were destined to be unsolved in my lifetime?

When that happens-

will be more interesting

you're going to have to think in a whole new way

I'm going to have to go back to my assumptions and see if I'm wrong somewhere.

And we must invite more people to study science with us, because we need a new perspective on a century-old problem.

i haven't found the answer and i'm still looking for the answer

But somebody, maybe a student now, maybe not even born yet, will lead you to look at physics in a whole new way, and point out that you're just asking the wrong question.

It's not the end of physics, it's a new beginning.

thank you

(applause)

One amazing fact is that since the introduction of ATMs -- that cash vending machine -- 45 years ago, the number of bank tellers employed in America has roughly doubled, from 250,000 to 500,000.

250,000 in 1970, 500,000 now, 100,000 more since 2000 alone.

This fact, revealed in a recent book by Boston University economist James Bessen, raises an interesting question: What are these people doing? Why won't automation eliminate those jobs?

If you think about it, many of the great inventions of the last 200 years were designed to replace human labor.

Tractors were created to replace manual human labor with mechanical power.

The assembly line was devised to replace the inconsistent manual work of humans with the precision of machines.

Computers were created to replace error-prone hand calculations with digital perfection.

These inventions were a great success

We no longer dig trenches by hand, we no longer hammer tools out of wrought iron, we no longer keep paper books.

Yet the percentage of American adults employed in the labor market is higher now than it was in 1890, 125 years ago, in 2016, and has been rising almost every decade in the meantime.

This raises a paradox

As machines increasingly replace humans at work

Why isn't human labor superfluous and human skills obsolete?

Why do you still have so much work to do?

(Laughter) I'm going to try to answer this question tonight, and in the process, I'm going to talk about what it means for the future of work, and what the problems automation poses for our society, and what it doesn't.

Why are there so many jobs?

This involves two basic economic principles.

One is about human ingenuity and creativity.

The other has to do with the insatiable human greed.

Let's call the first one the "O-ring principle," which determines the kind of work that humans do.

The second principle is the no-enough principle, which determines how much work there is.

Let's start with the o-ring story

ATMs have had two offsetting effects on bank teller employment.

As you can imagine, it replaces a lot of the teller's work.

The number of tellers per branch has decreased by a third

But banks also found it cheaper to open new branches, and in the same period, the number of bank branches increased by 40 percent.

In total, the number of tellers increased along with the number of branches.

But the teller's job description has changed a bit.

Cash-handling became less of a daily job, and I became more of a salesman than a cashier, building relationships with customers, solving problems, and introducing new products such as credit cards, loans, and investments.

There is a general principle at work here.

Many of the jobs we do require a variety of skills: brains and muscles—expertise and experience intuition Edison called effort and inspiration.

Automating one part of such a job usually doesn't make other parts redundant.

that part is more important

have a higher economic value

Let me give you a notable example

In 1986, the Space Shuttle Challenger exploded less than two minutes after launch, sending debris to the ground.

Investigations revealed that the cause of the explosion was a cheap rubber O-ring in the rocket booster that had froze on the launch pad the night before, causing a catastrophic failure shortly after launch.

In this multi-billion dollar enterprise, a mere rubber O-ring was the difference between the success of the project and the tragic deaths of seven astronauts.

The "O-ring production function" is a clever metaphor for this tragic situation, coined by Harvard economist Michael Creamer after the Challenger disaster.

The O-ring production function looks at work as a series of interlocking steps, chains of loops.

All the links in the chain must work for the plan to succeed.

If any one of them fails, the entire plan, product, or service crashes.

This precarious situation has surprisingly positive implications: improving the reliability of one link increases the value of improving the other links.

If most chains are fragile and fragile, it doesn't really matter how reliable your chain link is.

Either way, somewhere will break

But if all the other links are solid and reliable, then the importance of our link becomes more essential.

Ultimately it all comes down to

The O-ring was the cornerstone of the Challenger because everything else worked perfectly.

If the Challenger had been something like Windows 2000 in the space age -- (Laughter) -- O-ring reliability wouldn't have mattered, because it would crash anyway.

(Laughter) More generally speaking, I would say

A lot of the work we do is that people are the O-rings.

ATMs did the job of receiving and withdrawing cash faster and better than tellers, but that didn't make tellers unnecessary.

Instead, the teller's problem-solving skills and customer relationships became more important.

The same principles apply to building buildings, examining and caring for patients, teaching a classroom full of high school students, and so on.

As tools advance and technology acts as leverage, human expertise, judgment and creativity become more important.

And that leads us to the second principle, which is the principle of never having enough.

You might be thinking, "O-rings got it. Human work matters.

Machines can't do it, but there's a job that needs to be done.

But it says nothing about the amount of work that will be required."

Isn't it obvious that when something becomes sufficiently productive, people will drop out of it?

In 1900, 40% of American employment was in agriculture.

less than 2% today

Why have there been so many fewer farmers?

It's not because people are eating less.

(Laughter) Thanks to a century of agricultural productivity gains, two million farmers can now feed 320 million people.

It's amazing progress, but it also means that farmers are left with a lot of O-ring jobs.

So yes, technology will reduce jobs.

Agriculture is just one example

There are many other such examples

But what's true for one product, service, or industry doesn't mean it's true for the economy as a whole.

Many of the industries that people work in today, such as medicine and health, finance and insurance, electronics and IT, didn't exist or were tiny 100 years ago.

The products that we spend a lot of money on, like air conditioners, SUVs, computers, mobile devices, were either ridiculously expensive or weren't even invented 100 years ago.

Automation has given us more time, expanded the scope of what is possible, and created new products, ideas, and services that captured our attention, occupied our time, and encouraged us to consume.

You might think it's a lot of junk Ultimate Yoga Adventure Tour Pokémon GO... I'll admit it.

But people want those things, and they work hard for them.

The average worker in 2015 would only have to work 17 weeks, a third of the year, to achieve the average standard of living in 1915.

but most people don't

Work hard to get the gift of technology

Material wealth doesn't erase psychological scarcity

As economist Thorstein Veblen said, "Invention is the mother of necessity."

Now

If these two principles, the "O-ring principle" and the "never enough" principle, are recognized, there will be no shortage of jobs.

you will nod

So what's there to worry about?

Automation Employment Robots Jobs... Will it all work itself out?

no

that's another story

Automation creates wealth by enabling us to do more work in less time.

But there are no economic laws that guarantee that people will put that wealth to good use, and that's a concern.

Consider two countries, Norway and Saudi Arabia.

Both of these countries are rich because of oil, and it's like money is blowing out of a hole in the ground.

(Laughter) But it's not like they're using that wealth in the same way for the prosperity of their people.

Norway is a country with a successful democracy.

In general, people get along well with each other

We are roughly between 1st and 4th in national happiness rankings.

Saudi Arabia is an absolute monarchy, and the road to prosperity is not open to many of its citizens.

The national happiness ranking is around 35th, which is low for such a rich country.

By way of comparison, we have the United States at around 12th or 13th place.

The difference between Norway and Saudi Arabia isn't wealth or technology.

social system

Norway has invested in creating an open and economically mobile society.

Saudi Arabia has improved its standard of living, but many people are dissatisfied.

Both countries are rich, but they are not doing equally well.

This reminds me of the problems we face today, the problems that automation brings.

The problem is not the lack of jobs

America has added 14 million jobs since the worst of the Great Recession.

The problem is that many jobs aren't good jobs, and many people don't have the skills to get the good jobs that are emerging.

Employment growth in the United States and many other developed countries is like a barbell with increasing weights on both ends.

On one side, there are highly educated, high-paying jobs: doctors, nurses, programmers, engineers, marketing and sales executives.

Employment is strong and growing

Similarly, low-skilled and low-educated jobs are also increasing in employment, such as food service, cleaning, security, and nursing care.

On the other hand, middle-class, middle-income jobs are shrinking: laborers, such as factory workers and craftsmen, and clerical jobs, such as clerks and salespeople.

This reduction in the midsection is not surprising.

Because a lot of those middle-skill jobs follow well-understood rules and procedures, and they're turned into software and run on computers.

What this phenomenon creates is what economists call "employment polarization," with steps removed from the economic ladder, a shrinking middle class, and a more stratified society.

While high-income, highly-educated professionals have interesting jobs, many have low-income jobs whose primary responsibility is to look after the well-off to keep them comfortable and healthy.

This is not how I see progress, and neither do you.

But there are also encouraging stories.

We've faced similar big economic shifts in the past, and we've weathered them well.

In the late 1800s and early 1900s, automation greatly reduced jobs in agriculture.

In response to this problem, they took a bold step and asked a whole generation of young people to stay in school and get an education until the age of 16.

This was called the high school movement, and it was extremely expensive.

Not only do we need to invest in schools, but those young people will not be able to work.

It turns out that this was the best investment America made in the 20th century.

Because we now have one of the most skilled, flexible and productive workforces in the world.

To understand how this worked, imagine bringing the workers of 1899 into the present day.

However strong they may be and how good their character may be, many lack basic literacy and mathematical skills to perform all but the simplest tasks.

Most would be ineligible for employment

What this example shows is the superiority of our systems, especially our schools, which has allowed us to reap the fruits of technological prosperity.

It's silly to say there's nothing to worry about

It's quite possible that we're doing it wrong

If America hadn't invested in schools and skills in the high school movement a century ago, we would be a much less prosperous, less economically mobile and much more unhappy society.

But it would be foolish to say that our destinies are closed.

It's not the machine that decides our destiny

not even a market

Our destiny is determined by ourselves and our institutions.

I started with a paradox

While machines are increasingly doing the work of humans,

Why can't human labor and skills become superfluous?

Isn't it obvious that the road to economic and social hell is paved by our own great inventions?

History has repeatedly answered this paradox.

One of the answers is that technology can act as a lever to increase the added value and importance of human expertise, judgment and creativity.

O-ring

The other answer is that due to the endless human ingenuity and endless desires, we are never satisfied.

there are always new jobs

Adapting to the speed at which technology changes creates a difficult problem that can be seen in the polarization of the labor market and how it threatens economic mobility.

Overcoming this difficulty is something that can be done automatically

It's not something that can be done without cost

it's not easy

it is possible

And there is also a bright story

We are rich because of our amazing productivity.

We can, of course, invest in ourselves and our children, just as America did in the high school movement 100 years ago.

It would be unforgivable not to

You might be thinking, Dr. Orto may be telling you bright stories about the distant past, not too long ago, and the present, but he's not talking about the future.

'Cause we all know this time is different

It's different this time, right?

Of course not this time

it's different every time

Countless times in the last 200 years, scholars and activists have warned that jobs will run out and we will be obsolete, as Luddites said in the early 1800s, US Secretary of Labor James Davis in the mid-1920s, Nobel Prize-winning economist Vasily Leontief in 1982 and, of course, many scholars, pundits, technologists and mass media people today.

Such predictions seem arrogant to me.

These self-proclaimed prophets are effectively saying, "If I can't figure out what people will do in the future, neither the world nor my descendants can figure it out."

I don't have the guts to make such a bet against human ingenuity.

I don't know what people will be doing hundreds of years from now.

But the future doesn't depend on my imagination.

Let's say I'm an Iowa farmer in 1900, and an economist from the 21st century teleports into my field and says, "Hey farmer Oto, over the next 100 years of productivity growth, farm employment will drop from 40% to 2%.

What do you think the other 38% of people do? ”

I probably wouldn't say

“Ah, app development, radiology, yoga instructors, emoji design, etc.”

(Laughter) I have no idea.

But I wish I had the wisdom to say, "It's amazing that the farming population is down 95 percent without food shortages.

great progress

I hope that its prosperity will lead mankind to do something extraordinary.”

And I think that's generally the case.

thank you

(applause)

When I look up at the night sky and see the stars, I am amazed at the number of stars.

beautiful

But there are more stars out there that we can't see, because we know that most stars have one or two planets orbiting each other.

So this picture doesn't show every exoplanet ever discovered.

When we think of a planet, we tend to think of a celestial body that's far, far away and completely different from Earth.

The earth we live on is also a planet, and there are many amazing phenomena associated with the earth.

I'm coming to know that I'm surprised

I want to tell you something about the earth in it.

About 180 kg of hydrogen and nearly 3 kg of helium per minute dissipate from the earth into outer space.

It means that it will never come back

Earth's atmosphere, which is composed of hydrogen, helium, and many other gases,

It's just a bunch of different gases that show up as blue lines in this photo taken by an astronaut from the ISS.

But it's this thin layer that envelops our planet that allows life to thrive on Earth.

Earth is protected from meteorites and many other impacts

It's a startling phenomenon, and that's why the loss of this component is a frightening, if not a terrible, story.

I'm studying this phenomenon, and it's called "atmospheric dissipation."

It's not just happening on Earth

Rather, you could say it's proof that they're planets.

It provides clues about the planet itself.

When you think of the solar system, you probably think of this picture.

There are eight planets, but some would say nine.

For those of you who are irritated by this picture, let's add one more.

(Laughter) I have pictures of the New Horizons spacecraft, so let's add Pluto.

In fact, for the purposes of this talk here on atmospheric dissipation, Pluto is a planet to me, just like any other planet that orbits an invisible star.

The definition of the basic properties of a planet includes objects that are held together by their own gravitational force.

In other words, various things are attracted and connected by gravity,

because of its high mass and gravity

it's round

If you look at all these planets, including Pluto, they're all round.

You know how gravity works

Another fundamental property of planets is their relationship to the invisible star, the Sun, although all the planets in our solar system orbit the Sun.

That's basically what's causing the dissipation of the atmosphere.

The root cause of how stars cause planets to lose their atmospheres is that the particles, light, and heat that the stars radiate onto the planets drain the planet's atmosphere.

If you think about hot air balloons, or if you look at the lanterns from Thailand's Khom Loi festival, which you can see in this photo, you can see that hot air creates the force that causes the air to rise.

With enough energy and heat from the sun, very light gases that are only gravitationally bound diffuse into space.

This is how the atmospheres of Earth and other planets receive heat from the stars, defy their own gravity, and are affected by both, resulting in atmospheric dissipation.

As I mentioned earlier, the rate is about 180 kilograms of hydrogen and nearly 3 kilograms of helium every minute.

So how's it going?

Already in the 1980s, NASA's "Dynamic Explorer" probe was taking ultraviolet photographs of the Earth.

In this picture of Earth, the dissipating hydrogen is shown in red.

Oxygen and nitrogen and other gases form a ring of white, sparkling auroras in the polar circle, and they also appear in places near the tropics.

This photo proves conclusively that the Earth's atmosphere not only tightly envelops us here on Earth, but it also spills out into the far reaches of space.

But Earth isn't the only one causing atmospheric dissipation.

Our next-door neighbor, Mars, is much smaller than Earth, so the gravity that holds its atmosphere is much less.

We do have an atmosphere, but it's far thinner than the atmosphere on Earth.

look at the surface

You can see the craters, which indicate that the atmosphere was thin enough to soften the impact of the asteroid impact.

Atmospheric dissipation is also responsible for the redness of Mars, which is why it's called the "red planet."

It is believed that Mars had water in the past, and enough energy was added to the water to decompose it into hydrogen and oxygen.

It's okay to look at a picture of Mars and say that maybe atmospheric dissipation has happened, but NASA is sending a probe called Maven into orbit around Mars to study atmospheric dissipation on Mars.

Mars rover Maven

They're sending us images that look very similar to what we see on Earth, even though we've known for a long time that Mars is losing its atmosphere.

I have a great photo to show it

You can see the red circle, which is the outline of Mars, and the blue color represents the hydrogen escaping from Mars.

It's more than ten times the size of Mars, and it's spread out.

is in outer space

This supports the theory that Mars turned red because it lost hydrogen.

Mars isn't just missing hydrogen.

Not only does helium escape from Earth's atmosphere, it also loses oxygen and nitrogen, but Mars also loses oxygen, as recorded by Maven.

Oxygen is heavier, so it doesn't travel as far as hydrogen, but it's still diffusing from Mars.

You can see that we're not trapped inside the red frame.

Atmospheric dissipation isn't unique to Earth, it happens on every planet, and if you send a probe to study atmospheric dissipation, you can learn about the history of that planet, the planet in general, and the future of Earth.

So one way to predict the future of our planet is to know the distant, invisible planets.

But before that, I can't show you a picture like this on Pluto, and I'm sorry to say that we don't have that picture yet.

The New Horizons probe is investigating Pluto's atmospheric dissipation.

look forward to it please wait

But the planets I want to talk about here are known as "transiting exoplanets."

It's a planet orbiting a star outside our solar system. It's called an "exoplanet" or "exoplanet."

Transiting exoplanets have one peculiarity: if you look closely at the central star, you'll see it twinkling.

The reason it blinks is because there are multiple planets orbiting the star at any given time, and that creates a peculiar effect, and when those planets block the star's light, it appears to blink.

You can find planets by studying the twinkling of stars in the night sky.

Over 5,000 planets have been discovered in the Milky Way galaxy this way, and as I said before, I'm sure there are more.

The star blinks we see aren't from the planets themselves, they're the periodic changes in stellar brightness that can be recorded.

The planets orbiting the star block the light from the star, so they appear to us to blink.

Now, not only will we be able to find planets, but we will also be able to detect different wavelengths of light.

You said you look at Earth and Mars in ultraviolet light.

When the Hubble Space Telescope observes transiting exoplanets in ultraviolet light, when the planet passes in front of its star, the ultraviolet light is much weaker and the blinks appear much louder.

They think it's because an atmosphere of diffused hydrogen surrounds the planet, making it appear bloated and blocking out more light.

Using this technique, we were able to discover a few transiting exoplanets that were escaping into the atmosphere.

Some of the planets we've discovered are what I like to call "hot Jupiters."

It got its name because, like Jupiter, it's a planet made mostly of gas. Hot Jupiters are very close to their stars, only one-hundredth of the distance between the Sun and Jupiter.

Hot Jupiters have a lot of light gas on the verge of escaping, as well as intense heat radiating from their stars, and are escaping into the atmosphere at a catastrophic pace.

Hot Jupiter is losing about 600,000 tons of hydrogen every minute, compared to Earth, which is losing 180 kilograms of hydrogen every minute.

With this, I thought that such a planet would disappear.

It's a question that everyone has asked when looking at our solar system, because the planets closest to the sun are rocky planets, and the planets farther from the sun are larger and mostly gaseous.

Is it possible that it started out as a Jupiter-like planet, but because it's so close to the Sun, it's lost all its gas?

I believe that if planets started out like Hot Jupiter, they wouldn't end up like Mercury or Earth.

But if you started with a small planet, it's possible that a lot of gas was released, and that had a big impact on the planet, making it very different from what it started with.

This seems like a common thing, and you might be thinking, what does this mean in our solar system? What does this have to do with us here on Earth?

In the distant future, the brightness of the sun increases

If the heat radiating from the sun were to become very intense,

Just as gases are escaping from hot Jupiter right now, so are gases escaping from Earth at a rapid rate.

So what we do expect, at least, is to prepare ourselves for the reality that in the distant future, the Earth will look like Mars.

The hydrogen that separated from the water on Earth would be ejected into space faster, leaving only a dry red planet.

But don't be scared, we're talking billions of years from now, so there's plenty of time to prepare.

(Laughter) I wanted you to realize, not just what's going to happen in the future, but that atmospheric dissipation is happening while we're doing this.

We have a lot of amazing technologies now that can tell us what's going on in space, about planets far, far away, and we're studying these planets to try to understand that world.

Thus, in the process of studying exoplanets like Mars and hot Jupiters, we can discover phenomena like atmospheric dissipation and learn more about our planet.

The next time you feel like the universe is somewhere far away, remember this story of mine.

thank you

(applause)

why do cats do that?

Cats are cute and irresistible. With over 2 million YouTube videos and 26 billion views, cats jump, jump, climb, get into tight spaces, crawl, scratch, make noises and purr.

This sort of strange cat behavior is both fun and baffling, and many people wonder, "Why do cats do this?"

Cats have always been solitary animals, preying on smaller animals and preying on larger carnivores.

Whether as predator or predator, the survival of the species depended on all-important instinctive behaviors that we see today in both wild and domestic cats.

Grizmo's behavior as a domestic cat may seem puzzling, but similar behaviors that have been naturally inherited among wild cats for millions of years may make Grizmo look even more feline.

With their unique musculature and excellent sense of balance, they can climb to high vantage points to patrol their territory and target wild prey.

Grizmo doesn't have to use this ability now to hunt and catch prey to eat, but his instinct to look out over the living room from the top of the bookshelf is exactly what Grizmo has evolved to meet his needs.

As wild predators, cats are opportunistic and will hunt whenever prey is available.

Because most of the cat's prey is small, wild cats had to eat many times each day to satisfy their hunger, and had to use the strategy of sneaking up, pouncing, and killing and eating.

That's why Grizmo likes to chase small toys and pounce on them, and likes to keep eating small amounts day and night.

What's more, in their natural environment, small prey often hide in tight spaces, so the grizmo's habit of trying to enter containers and crevices is the same curiosity-driven behavior that ensures the survival of the species as its ancestors did millions of years ago.

Wild cats needed sharp claws to climb, hunt, and defend themselves.

By sharpening on familiar surfaces, they keep their nails in good condition, stretch their back and leg muscles, and release stress at the same time.

So Grizmo doesn't dislike your sofas, chairs, ottomans, pillows, curtains and other things around you.

Scratching these until they're tattered keeps their claws in perfect condition, because that's what Grizmo's ancestors did to survive.

As predators, cats have evolved to avoid being caught, and in nature, the cats that are best at avoiding predators have survived.

So now in your home, Grizmo is a genius at slipping into tight spaces, seeking out and hiding in places we least expect.

That's why I like clean, odorless cat litter.

That way, you can hide your whereabouts from nearby predators sniffing around.

Considering everything we know about cats, one of their most recognizable behaviors is also one of their most enigmatic.

Cats purr for many reasons: comfort, stress, hunger, etc.

But interestingly, the frequency they purr at is between 25 and 150 hertz, in the range that can regenerate tissue.

While the purring Grismo makes a great nap companion, the sounds may heal her own muscles and bones, and maybe even yours.

Over the years, they have evolved both as solitary predators, hunting to eat, and as prey, fleeing and hiding to survive.

So modern cats have inherited many of the traits that allowed them to survive in nature over millions of years.

Their seemingly incomprehensible behavior can be explained by that.

For them our home is the jungle

But if so, who are we from a cat's point of view?

Big, stupid, hairless cats competing with them for prey?

Are they really dumb predators that they can outwit every day?

Cats may think we're prey.

The #MeToo and #Time'sUp movements have highlighted the reality that many of us experience harassment and discrimination in a surprisingly common way, and that this extends to the workplace.

Whether it's technology, finance, sports or services, we hear stories of abuse of power and misbehavior in the workplace every day.

people are outraged

And they're voicing on Twitter and social media that this situation should change.

But it's not just hashtags anymore, it's time to move on to the next action.

In order not to tolerate harassment and discrimination, we should report the damage to those who can solve it.

And we need to talk about harassment more comprehensively, not just about sexual harassment, but about harassment and discrimination on the grounds of age, disability, ethnicity, and so on, and encourage everyone to come forward.

Only together can we address the root causes of harassment and the problems that go with it.

Most of us experience workplace harassment and discrimination at some point in our lives.

One study found that women and people of color, especially those who identified themselves as LGBTQI, were more likely to be targeted.

Most of them -- 98 percent, according to one study -- don't speak up and speak out against their employers.

Harassment and discrimination are often lonely experiences, but so that victims don't have to hide.

We have to create an environment where people can speak up.

The first question that comes to anyone who has experienced harassment is, "What am I going to do now?"

this is what i want to advise you today

My head spins when I think of the obstacles I'll have to overcome to accuse.

How can we speak up in a society that disbelieves or despises real-life experience?

How can you speak up in a society where the victims get retribution?

How do we break through when silence is the right thing to do?

Worse, the victim's "memory" is often the only evidence.

here is my appearance

I'm a memory scientist, and I'm an expert on how humans recall important emotional events.

In particular, I've focused on how the way hearings are conducted can greatly affect the admissibility of memory-based testimony.

The wrong technique can cause you to forget details or misremember, but good listening can change a person's life for the better.

We've reviewed experimental reports and explored this issue both in the courtroom and in the research setting, analyzing the various factors that can alter memory to the extent that it affects court decisions.

So I focused on how we can document and report workplace harassment and discrimination.

I learned three things from this study: techniques that can be applied immediately when faced with harassment or discrimination in the workplace.

I think it will help you turn your memories into evidence, in a way that even memory skeptics like me can't find the problem.

The first is that James Comey was right.

This former FBI director would lock himself in his car after every meeting with the president and write down everything that happened in that meeting, as far as his memory allows.

The now-famous record turned out to be very useful evidence later on.

be like comey

Nothing says lock yourself in your car, but as soon as something happens, record everything on the spot.

It is recommended that you do this before you speak to anyone

Because the moment you share the story with a friend, family member, colleague or therapist, your memory of the event can be distorted or altered.

In-situ, unaffected evidence is of tremendous value.

The second is that the form of evidence is very important.

Of course, you can record events by hand, but that makes it difficult to prove when you wrote them.

Instead, record it on your computer or smartphone and time-stamp it so you can prove it was recorded at the time.

Evidence that is time-stamped on the spot is more credible.

Lastly, “record the content that can be used as evidence”

A common example is to use timed Facebook message exchanges as evidence, but the content is not necessarily evidence of an event and certainly not useful.

It's easy to write events out of emotional turmoil, and that's understandable because it's an emotionally charged experience, but the details don't necessarily count in later investigations.

Please note the following seven

All you have to do is write your answer along the lines of

First one: "What happened?"

Describe the situation at the time in as much detail as possible, preferably on the day the event occurred.

Second, who was there? Were there any witnesses?

This may be the difference between victory and defeat later on.

Third, when exactly did it happen?

Fourth, "Where did this happen?"

Fifth, "Who did you talk to after the event?"

Number 6: How did you feel during and after the event?

Seventh, is there any other evidence to support the credibility of the claim? WhatsApp, photo mail, etc.

These are things that are very easy to record in detail in the moment an event occurs, but they are also things that are very easy to forget afterward.

Research suggests that people often overestimate their ability to recall details of emotional events over time.

Assuming you forget

think it should be recorded

The first three things I talked about are a head start, but they're not enough to overcome the many other barriers to accusation.

A 2018 report from the Equality and Human Rights Commission recommended certain steps that are important for overcoming other concerns raised when reporting such incidents to companies.

So what?

by using online anonymous whistleblower tools

According to them, this is the only way to get past the many concerns that come with accusations.

Along the lines of that, I also took what was happening around me, applied the mechanics of the science of memory, something I'd been working on for years, and got together with a few friends to co-create TalkToSpot.com.

Spot is an online anonymous whistleblowing tool that helps you document and report workplace harassment and discrimination.

It's anonymous, it's free, it's completely science-based.

You don't have to tell anyone, you won't be judged, it's available whenever and wherever you feel you need it.

Now you can take an evidence-based memory interview.

This is called a cognitive interview.

It's the same technique that the police use to conduct interviews.

So, hopefully, you'll be interviewed along the lines of a cognitive interview about important emotional events.

It's a tool that surfaces everything that's relevant to you. It's powered by automated messaging. After you've spoken to this bot and answered all of its questions, it creates a time-stamped, digitally signed PDF transcript that you can either save for later use or send to your company right away.

You can also submit anonymously to the company, as recommended earlier.

But how useful the whistleblower tool is is up to the listener.

So for companies that want to embark on real change, we're also giving them the tools to respond.

If your organization is serious about eliminating harassment and discrimination in the workplace, even if you choose to remain anonymous, your organization can respond.

I think it's very important to work with the company on this issue.

I believe that by shedding light on this dark issue, we can all be happy.

Whether it's you or someone you know who's going through this, I believe that documenting and speaking out about what happened can improve how we approach this issue.

This is your chance to provide your employees with a better and more efficient whistleblowing system.

The current whistleblowing system that many organizations use doesn't work.

If you're looking for inclusion and diversity, now is the time to make a difference.

It's Time to Celebrate Diversity

It's time to give a voice to those who have been ignored for too long.

It's time to honor those who take that step, even if they remain anonymous and conceal their true identities.

It's time to change the way accusations are made

thank you

(applause)

I'm going to share a lot of secrets with you in the hope that by doing so, you'll be able to take some of the shyness that most people feel about sex.

Have any of you ever heard vulgar words thrown at you by a passer-by?

Only women

The most intense moment for me was when that "passerby" was actually a student of mine.

That day, at the end of class, the student in question came up and said exactly what I expected, "Professor, I'm so sorry.

If I had known you were a professor, I wouldn't have said that."

(Laughter) He didn't see me as a person until he recognized me as a professor.

This concept, called sexual objectification, is at the root of sexism, and it's repeated throughout every aspect of our daily lives.

For example, we see governments in countries where men rape women and refuse to punish them.

Also seen in ads

For example, have any of you ever seen an advertisement with a woman's breasts that wasn't related to the product?

Who thinks there's an alarming number of movies where women only appear as romantic objects?

These cases, seemingly innocuous and innocuous, are slowly becoming part of a culture that continues to objectify women.

We see it in schools that send 10-year-old girls home for wearing clothes that distract boys from studying, in governments in countries that refuse to punish men for repeated rapes, and in discos where women are killed for refusing to dance with crotch rubs.

The media continues to play a large part in the sexual objectification of women.

Let's take a look at a typical romantic comedy

There are two common types of female characters, which are women portrayed as love interests.

The first one is so sexy

An incredibly beautiful woman with a perfect body.

The main character, the man, easily notices her charm and has sex with her.

The second is the female protagonist, who is beautiful yet humble and falls in love with the male protagonist, but is either unrecognized at first or hated at first.

The first woman is a "light woman"

discarded and forgotten

because it's too light

The second is attractive yet humble, so she's the perfect type to give birth to the main character's male baby.

I mean, she's a bride candidate.

In fact, women are said to have two roles, but it's difficult for one woman to juggle both roles.

Very rarely, I tell people I've just met that I'm researching sex, and if it doesn't stop the conversation, it's usually very amusing.

"Hey tell me more"

So take my word for it—

“I would love to investigate the sexual behavior of couples during pregnancy and after childbirth.”

When I say this, I get a different reaction than the first time.

(laughs) "Eh, what is that?

Do pregnant women have sex?

Rather than that, why don't you try researching sexual desire or orgasm?

That one seems more interesting, and it's also a topic."

Ladies and gentlemen, what words come to mind when you imagine a pregnant woman?

In one study, we asked more than 500 adults this question, and the majority of the answers were "belly," "round," and "cute."

it wasn't particularly surprising

Speaking of "cute", what else is there?

baby puppy kitten

Are you old?

(Laughter) But calling an adult "cute" greatly undermines their intelligence and complexity.

only childlike qualities remain

We also asked men and women questions. Men imagined that their female partner was pregnant, and women imagined themselves pregnant and told them what words came to mind when they had sex.

Most of the responses were negative

"feel ill"

"awkward"

"Not sexy" "Weird"

"Difficult to do"

"how?"

(Laughter) "It takes time." "It's not worth the risk."

The last one was very impressive.

You might think that because pregnant women and mothers are generally considered separate from sex, they are not subject to sexual objectification.

I think it's hard to accept gender discrimination.

not necessarily

A different type of sexual objectification occurs.

When I was trying to explain this, I was once told of a Paleolithic figurine called "Woman of Willendorf," which scholars thought was the goddess of love and beauty and called Venus.

This theory was later debunked because of the discovery of overt emphasis on reproductive features, such as large breasts, which are believed to be suitable for lactation, rounded, presumably pregnant bellies, and a slightly reddish hue that is associated with menstruation and childbirth.

It was also thought that it was made to be held in the hand or to lay on, because its legs were so small that it could not stand up on its own.

not even a face

For these reasons, the statuette was considered a symbol of fertility rather than a human figure.

It was just a "thing"

Interpretation of the statuette has changed from an idealized symbol of love and beauty to a symbol of procreation.

I think these changes tell us more about the scholars who studied them rather than the actual significance of the statuettes.

A pregnant woman ceases to be the object of male sexual desire and is relegated to the role of reproduction and child-rearing.

At the same time, women become property of society and are greatly valued, simply because they are pregnant.

This is what I call the Willendorf effect, and it also shows up and is imprinted on every aspect of a person's life.

Have you ever been pregnant and had a noticeable belly?

(Laughter) There are many.

So, have you ever been touched by someone you don't know when you were pregnant? And who didn't even say, "Can I touch you?"

Have you ever been told to eat that, don't eat that, by a doctor or healthcare worker who you don't care about?

Have you ever been asked an in-depth question about how to go about giving birth?

Have you ever been told "that's wrong" at the end?

yeah me too

Have you ever ordered wine and been turned down by the waiter?

You may be thinking, "Huh?", but please listen to me.

this is a big secret

In fact, moderate drinking during pregnancy is safe.

Most people don't know this, because doctors believe that if they do, they won't be able to follow the recommended dosage.

What this tells us is that the Willendorf effect also includes classism and racism.

This shows up when governments roll out bills banning abortion, reminding them that the life in the womb doesn't belong to them, or when a gynecologist says, "Sex during pregnancy is safe, but it's never guaranteed."

It's "safety first"

In this way, you're denied freedom over your body, basic privacy, under the guise of being a good mother.

Pregnant women are seen as having lower decision-making capacity.

It's a "cute" existence, isn't it?

Sexual pleasure for women — I'm sorry.

To say that it's not worth risking sex while pregnant is to say you don't care about the woman's sexual pleasure.

It means that as a person it doesn't matter, even though maternal pleasure shouldn't harm the fetus.

Although medical institutions, such as the American College of Obstetricians and Gynecologists, are in a position to teach about the safety of sex during pregnancy.

what is your opinion

In fact, we haven't made any official comments about the safety of sex during pregnancy.

The Mayo Clinic is generally positive, but comes with a caveat: "In most cases, it's safe to have sex throughout pregnancy, but there are some cases where caution is warranted."

Some women don't want to have sex while pregnant, and that's okay.

Some women 'want' to have sex during pregnancy, and that's okay.

What should be banned is society telling women what they do to their bodies.

(Applause) Pregnant women are faceless people who can't stand alone -- they're not reproductive vehicles.

But the truth is, the crux of the problem is that all women are told that they don't care about female sexual pleasure.

Women who have same-sex sex and women who don't want children aren't even allowed to exist.

"I'm acting like that temporarily

It's just that a nice man hasn't appeared."

It's revolutionary for women to have sex just because it feels good.

Treated as a revolutionary

Women are seen as resisting social oppression that imposes that their raison d'être is limited to male pleasure and reproduction.

A woman who puts her own sexual needs first is terrifying, because she puts her own needs first.

(Applause) A woman who claims to be treated equally.

She's the kind of woman who wants a seat for herself at the table of power, and what's scarier than anything else is that she has to give up someone else's extra seat to get a seat.

(Applause) I have one more secret.

I have two sons and I need your help.

I always tell my sons that it's important for men to see women as equals, and my husband has taken the lead in putting this into practice, but this needs to be practiced not only in the home, but also in the world.

It's not a man's problem, it's not a women's problem

It's everyone's problem. Everyone has a part to play in breaking down an unequal system.

First, stop telling women what they can and can't do with their bodies.

(Applause) Let's also stop treating pregnant women as property of society.

If you don't know the pregnant woman, it's rude to ask if you can touch her belly.

Unless the other party is pregnant

don't tell pregnant women what to eat

Don't Pry About Childbirth Choices

And please understand that even those who choose not to have an abortion can fight for a woman's right to choose.

From a gender equality perspective, these two needs are not mutually exclusive.

When having sex with a woman, give priority to the other person's pleasure

If you don't know what makes you feel good, ask me

If you have kids -- (Laughter) -- talk to them about sex as soon as possible. We don't live in an age when kids look up the word "sex" in the dictionary.

I look it up on the internet

And when you're talking to your child about sex, don't just focus on procreation.

People have sex for many reasons.Some people want children, but most people have sex because it feels good.

let's admit

Support comprehensive sex education that makes sex shameless for teens with or without children

(Applause) Shaming young people's sexual desires and sexual behavior doesn't produce anything positive, or good, except for sexually transmitted disease and pregnancy test results.

Each of us has an opportunity every day to disrupt patterns of inequality.

I'm sure everyone will find it worth the effort.

thank you

(applause)

I'm a cook and a nutrition policy maker, but my whole family grew up in a family of teachers.

My sister is a special education teacher in Chicago.

My father just retired after 25 years of fifth grade.

my aunt and uncle were professors

All my cousins ​​are teachers

Except for me, basically everyone in my family is a teacher.

My family taught me that the only way to get the right answers is to ask the right questions.

So what are the right questions to ask to improve children's learning outcomes?

There are, of course, many important questions, but why not start with these questions: What is the relationship between a child's mental and physical development? What is the relationship between a child's mental and physical development? What is the relationship between a child's mental and physical development?

If children's diets are sugary and nutrient-poor, what can we teach them?

If a child's body is literally starving, what can it learn?

We should stop and ask ourselves about the resources we're pouring into our schools: Are we really setting our children up for success?

Now, a few years ago, I was a judge on a cooking showdown.

Four chefs will compete with each other on the taste of their dishes using the ingredients given to them on the day.

But this time it was very special

It's not that these four cooks are desperate for the limelight -- but that's a different world to me -- (Laughter).

These women -- I'm totally humbled -- cook breakfasts and lunches for thousands of children every day for just $2.68 per lunch, and only about a dollar for ingredients.

Now, in this episode of the show, the challenge ingredient for the main course was quinoa.

Now, I'm sure most of you haven't eaten school lunches in a long time, and although we've come a long way in terms of nutrition in school lunches, quinoa is still not a staple in most school cafeterias.

(Laughter) So this was difficult.

But what I will never forget is a dish prepared by a woman named Cheryl Barbara.

Cheryl was a nutrition coach at a high school in Connecticut.

What she made was a delicious pasta

it was brilliant

Pappardelle with Italian sausage, kale and parmesan cheese

It tasted just like a regular restaurant meal, except that the most important ingredient, quinoa, was added to the dish almost uncooked.

I did something funny.

(Laughter) So I asked him why he did that, in the way television judges often do.

Cheryl replied, "I didn't know what quinoa was at first."

(Laughter) "But today is Monday, and my school always makes pasta."

Cheryl explains that many of the children don't eat on weekends.

no food on saturday

no food on sunday

That's why I made pasta that I'm sure my kids would love to eat.

She wanted to make something that would make children feel full.

It was something that filled the stomachs of the children.

By the time Monday came, the children's hunger pangs had reached a peak, and they couldn't even think about schoolwork.

The only thing that comes to mind is food

that's it

Unfortunately, statistics tell us the same thing.

Let's apply this to the child's situation.

Let's focus on the most important meal of the day - breakfast

For example Allison

I'm 12 years old, very smart, and I want to be a physicist when I grow up.

If this kid went to a school where every student could eat a nutritious lunch, here's what would happen.

Nutrient-dense meals: You'll dramatically increase your chances of eating a low-sugar, low-salt diet with fruit and milk.

This child is less likely to be obese than the average child.

Fewer trips to the hospital

Anxiety and depression tend to decrease

behavior will improve

School attendance will improve and tardiness will decrease.

why?

Because when you go to school, there's a nice meal waiting for you.

On the whole, Alison is much healthier than the average other child.

But what about children who go to school but don't have a nutritious breakfast waiting for them?

let's say it's tommy

He's also 12 and a really good kid.

My future dream is to be a doctor

By the time I was in kindergarten, I was already bad at numbers.

By the time I'm in third grade, I'm already getting low marks in math and English.

By the time you're 11, you'll likely have repeated a grade once.

Research shows that undernourished children, especially those who don't get enough at breakfast, generally have lower cognitive function.

How pervasive is this problem?

unfortunately quite serious

The two statistics I'm about to present to you, which seem to be polar opposites on this issue, are in fact two sides of the same coin.

First, on the one hand, one in six Americans is not eating well, including 16 million children -- about 20 percent of all children.

Here in New York City alone, 474,000 children under the age of 18 are food insecure every year.

it's a terrible situation

At the same time, diet and nutrition are the leading cause of preventable death and illness in this country.

More than a third of the children I've been talking about are prediabetes.

It's hard to make the connection between hunger and diabetes, but in fact, in many cases, both problems occur in the same child.

In other words, they fill their bellies with unhealthy, high-calorie foods that their parents can buy cheaply.

But by the end of the month, if your parents ran out of food stamps or had their jobs cut, they wouldn't have enough money to buy basic food.

But we should be able to solve this problem, right?

because i know the answer

As part of my job at the White House, I developed a program where every school with more than 40 percent of children from low-income families would serve breakfast and lunch to every child in that school.

And it's free

This program has been a huge success, because it has helped us overcome some very difficult obstacles in getting our children to eat a nutritious breakfast.

It's a disability called 'disgrace'

Until now, only poor children could afford the breakfast that schools serve before classes.

I knew who was poor and in need of government assistance.

Every child has high pride no matter how much their parents earn or not

what happened?

Schools that implemented this program saw a 17.5 percent increase in scores in math and language.

17.5%

Studies show that when children consistently eat a nutritious breakfast, they're 20 percent more likely to graduate.

as much as 20%

Giving children the nutrition they need gives them the chance to thrive and thrive in school and beyond.

You don't have to take my story for granted on this subject, but just talk to Donna Martin and you'll find out.

is my favorite person

Donna is a school lunch director for Burke County in Waynesboro, Georgia.

Now, Burke County is one of the poorest of the five poorest states in America, and nearly all of Donna's students live below the poverty line.

A few years ago, Donna scrutinized and revised the nutrition standards in her area ahead of the new nutrition standards update.

She improved her menu with new fruits, vegetables and whole grains.

Serve breakfast in the classroom to every student in the county, and

We have also started serving dinner.

Why?

Because a lot of the kids don't have dinner when they get home.

What was everyone's reaction?

the kids were very happy

It is nutritious and fills your stomach.

But Donna's biggest supporter came from an unexpected place.

His name was Eric Parker, and he was the chief coach of a football team called the Burke County Bears.

Parker coached a dull team for years.

The Bears finished roughly in the middle, a disappointing result in a football-obsessed state that ranks first and second in the country.

But in the same year that Donna changed her diet, the Bears not only won the league, they also won the state championship, beating the Peach County Trojans 28-14.

(Laughter) And Coach Parker credited the victory to Donna Martin.

If you give your children basic nutrition, they will grow up healthy and thrive in the future.

And it's not just people like Cheryl Barbara and Donna Martin all over the world.

we are all responsible

Giving children basic nutrition is just the starting point.

What I've just described is just one solution to one of the many, most pressing challenges we face.

When we focus on the simple goal of proper nutrition, we can see a safer and more resilient world, with a more productive economy, better health care, and a more secure planetary resource that will last for our children and grandchildren.

Food is the area where our combined strengths are most effective.

So we have to ask ourselves what is the right question

What if we ate more nutritious and sustainably grown foods?

What effect does it have?

Cheryl Barbara, Donna Martin, Coach Parker and the Burke County Bears all know the answer.

thank you

(applause)

I remember seeing Turkish carpet patterns when I was a kid crawling around the house, scenes of fights and love affairs.

This animal is challenging the soldier's spear.

It was actually taken by my mom last week, but it reminds me of that time.

Other pieces of furniture included creatures, monsters, nudity, and other scary things for children.

Looking back, they all had a story to tell, and that's why stories have had such a big impact on my work.

There are other things that have affected

When I was 15 or 16, like most teenagers, I was doing what I wanted to do and what I believed in.

It's skiing and windsurfing, and I've combined those two things that I love.

These two can be enjoyed even in the drab climate of Switzerland.

So I decided to put the two together. I put the skis and the surfboard together, put the fixtures, the scaffolding, the metal fins, and it was done, and I ran really fast on the frozen lake.

And that was the pitfall. It was surprisingly, really well done, but it was also very dangerous.

I felt that I had to go to art school as well.

(Laughter) Look at the picture here.

(Laughter) I went to art school and graduated in the early '90s.

I saw a revolution happening in Silicon Valley. I wanted to go with the flow.

So I started working as a consultant, and I would go to a meeting and the manager would come in and say, "This is a very important thing to talk about."

And then I randomly name the project, which is often Star Wars stuff like C3PO or Yoda Luke.

Looking back, I'm still a young designer, behind me with my hands up and asking questions.

It's kind of a silly question in retrospect, but "What's the use of the Caps Lock key?"

"What is the use of the Num Lock key?" "What is that?"

"Does anyone really use it?"

"At home?"

(Laughter) And what I realized was that they didn't want to change the old stuff, they wanted to keep the substance.

What they wanted was a designer to make the outer box, they wanted a clean look.

the colorist

it wasn't the job i wanted to do

Different stylist

There's a saying, "Companies spend money on advertising to imitate."

(Laughter) So I had to start on my own, and I moved to San Francisco and started a little company called FuseProject.

what i wanted to do was important

I wanted to work not just on appearance, but on the human experience itself.

My first project was humble, but I was able to take the technology and find new uses for it and discover new aspects of it.

This is a watch that was built at the beginning of the car company called Mini Cooper, and it was the first watch with vertical dials instead of horizontal dials.

You can read the time individually without having to bend your arm.

In other projects, I've worked on things that morph according to need.

This is a piece of Italian furniture that ships completely flat and can be assembled into a coffee table or chair.

The experimental one is Swarovski's shape-shifting lighting.

If you draw your favorite shape on a small screen,

Transform into any desired shape, such as a circle or square

The last is a Herman Miller leaf lamp.

This is a really difficult project that took me four and a half years.

But I was looking for an original and new experience with lamps.

So I had to design both the lamp and the bulb.

It was a very unique opportunity from a design standpoint.

The new experience was like choosing between a warm, dim light and a brighter light for work.

the light bulb does that

Switching the lights and combining the two

It's so easy, you just touch the bottom of the lamp, one changes the brightness and the other changes the color.

I think these projects have a human touch, and I think we need to think more about how we can relate our work to the world, whether it's for the enterprise or the consumer products that I'm about to show you.

Because it's generally accepted that a designer's job is to add value to the business environment and users, but I believe that projects that create more value are the ones that give value.

The value we create can be environmental issues or sustainability or low power consumption.

These are both functional and beautiful, and can be the core of your business.

This is where designers are needed as a bridge.

The Jawbone project you all know is based on user-centered design.

Fits like skin and senses speech

And when it senses you're talking, it filters out what's called ambient noise.

But with this product, we've tried to be as beautiful as possible, stripped of the latest features and superfluous features.

Think about it: what do you pay attention to when choosing sunglasses, jewelry or accessories?

that's what we're after

The approach to Jawbone was very novel

look at this left part

This board is the very important part that makes this technology possible.

In the design process, there is a person who designs the board and draws the blueprints, and the designer is working next to him adjusting the position of the IC.

Gone are the days of just attaching a box to technology.

We design from the inside.

On the other side of the room, designers make tweaks and hand-draw sketches into the computer.

This is what we call design-led

Of course there's a balance, but design plays a big part in defining the product experience.

Design never ends

That's the special part of how we work. We have to do all the other parts.

You'll have to appeal to consumers on packaging, on your website, in many ways.

Who will do the never-ending work?

Hossein Rahman, president of Aliph Jawbone, recognized the need for a completely different framework.

Another paradigm is that we are partners, a partnership, we are dedicated to this project and we share the benefits.

Here's another example of employing partnerships

This "Y Water" is an Austrian-born Los Angeles resident, Thomas Arndt, who came to us and said he wanted to create a healthy, organic drink to keep his kids away from sugary, fizzy water.

So we created this bottle, a perfectly symmetrical bottle.

You can play games with this bottle

Bottles can be combined to create different shapes.

(Laughter) (Applause) Thank you.

(Applause) During this project, I realized that if I turned the bottle upside down, it looked like a Y, and I thought that the most important word for a child would be "why."

That's why I named it "Y Water." It's a room where three-dimensional design and idea branding are all done and deeply connected.

There were other things that went into this project, intellectual property rights, sales strategies, and so on, but ultimately their own value shaped the hearts of our partners' companies.

It's such an honor to have something I design spark new creativity and increase productivity.

This project does exactly that.

Give each child a $100 laptop.

please look at this photo

In Nigeria, we carry the most important things on our heads

This girl is going to school with a laptop on her head

this is amazing

Nicolas Negroponte, the creator of this OLPC project, has already said a lot, but when he came to us about two and a half years ago, he had a clear idea.

I want to deliver education and technology.It was the cornerstone of his life and also the cornerstone of this OLPC project.

But what he considered the third cornerstone was design.

At that time, I was ignorant about computers.

I was reluctant from my previous experience

But he said that whether or not kids like this product depends on the design, making it cheap and durable.

Also, he said get rid of the Caps Lock key (Laughter) and the Num Lock key.

So convinced, we designed it to be iconic, custom, kid-friendly, but not cheap-looking.

Inside, you'll find all the great tech you know, like Wifi antennas, sunlight-readable displays, rubber keyboards, and more, all designed to withstand the outside world.

It's the passion of the OLPC staff and engineers that made this amazing technology come together.

Towards our ideals

negotiated with the manufacturer

And that's how the project came to fruition without breaking the original idea.

i think this is very important

Imagine waking up in the morning to kids in Nigeria, Uruguay, Mongolia, with computers.

From sepia to a colorful and fun world

I am stepping

Actually, I think you can see the logo is slightly different.

20 different colors for each of the Xs and Os that give the computer its name in the manufacturing process, so you can choose from 400 different options in combination.

It's very nice that it's being used by children in developing countries.

This is my nephew, Anthony, in Switzerland, and he was using his laptop until late afternoon, and it was very difficult to pick it up.

(Laughter) It was a prototype, but when I returned to Switzerland a month and a half later, he had his own.

(Laughter) It's made out of cardboard or something.

Let me introduce you to my last project, which is a little more grown-up.

(Laughter) You know the New York City Condom Project?

It actually only started about 10 days ago, on February 14th, Valentine's Day.

The New York Department of Health came to visit and said they were looking for a way to distribute 3.6 million free condoms to the public.

In a very big attempt, we took charge of the distribution machine.

This is it, it's a familiar form, isn't it?

It had to be somewhat like a fire hydrant, easy to use and easy to locate and use.

We even designed the condom itself

When this started in New York, I've seen it all installed, and this is a little Puerto Rican bar on Christopher Street, a billiard hall.

It's been installed all over the homeless clinic.

Also in clubs and discos, of course.

This is the CM for this project

(music) (laughter) Take one.

(Applause) This is an example of how design can create interaction.

When I see it in the store, everyone takes it happily.

Design can also release tension and shame.

So I decided to spread condoms here, I thought it was etiquette.

(Laughter) Oh yeah, I don't have that much.

(Laughter) (Applause) We've got a few more.

(Laughter) If you ask me why I own a condom, tell me that you like the design.

(Laughter) Finally, let me share my thoughts. If we keep the value of our work in mind when we're doing work that creates value, we can change the way we work.

By changing these values, we can transform the companies we work with, and ultimately, together, we may change the world.

thank you

(applause)

Imagine a sculptor carving a statue using only a chisel.

Michelangelo made this elegant analogy: "Every stone has a statue inside, and the sculptor's mission is to discover it."

But what if he works from the opposite direction?

What if instead of a lump of stone, but a mound of dust, you could cement these millions of particles together to make a statue?

I know it's a silly idea

probably not possible

To make a statue out of a pile of dust, unless the statue manages to form itself by gathering millions of particles together.

As strange as it sounds, this is the problem I'm working on in my lab.

I don't make stones, I make nanomaterials.

This is impossibly small, wonderful little matter.

If this controller were a nanoparticle, a human hair would be the size of this entire room.

And this is the center of a field called nanotechnology, and I'm sure you've all heard that it's going to change everything.

My time as a graduate student was one of the most exciting times for nanotechnology research.

scientific breakthroughs were happening all the time

The conference was enthusiastic, and the funds were pouring in from the fund.

The reason is that very small objects have very different physics than the physics that govern normal objects that we see.

We call this physics quantum mechanics

Relatively small changes, like adding or removing a few atoms or twisting the material, can fine-tune these behaviors.

It's the ultimate toolkit, so to speak.

I felt really empowered and I felt like I could do anything.

What we were doing -- we were all graduate students of our generation.

They were trying to build a super-fast computer out of nanomaterials.

We were building quantum dots that we were going to one day find and fight disease in the body.

There was even a group that wanted to build a space elevator out of carbon nanotubes.

check it out it's true

We thought this would impact all areas of science and technology, from computing to medicine.

Now, I have to admit, I took everything with a grain of salt.

everything

But that was 15 years ago, and some really great scientific work was done.

we learned a lot

Translating this science into a new technology -- a truly impactful technology -- has not been possible.

The reason is that these nanomaterials are like double-edged swords.

Nanomaterials are interesting because of their size, but they're also extremely difficult to work with because of their size.

It was literally like creating a statue out of a pile of dust.

And we didn't have the really detailed tools to do the job.

If there had been, it wouldn't have made much difference, because you couldn't just put together millions of particles one by one to build a technology.

So every promise and expectation was just an unfulfilled promise or expectation.

There are no disease-fighting nanobots, there are no space elevators, there is no new kind of computing that I am most interested in.

Finally, and most importantly,

We've come to expect that the rate of computing progress will continue forever.

We have an economic system based on this idea.

And this speed is determined by the ability to pack more elements into a computer chip.

As devices get smaller, they're faster, they're more power efficient, and they're cheaper.

This synergy has allowed us to progress at an amazing rate.

As an example, let's say you managed to compress a computer that was the size of the room that sent three astronauts to the moon, and you managed to compress what was the best computer at the time and make it about the size of your smartphone.

It's a dull computer

You can't do anything that a smartphone can do

It's slow, you can't add content, and I think it's hard to put in the first two minutes of "The Walking Dead." Even if you're lucky -- (Laughter) the point here is progress -- not incremental.

progress is relentless

Exponential

Each year it accumulates to the point where one technology is indistinguishable from the next generation of technology.

We are the ones who keep this rate of evolution going.

10, 20, 30 years from now, we hope to say, "Look back at what you've accomplished in the last 30 years."

But this progress won't last forever.

In fact, the party heat is cooling off.

It's like, "It's time for the last order."

If you look closely at many metrics like speed and performance, progress has already largely stopped.

If we want this party to continue, we have to do what we can, which is innovation.

Our group's role and mission is to innovate with carbon nanotubes, because we believe that this technology will open the door to sustaining the pace of progress.

it lives up to its name

It's a tiny, perforated tube of carbon atoms, and it's this nanoscale size that creates the wonderful electronic states.

If we can bring this into computing, we'll get up to 10 times more performance.

It's like leaping past several generations of technology in one step.

It is this

I have a very important problem and it's basically the ideal solution.

Science is yelling at us, "We're going to do this to solve our problems."

If that's the case, let's get started, let's do it

But here comes the double-edged sword again.

This "ideal solution" involves materials that are difficult to handle.

To make a single computer chip, you have to line up billions of them.

It's the same problem again.

"Stop here

stop repeating the same thing

think about what you're missing

what are we not doing

What should we do? I asked

Sounds like "The Godfather"

When my brother Fredo betrayed Michael, we all knew what to do.

Make Fredo dead

(Laughter) But Michael put it off.

I just said that I understand

Mother is still alive, so it's a big deal.

We said, "What is our Fredo?"

What are we not addressing?

What am I missing? What does it take to be successful? ”

The answer was that the statue shapes itself.

We have to somehow find a way for billions of particles to self-assemble into nanomolecular structures and turn it into a technology.

We can't do it, so let's do it ourselves

It's very difficult, it's not easy, but in this case it was the only way.

And it turns out that this is nothing special

We don't assemble things this way.

no one uses this method

But when I looked around -- there were examples everywhere -- this is how Mother Nature makes everything.

Everything is made bottom-up

If you go to the beach, you'll find simple life forms using proteins, which are basically molecules, using sand as a template and pumping it up out of the ocean to build a huge variety of structures.

Nature doesn't act violently like we do, it just uses it.

Nature is elegant and smart, taking what's at hand and building it molecule by molecule into structures of complexity and diversity that we can't even come close to.

Nature was already a nano world

existed for millions of years

We were the ones who missed the party.

We decided to use the same tool as nature, and that was chemistry.

chemistry was the lost tool

Chemistry worked well in this case because we can manipulate matter by using molecules as small as nanoscale matter as tools.

This is exactly what we do in our lab.

We're going to develop a chemistry that works with the dust pile -- the nanoparticles -- and we're going to take out what we need.

It uses chemistry to arrange literally billions of particles into the patterns needed to build circuits.

If we can do this, we'll be able to build circuits that are many times faster than they were before using nanomaterials.

Chemistry is the missing tool, and our tools are getting sharper and more precise by the day.

And finally -- in the next few years, we expect to deliver on one of the promises we've made.

Computing is just one example

There are other things that I'm interested in and that the group is focusing on, and there are other renewable energies, medicine, structural materials, and the science is suggesting that they're going nano.

there is the greatest profit

But to do that, scientists need new tools, tools like the one I just described.

You're going to need chemistry, this is the point

The beauty of science is that once you develop this new tool, it's always there.

It's going to exist forever, and anyone, anywhere can pick it up and use it, and it can help make nanotechnology a reality.

Thank you very much for your time

(applause)

Today I want to talk to you about how to talk about love.

Specifically, I'm going to talk about the problems we have when we talk about love.

Most of us probably fall in love more than once in our lives, and English often uses the word "fall" to describe this experience.

Maybe it's just me, but when I think of this metaphor, what comes to my mind is something straight out of a cartoon: a man walking down a sidewalk, comes across a manhole, doesn't realize the cover is off, and falls into the sewer.

I envision it this way because falling is not the same as jumping.

Falling is accidental and out of control.

Even if you don't like it, it will fall on you

This is the main way to describe the beginning of a new love.

I'm a writer and an English teacher, and my job is to think about words.

It's like we make money by preaching the importance of the language we use. I think there's a problem with a lot of the metaphors we use when we talk about love -- maybe a lot of them.

Well we "fall" in love

I'm scared

I am crushed

lose my mind

burning passionately

Love drives us crazy and makes us sick

My heart hurts and will eventually break

So these metaphors equate the experience of loving someone with extreme violence and illness.

(laughs) That's right.

And that metaphor makes us victims of unforeseen and unavoidable circumstances.

One of my favorite metaphors is "smitten," the past participle of the word "smite."

If you look up this word in the dictionary (Laughter), you'll find that it has definitions for both "suffering horribly" and "to be deeply in love."

When I hear the word "smite," one context comes to mind, and that is the Old Testament.

In Exodus alone, there are 16 references to it, but it's the word used in the Bible to talk about the vengeance of an angry God.

(Laughter) We use the same language to describe love that we use to describe locust outbreaks.

(laughs) Isn't it?

how did this happen

Why did we come to associate love with intense pain and suffering?

And why do we speak as if we were victims of this ostensibly happy experience?

These are tough questions, but I have a theory.

In thinking about this problem, I'd like to draw your attention to a metaphor: the idea that love is insanity.

When I started studying love, I saw this metaphor for madness all over the place.

Throughout history, Western culture is full of idioms that equate love with mental illness.

Let me give you an example

William Shakespeare, ``Love is all madness,'' from As You Like It

Friedrich Nietzsche “There is always some madness in love”

"That's why I love you like crazy." (Laughter) From the great philosopher Beyoncé Knowles.

(Laughter) I first fell in love when I was 20, and it was a tumultuous relationship from the beginning.

And the first two years were long-distance, so there were either the best times or the worst times.

I remember one scene in particular.

I was sitting on my bed in a hostel in South America, watching my love walk out the door.

It was late in the night, almost midnight, and we had an argument over dinner.

Although I can no longer remember what the argument was about, I do remember very clearly how I felt as I watched him leave.

I was 22 and on my first trip to the developing world, I was completely alone.

I had a week left before my flight home. I knew the name of the town I was staying in, I knew the name of the city where the airport was from, but I didn't know what to do.

I didn't have a guidebook, I had little money, I didn't speak Spanish.

Someone more adventurous than me might have seen this as an opportunity, but I just froze.

i was just sitting

Then I cried out loud

But despite the panic, a little voice in my head said, "Oh, that was dramatic.

I might be doing something super romantic."

(Laughter) Somewhere in my heart, I wanted to be miserable in love.

It sounds very strange to me now, but when I was 22, I longed for a dramatic experience, and in that moment I was irrationally agitated and confused, and strangely enough, I thought that somehow justified my feelings for him for leaving me.

Maybe I wanted to feel a little bit insane, because that's how I thought love was supposed to be.

It's not all that surprising, because Wikipedia says there are eight movies, 14 songs, two albums and a novel called "Crazy Love."

About 30 minutes later he came back to his room.

we made up

We traveled together for the next week and had a lot of fun.

And then I went home and said, "It was so painful, so beautiful, this must be real romance."

I thought

I expected my first love to be crazy, and of course it exceeded my expectations.

But loving someone like that wasn't very good for me, because how they love me back determines my happiness.

But I don't think this kind of love experience is all that unusual.

Most of us feel a little crazy in the early stages of a relationship.

In fact, there are studies that have established that it's somewhat normal, because neurochemically, we can't easily distinguish between love and mental illness.

It's true

A 1999 study using blood tests confirmed that serotonin levels in people in the early stages of a relationship were very similar to those in people with a diagnosis of obsessive-compulsive disorder.

(Laughter) And low serotonin is also associated with seasonal affective disorder and depression.

So there's evidence that love is linked to changes in our moods and behaviors.

And there are other studies that confirm that most romantic relationships start this way.

Researchers believe that low levels of serotonin correlate with obsessions toward love objects -- that feeling that someone's stuck in your head.

And most of us feel that way when we first fall in love.

But fortunately, that feeling doesn't last long, usually from a few months to two years.

After returning from a trip to South America, I spent a lot of time alone in my room, checking emails and waiting impatiently to hear from my beloved.

I strongly believed that if my friends couldn't understand my agonizing pain, I didn't need friendship.

So I stopped playing with most of my friends.

It was probably the most unlucky year of my life.

But I think I felt like it was my mission to be miserable, because I thought that by being miserable, I could prove the depth of my love for him.

And I thought that if I could prove my love, we could eventually be together.

This is real madness, because there is no law in the universe that says that suffering only pays off, but we talk about love as if such a law were real.

The experience of love is both instinctive and cultural.

Our instincts tell us that love is good by activating reward circuits in our brains, and that love is painful after a fight or breakup, when the neurochemical rewards are gone.

In fact, as you may know, neurochemically speaking, going through a breakup is a lot like going through cocaine withdrawal, which is reassuring.

(Laughter) What's more, our culture has shaped and anchored the concept of love through language.

In this case, using metaphors like pain, addiction, madness.

It's an interesting cycle of reactions.

We say that love is powerful and sometimes painful, but in doing so we are taught that love is powerful and painful.

I find it interesting because all of this is happening in a culture where it's okay to be with one person for the rest of your life.

It seems we want both, we want love that feels insane, and we want it to last a lifetime.

it's a terrible story

(Laughter) To fix this, we either need to change our culture, or we need to change our expectations.

Imagine if you weren't passive in love

If we were more proactive, more open-minded, more tolerant, instead of "falling" in love, we would "step out" in love.

It's a tough proposition, but actually, someone has made this suggestion before me.

In their book "Rhetoric and Life," linguists Mark Johnson and George Lakoff offer an interesting solution to this dilemma: changing metaphors.

They claim that metaphors determine how we experience things and even guide future behavior, like self-fulfilling prophecies.

Johnson and Lakoff propose a new metaphor for love: love as a collective work of art.

I love this way of thinking about love

Linguists refer to metaphors as having implications, which is an essential way of thinking about the implications, the concepts that are contained in a metaphor.

Johnson and Lakoff list everything that goes into collaborating on a work of art: effort, compromise, perseverance, common goals.

This idea aligns with our culture's desire to foster long-term, committed relationships, and it works well in a variety of other relationships -- short-lived relationships, casual relationships, polygamy, bigamy, asexuality -- because this metaphor introduces a much more complex conception of the experience of loving someone.

Now if love is a collective work of art, love is an aesthetic experience.

Love is unpredictable Love is creative Love requires communication and self-control It's frustrating and mentally demanding

In other words, love involves both joy and pain.

After all, every romantic experience is different.

When I was younger, it never occurred to me that I could ask for more from love.

When 14-year-old Juliet met Romeo, no, when 14-year-old Juliet found out that Romeo, whom she met four days earlier, would not marry, she wasn't disappointed or worried.

how was it

i wanted to die

isn't it

By the way, at this stage in the play, Act 3 of 5, Romeo isn't dead.

He's alive and he's pinging He just disappeared from town

I understand that 16th-century Verona doesn't look like modern North America, but when I first read the play, and I was also 14, Juliet's anguish made sense to me.

It's energizing to rethink love as something I create with someone I admire, rather than something that just happens to me against my will.

love is still difficult

Sometimes I feel absolutely insane, sometimes I feel overwhelmed, and when I get so frustrated, I have to tell myself that what I need to do in this relationship is talk to my partner about what we want to build together.

It's not easy either

But it's a lot better than the other way of thinking, which is to feel insane.

Love, in this interpretation, isn't about gaining or losing someone's love.

Now, what you need to do is to trust your partner and talk to them when it's hard to believe. It sounds simple, but it's actually a revolutionary and radical move.

Because you have to stop thinking about yourself and what you're getting and what you're losing in your relationship, and start thinking about what you can do for the other person.

This interpretation of love would allow us to say, "We're not good partners, maybe we should break up."

Or "I can say that this relationship was shorter than I thought, but it was still beautiful."

The great thing about collaborative works of art is that they're not given a color, a pattern, a shape.

In this interpretation of love, we can decide what kind of work we do.

thank you

(applause)

As a child, I believed that I had special powers.

you're laughing

(Laughter) I was so proud of myself because I was really good, because I could understand people with dark skin, like my grandfather, who was a conservative Muslim.

And I could understand liberals who weren't so religious, like my Afghan mother and my Pakistani father.

And then, of course, I understood how white people feel.

I'm white from my hometown Norway.

I loved everyone, whether they were white or brown.

I understood everyone, and even though they didn't necessarily understand each other, they were all my friends.

But my father always worries about me

He kept telling me that even if I had the best education, I wouldn't be treated equally to white people.

Even if I'm smarter, I'll still be discriminated against

My father used to say that if you want recognition, you have to be famous.

When I was seven years old, I had a conversation with my father, and he said this to me.

When I was seven years old, my father said to me, "You have to do sports or music to get recognized."

Unfortunately, my father couldn't play sports, so he ended up doing music.

When I was seven years old, my father scraped up all my toys and dolls and threw them away.

Instead, they gave me a cheap little keyboard and (Laughter) and singing lessons.

I was forced to practice for hours and hours every day without fail.

I was soon asked to perform in public, and the audience grew, and interestingly enough, it became a symbol of Norwegian diversity.

Of course I was very proud

Around this time, the newspapers began to favorably portray brown people, and I felt that my special powers were growing.

When I was 12, on my way home from school, I took a short detour to buy my favorite salty feet.

The name is terrible, but I loved it

It's a little foot-shaped salty licorice candy.

It's a disgusting snack when I try to explain it out loud like this, but I still loved it.

On my way into the store, a large white man was blocking the entrance.

When I tried to avoid it, this time he stood in front of me, stared at me, and spat in my face, "You're in the way, you black bastard, you bastard, you bastard, go back to your country."

I'm completely frozen in terror

staring at the man

I was so scared that I couldn't even wipe the spit off my face, even though my own tears mixed with the man's spit.

As I looked around, I was hoping that some adult would come and stop this man right now.

But the people around me pretended not to see it and hurried past.

I was very confused and I was thinking, "My fellow white folks, do something! Where are you? What's going on?

Why won't anyone come help me? ”

Of course, I didn't buy any sweets.

I ran home at full speed

I thought it was all right then

As time went on and my music career took off, I started getting harassed by people with darker skin.

For some men in the same community as their parents, it was disgraceful and outrageous for a woman to play music or be featured in the media.

Soon I started getting attacks at my concerts.

It happened at a concert, and the last thing I saw as I stepped out of the stage was the face of a dark-skinned young man.The next moment, something like chemicals flew into my eyes, and I could barely see anything, tears welled up in my eyes, but I kept singing.

Once, on a street corner in Oslo, a dark-skinned man spat in my face.

I've even been nearly kidnapped

Death threats continue

A middle-aged man with a beard stopped me on a street corner and said, "I hate you from the bottom of my heart. Because of you, even my daughter thinks she can do whatever she pleases."

I was once warned by a young man

Music is against the teachings of Islam, it's a whore's job, and if you keep going, I'll rape you and cut your stomach so that no other whore like me will ever be born again.

i'm very confused here

I didn't understand what was going on

Why is it that even my dark-skinned comrades are treated like this?

Instead of being a bridge between two worlds, it felt like I was falling into the chasm between them.

Spit on me and my power was taken away

By the time I turned 17, the death threats continued and the harassment continued.

The situation got so bad that my mother finally said, "I can't protect you anymore, I can't guarantee your safety. You have no choice but to run."

I got a one-way ticket to London, packed my bags and left the country.

Back then, the most painful thing was that no one said anything.

My exodus to Norway was widely reported.

None of my dark-skinned friends, my white friends, said anything.

"Wait it's funny

Let's support this child, let's protect him, because he's our friend."

no one said

Instead, it felt like this: at the baggage claim area at the airport, all kinds of suitcases were going round and round on the conveyor belt, but there was always one suitcase left, no one to take it, no owner to show up.

It was like that kind of baggage

I've never felt so lonely and lost.

After moving to London, I eventually resumed my music career.

I changed countries, but unfortunately it was the same situation.

One day, I received a threatening letter that read, "I'll kill you and make you bleed until a river forms, and then I'll rape you many times before you die."

By this time, I had gotten used to the phrase, but now it started threatening even my family.

So I packed up again, quit music, and moved to America.

I was tired of it

I didn't want to feel like this

It wasn't me who chose the music, it was my father, and I really didn't want him killed for it.

I lost myself somehow

i felt like i lost everything

But what I wanted to do next was to decide what I wanted to do next in my life, no matter how long it took, to support young people in any way I could, to help them even just a little.

I started volunteering with various organizations to help Muslim youth in Europe.

And to my surprise, so many young people were suffering and conflicted.

I had so many family and community issues, and in such an environment, the happiness and life of a child seemed to be neglected compared to the honor and reputation of an adult.

I started to wonder if maybe I wasn't so lonely and weird.

I wonder if there are more people like me

In fact, it's something people don't really understand, but what really happens to kids like me growing up in Europe is that they don't have the freedom to be themselves.

I can't let you live like yourself

You are not allowed to marry or date someone of your choosing.

I can't even choose the course of my life

For Muslims living in Europe, this is the norm.

Even in the freest society in the world, we are still in bondage.

Our life, our dreams, our future, none of it belongs to us, it belongs to our parents and the Muslim community.

I've heard countless stories from young people about being socially displaced, invisible, suffering, and alone.

Children are forced into marriage and subjected to violence and abuse in the name of honor.

After several years of working with these young people, I realized that I could no longer run away.

I realized that I couldn't spend the rest of my life in fear and hiding, and I had to do something about it.

I realized that if not just me, but people in a similar situation kept their mouths shut, this bad habit would only continue.

And so I decided to tap into that special power of my childhood and help other adults involved in these issues to understand how it feels to be a young person caught between family and country of birth.

So I started making films and telling stories that I heard from young people.

And the other thing I wanted you to understand is that if you don't take these kinds of issues seriously, you're going to be in a terrible situation.

The subject of the first work is a girl named Banaz.

Banaz is a Kurdish 17-year-old living in London.

I was a good listener, and I did whatever my parents told me to do.

I tried to do everything right

I married a man of my parents' choice, but my husband beat me and raped me on a daily basis.

When I asked my family for help, they said, "Go home and do more for your husband."

It was out of the question for my daughter to get divorced and move back out of the house, of course it would bring shame on the family name.

Her husband's violence was so bad that her ears were bleeding, and she finally escaped from him and fell in love with a young man of her choice, but when it became known to her community and family, Banaz disappeared.

Discovered 3 months later

It was found in a suitcase buried under the house.

They were strangled and beaten to death by their biological father and three cousins ​​on the orders of their uncle.

In addition to the horrifying incident, Banaz reportedly made five trips to the local police to ask for help from his family, who said he was about to be killed.

The police didn't take it seriously and didn't do anything about it.

What this incident tells us is that far too many young people are not only experiencing these problems within their families and surrounding communities, but they are also suffering from misunderstanding and indifference in the countries where they were born and raised.

Young people who have been betrayed by their families look to society for refuge.If society does not understand them, young people will have nowhere to go.

During the making of this film, some people said to me, "Diya, this is just the culture. It's just what these kinds of people do to their children. Outsiders can't do anything."

murder is never my culture

That's right?

Shouldn't a young woman who looks like me and comes from a similar background have the same rights and protections that everyone is entitled to in the country where they live?

In my next film, I wanted to understand why Islamist extremism and violence draw some young Muslims in Europe.

This theme forced me to face my biggest fear: a dark-skinned, bearded man.

I've lived most of my life in fear of men like this.

The type I've been afraid of most of my life.

I thought I hated it from the bottom of my heart, and for a long time.

Over the next two years, I interviewed criminal terrorists, combatants and former extremists.

The stark truth that I knew from the start was that religious and political issues, the scars of the colonial era and the failures of European foreign policy in recent years were all part of the background.

What I was more interested in exploring was the human beings, the circumstances that make each person different, and why some young people get involved in these organizations.

What really surprised me was finding a human figure with a broken heart.

I didn't find any of the villains I was looking for and trying to find—and, frankly, that would have been cleaner, but what came out were people who were hurt.

Like Banaz, the young man who turned extremist also suffered, traumatized as he tried to navigate the differences between his family and the country he was born in.

And then extremist and terrorist organizations take advantage of these young people's emotions and, ironically, turn them into violence.

Invite them to come with their friends

"Abandon both your family and the country you were born in. Neither will accept you.

Honor is more important to my family than you To my country the only real Norwegians, Englishmen and Frenchmen are whites."

And we promise to give young people what they desperately want: a community that doesn't just have a sense of importance, a sense of heroism, a sense of solidarity and purpose, but a community that loves and recognizes them.

Young people who feel helpless will feel empowered.

A young man who has kept his mouth shut and out of sight is finally getting attention and having his thoughts heard.

Treating young people the way they want

It's not us, it's this organization.

I mean, I'm not trying to justify or condone violence.

I want to say that we have to understand why some young people are drawn to these organizations.

Here are some childhood photos of the men in my films.

And what's really interesting is that many of them had something in common -- something I never thought of -- that they were either fatherless or abused by their fathers.

Some of these young people found a kind, loving father figure within the extremist organization.

Some men were brutalized by racist violence, and they turned to violence to escape victimhood.

I also remembered something, and I trembled.

It's the same feeling I had when I left Norway at 17.

The same confusion, the same grief, the same sense of betrayal and isolation.

I feel like I'm torn between two cultures and have nowhere to go.

That being said, I didn't choose violence, I chose cameras instead of guns.

Thanks to the example's special powers

I found that understanding, not violence, was the answer.

See that person as a human being, accept all their strengths and all their weaknesses, put an end to the cynicism, stop the dichotomy between villain and victim.

I myself have finally come to terms with the fact that the two cultures did not clash, but rather that they helped me find my own voice.

I stopped feeling like I had to pick one or the other, but it took me a very long time.

So many young people still struggle with the same problems and suffer alone.

In such a situation, like a raw wound

For some people, the radical Islamic worldview seeps into their wounded hearts and further erodes them.

There is an African proverb that says, "If a young man is not welcomed into the village, he will burn the village down to make himself feel warm."

I would like to ask Muslim parents and community members to give their children love and care without imposing expectations on them.

Please choose your child, not your honor.

Understand why your child feels angry and alienated when you put your honor before their happiness.

Be like a friend to your child. Not only will you gain their trust, but they will feel comfortable talking to you about their day-to-day affairs, and your child won't look for these relationships outside.

I have something to say to the young people who are drawn to extremism: Realize that it's suffering that drives your anger.

Find the strength to resist the bigoted adults who want to use your blood for their own purposes.

find a way to survive

Realize that the best revenge you can have is to live a happy and free life.

It's a life that I decided, not anyone else

Why, as a Muslim youth, would you rush to your own death?

I ask many of us: When will the voices of young people be heard?

How can we help young people transform their suffering into more positive emotions?

The world hates me—

no one cares what happens to me

The thought that no one will accept me

Please find a way to make me feel different

Before Muslim youth become victims of injury or violence, please somehow pay attention to their existence and recognize them.

Please take care of these young people and treat them as your fellow countrymen.

Please stop getting angry only when people of the same race are harmed.

Find a way to keep the hate at bay and bridge the cracks

We can't give up on each other, and on the young people, even if they've given up on us.

we are all part of this problem

In the long run, revenge and violence won't fight extremism.

The terrorist's wish is for us to be so terrified that we lock ourselves in our homes, closing not just our front doors, but our hearts.

It would be nice if there were more young people who were hurt in society in this way, and the idea was to further spread the ideas of extremists from there.

Terrorists want us to be just as hateful, bigoted and cruel as they are.

The day after the terrorist attacks in Paris, one of my friends sent me a picture of his daughter.

Two girls, one white and one Arab.

the two are best friends

Scenes like this rob extremists of their power.

It's the special power that these two girls have that gives them the direction they need to go. It's the society that we all need to work together to create, not a society that is inclusive of youth, but a society that is inclusive and supportive of young people.

thank you

(applause)

For the last few years, I've been spending summers at the Woods Hole Marine Biological Laboratory in Massachusetts.

I basically rent a boat there

Would you like to go on a boat with me tonight?

From Eel Pond, we'll set off for Vineyard Sound, just off the coast of Martha's Vineyard Island, where we'll use drones to figure out which spots in the Atlantic Ocean have potential new discoveries to explore.

Now, when it comes to diving deep in the Atlantic, you don't have to dive very deep to reach uncharted territory.

At this point, barely 2 miles away from what is arguably the world's largest marine biology research facility, a simple plankton net is submerged and pulled out to sea, all of which most people rarely care about and have never seen before.

This is one of the creatures we caught on the net.

It's a jellyfish

But if you look closely, you'll find another organism living within this animal, probably something completely new to science.

It's a completely new breed

Or what about this translucent beautiful heart-beating creature? At the top of the head, they reproduce asexually to produce offspring, but these offspring reproduce sexually.

Again, this animal reproduces asexually and raises offspring on the crown of its head, and the next generation reproduces sexually.

Weird jellyfish?

not at all

this is a sea squirt

Ascidians share much of their genetic lineage with humans, and may be the most closely related invertebrate species to humans.

This is your cousin T. democratica

(Laughter) I'm sure you didn't put Salpa's seat at the family reunion table, but I've recently begun to realize that these animals have a lot to do with us.

The next time you see someone mocking this kind of research as just a research expedition, I want you to remember what we just saw.

Today, many biologists believe there is value only in furthering what is already known: mapping the continents that have already been discovered.

But some people are interested in the unknown world.

We want to discover whole new continents and gaze at magnificent landscapes full of the unknown.

I desperately want to be overwhelmed by something no one has ever seen.

Of course, I know I'm complacent, but I want to say, "I was the first to discover it."

But this isn't the kind of work that allows you to be narcissistic, and in this kind of research, if you haven't become a big idiot, you haven't fully committed yourself to science.

(Laughter) Every summer, I pull a stream of little-known creatures onto the deck of a small boat.

Tonight, I'm going to tell you a story of life that is rarely told outside of academia.

From a bird's-eye view, the 21st century biology laboratory is beginning to use knowledge to unlock many of life's mysteries.

After centuries of scientific research, we feel that we are beginning to understand some of life's most fundamental principles.

Advances in biotechnology have brought hope, and people around the world are striving to use scientific knowledge to treat disease.

Cancer, aging and degenerative diseases are exactly the diseases that humanity wants to overcome.

I often wonder why we have such a hard time treating cancer.

Maybe it's because you're trying to cure cancer and you're not trying to understand life.

Life on this planet has a common origin, and this one slide summarizes 350 million years of life on this planet.

This slide shows all the species known to exist on Earth.

In this grandeur and biodiversity of life, humans occupy a marginal position.

(laughs) Homo sapiens

existing humans

We don't want to underestimate our human achievements, but humans aren't the beacon of everything we think they are.

but we measure a lot of things

We constantly quantify, analyze and compare, some of which are irreplaceable and some of which are truly essential.

But today, the specialization of biological research and its focus on producing practical results actually unacceptably narrows the possibilities for pursuing the mysteries of life, limiting them to an unsatisfactory surface.

We study a surprisingly small subset of organisms, and hope that they can save all lives.

How much?

let's give the numbers

The National Oceanic and Atmospheric Administration recently estimated that 95% of the ocean remains unexplored.

let's think for a moment

95% of the ocean remains unexplored

It's not an exaggeration to say that we don't even know how many organisms there are that we don't know about.

So it's not surprising that every week at sea, new species continue to join this wonderful family tree.

For example, this one was discovered this summer, it's scientifically new, and it's the only species in this genus on the phylogenetic tree.

Even more unfortunately, despite how much we know about many species of animals, their biology remains largely unstudied.

I'm sure you've all heard the story that a starfish can lose an arm and regenerate it.

But what many people don't know is that the arm itself can also regenerate into a complete starfish.

There are animals out there that can do some really amazing things.

I'd bet most people don't know about the flatworm S. mediterranea (planaria).

This little guy really amazes me

If you catch one of these animals and cut them into 18 pieces, all the pieces will regenerate and within two weeks you'll be a complete individual.

18 heads, 18 bodies, 18 mysteries

For the last 15 years or so, I've been trying to figure out how these tiny creatures reproduce and perform magical tricks.

But like a good magician, he's reluctant to reveal his secrets.

(Laughter) At this stage, after 20 years of studying these animals, genetically mapping them, contemplating them, cutting them thousands of times, regenerating them thousands of times -- we still don't fully understand how they regenerate.

Each planaria is as full of unknowns as the ocean.

One of the common traits of the animals I'm talking to you about is that they don't just receive notes from a handful of randomly selected animals that are being studied in biomedical laboratories around the world and do what they tell them to do.

These are Nobel Prize-winning organisms.

In principle, the prize goes to the organism that has contributed to our understanding of seven major biological functions.

This little guy (nematode) won three Nobel Prizes in 12 years.

But for all the attention, all the knowledge, all the money for research, there are still so many intractable challenges and so many new challenges standing in our way.

And that's because, unfortunately, these seven species basically represent only 0.00009 percent of all the species on the planet.

So I'm beginning to suspect that specialization is actually slowing human progress, and at worst, disorienting.

Because the history of life on this planet is the history of life that broke the rules.

Life began on Earth as single-celled organisms, and they've been swimming in the ocean for thousands of years until one of them made a decision: "Today, I'm going to do something different. I'm going to invent something called multicellular."

I was definitely in the minority back then (Laughter), but I managed to do it.

Then multicellular organisms began to live and thrive in the primordial seas.

And now we come to multicellular organisms.

The land rose out of the sea, and other creatures thought, "Hey, the land looks nice to live in.

I want to move to land."

"Are you mad?

It will dry out. Nothing can live outside water."

But it found a way, and now there are creatures that live on land.

When he landed on land, he might have looked up at the sky and said, "I wish I could reach the clouds. I'm going to fly."

"You can't break the law of gravity. Can you fly in the sky?"

But nature - many times on its own - invented a way to fly.

I love studying animals that break the rules, because every time they break the rules, they invent something new that allows us to be here.

These animals haven't been instructed by anyone.

I broke the rules

If we study animals that break the rules, don't we also break the rules of how we do research?

I think we need to renew our inquiring minds.

Instead of taking nature into a lab and examining it, we need to bring science into nature, a gigantic laboratory, where we use the equipment of modern technology to investigate every new organism and biological feature that is discovered.

We really have to mobilize all our intelligence and become stupid again, back to ignorance in front of the great unknown.

Because, after all, science isn't really about knowledge per se,

Because science is the study of the unknown

that's what we do

Antoine de Saint-Exupéry once wrote, "If you want to build a ship, you don't have to make people gather wood, or assign and order jobs, but teach them to yearn for the vast, infinite sea."

As a scientist and a teacher, I like to paraphrase the word "sea" in this sentence. We scientists need to teach our students that the vast, infinite ocean is something we don't know.

We Homo sapiens are the only species to explore science.

Humans, like all life on Earth, are tightly woven into the history of life on Earth.

I think it's a bit of a misnomer to say that life is a mystery, because life is really an open secret that has beckoned to be understood for thousands of years.

So let me ask you guys: don't we have a golden opportunity to unlock the mysteries of life?

If so, what are we waiting for?

thank you

(applause)

How many of you have ever used a spreadsheet like Excel?

It's a lot

So who, like my father, who ran a small printing business in Philadelphia, does his company's bookkeeping by hand?

much less

That's the way it's been done for hundreds of years.

Early in 1978, I started working on the idea of ​​what would eventually become VisiCalc.

The next year it was launched for the new Apple II personal computer.

You can see how much has changed in the next six years, as evidenced by the Wall Street Journal's editorial assumption that everyone knew about VisiCalc, and probably even used it.

Steve Jobs said in a 1990 interview, "Spreadsheets drove the PC industry."

"VisiCalc contributed to Apple's success more than anything else."

In a more personal comment, he also said, "If VisiCalc had been written for another computer, you'd be interviewing a different person."

VisiCalc was the catalyst for the use of personal computers in the workplace.

how did it come about?

what was it? how did i end up making it?

I started learning to code in 1966, when I was 15, two months after I took this picture.

Back then, not many high school students had access to computers.

Through luck and tremendous perseverance, I was able to get some local computer time.

After sleeping in the mud at Woodstock, I went to MIT and worked part-time on the Multics project.

Multics was a pioneering interactive time-sharing system

You may have heard of Linux and Unix,

That came out of Multics

I've worked on an interpreted language for Multics, which is used by non-computer people who sit in front of terminals and do calculations.

After graduating from MIT, I got a job at DEC.

At DEC, we developed software in a new field called electronic typesetting.

I helped a newspaper company replace its reporters' typewriters with computers.

Once we had the software, we went to sites like the Kansas City Star to train users and gather feedback.

This real-life experience was very different from what I had seen in the lab at MIT.

After that, I became the project leader for DEC's first word processing program, and it's a new field.

As with typesetting, it was important to create a user interface that was natural and efficient for non-computer-savvy people to use.

After DEC, I worked for a small company that made microprocessor-based electronic cash registers for the fast food industry.

But I've always wanted to start a company with my friend Bob Frankston, who I met on the Multics project.

I decided to go back to college and learn as much as I could about business.

In the fall of 1977, I entered the MBA course at Harvard Business School.

Very few of the students there had programming experience like I did.

The yearbook has a picture of me sitting in the front row.

(Laughter) At Harvard, I learned through case studies.

We consider about three cases each time.

Each case consists of dozens of pages of descriptions of specific business situations.

It often came with an appendix with documentation and data about the scenario.

each one was something different

this is my homework

There are numbers and descriptions arranged in a way that makes sense.

We had a lot of calculations to do, and we always had a calculator handy.

This is the calculator that I used

Even on Halloween, I used to wear a calculator.

(Laughter) At the beginning of class, the teacher has someone explain the case.

Students describe the situation, read out the data, and the teacher writes it down on a number of electronic blackboards in front of the classroom, and then we discuss it.

The most frustrating part was when I finished all my homework and came to class the next day to find out that I had made a mistake in my calculations and that my numbers were completely wrong.

Then I won't be able to say much in class.

Evaluation is made on the degree of contribution to the class.

Being in that classroom with 87 other students, I used to dream.

A lot of programmers back then were building inventory systems, payroll systems, billing systems, etc., on mainframes.

I had experience developing interactive word processors and on-demand personal software.

So instead of an interface like a printer or a punch card, I dreamed of a "magic blackboard," something like a word processor for numbers, where if you erase a number and write a new value, the other numbers are automatically recalculated.

I envisioned a calculator with a mouse-like bottom and a heads-up display that looked like a fighter plane.

Type a number, circle it, hit the total button,

It's about getting an answer on the spot when you're negotiating.

I wanted to make that dream a reality

my dad taught me prototyping

I was once shown a full-size template that they use to determine the placement on the page when they print a booklet.

We use it to get feedback from our customers, and when it's OK, we put it to print.

By simplifying what we're trying to build into something that actually works, a major problem emerges.

We can find solutions to such problems at a much lower cost.

So I decided to try making a prototype.

I went to a terminal that was connected to Harvard's time-sharing system and started working on it.

One of the first problems I faced was how to represent variables in expressions.

let me explain what

I was thinking, I'm going to write a word somewhere, put a number in another place, and then put another number in there, and then I'll put the answer in there.

Point to the first number, press minus, point to the second number, and the result appears.

The problem is how to express the formula

It has to be something the computer knows what's in it.

And we need to be able to tell by looking at the formula where on the screen it's being referenced.

The first idea is the programmer's way

When you first specify somewhere, let the user give you a distinguished name.

I quickly realized that this was too much of a hassle.

I need my computer to automatically name it and keep it

So I figured we should name them in the order they were created.

variable 1 variable 2 and so on

However, when there are many variables, it becomes difficult to remember which one is where.

So instead of allowing variables to go anywhere, I thought, why not restrict them to a grid?

When you specify a square, you can name its rows and columns

If you write ABC at the top and 123 next to it, like a map, it's obvious where on the screen it points when B7 is in the equation.

Even if you write the formula yourself, you'll know how to do it right away.

Restricting users on a grid solved my problem

At the same time, it opened up new possibilities such as being able to specify a series of squares.

And yet this restriction isn't too hard, users can put any value or expression they like in any square.

And this is the method that is still in use today, 40 years later.

My friend Bob and I decided to create this product together.

I did some more work to figure out how the program should behave.

I wrote an explanation sheet as a document,

It also helped ensure that the user interfaces we were building were clear and concise and explainable to the average person.

Bob was working in the attic of his rented apartment in Arlington, Massachusetts.

this is the attic

Bob bought time on MIT's Multics system and wrote a program using a terminal like this.

Then, using a phone line and an acoustic coupler, we download the test version onto a borrowed Apple II and test it.

As part of the test, I used the "Pepsi Challenge" homework.

We didn't have the ability to print yet, so we had to transcribe everything by hand.

We didn't have a save function yet, so every time the program crashed, we had to retype all the formulas.

The next day, in class, I raised my hand and explained the case when pointed to.

We made five-year projections and looked at all sorts of scenarios.

I got an A in this case VisiCalc was already helping

My teacher asked me, "How on earth did you do it?"

I didn't want to reveal our top-secret program, so-

(Laughter) I said, "I added this to this, multiplied by this, and subtracted this."

"Why didn't you use ratios?"

I replied, "The ratio is not accurate!"

In fact, I hadn't learned to do division yet.

(Laughter) And in the meantime, VisiCalc was ready to show off.

My dad printed me a sample of an instructional sheet that I could use in my marketing.

VisiCalc was announced by the publisher in June of 1979 in a small booth at the giant National Computer Conference in New York.

The New York Times wrote a humorous article about the conference.

“A machine does what appears to be a religious ritual —

As the faithful gather, the painters of the Coliseum add to the Hall of Fame the words "VISICALC" written in large black letters on a yellow background.

Praise VISICALC! ”

(Whoa) The New York Times says, "Praise VISICALC"

(Laughter) For the next two years or so, no major business publications mentioned electronic spreadsheets.

most people still didn't understand

Some people understood

VisiCalc launched in October 1979

It's in a package like this

It worked like this on the Apple II

We all know what happened after that

There's still a lot to talk about, but let's save that for another time.

About the one thing Harvard remembers

This is an example classroom

There's a plaque commemorating what happened there.

(Applause) At the same time, it's telling you, too, to use your own unique circumstances, abilities, and needs to build prototypes, find and tackle important problems, and in doing so, change the world.

thank you

(applause)

Earlier this year, I was asked to give a TED talk.

I was so excited, but then I panicked, and I oscillated between excitement and panic. I started to prepare, but mostly I was just Googleing how to give a great TED talk.

(Laughter) In the meantime, I searched for Chimamanda Ngozi Adichie.

do you know?

(Cheers) I searched her because I always search for her, because I'm just a fan, but also because her stories are always interesting and informative.

In my searches, I always found one of her talks about the perils of having only one story, about what happens when you have only one perspective of understanding a group, and it's a great talk.

If I had been famous first, I would have been the one talking.

(Laughter) She's African, and I'm African, she's a feminist, and I'm a feminist, and she and I are writers, so it really felt like my talk.

(Laughter) So I decided to learn how to write programs, hack the internet, delete all the videos of my talks, and memorize them and go on stage and talk like my talks.

The plan seemed to work. The only problem was the program, but then one morning a few months ago, I woke up to the news that the wife of a presidential candidate had given a speech... (Laughter) (Applause) It was a strange resemblance to another of my favorite people, Michelle Obama.

(Cheers) So I thought I should do my own TED Talk, and I'm going to share it here.

What I'm going to talk about is my own take on storytelling.

Of course, I want to talk about the power of stories, but I also want to tell you that stories have limits, especially for those of us who care about social justice.

Since Adichie gave a TED Talk seven years ago, there's been a boom in storytelling.

Stories are being told everywhere, and if it's dangerous to keep telling stories that people are tired of hearing, I think it's a good thing that so many different people are spreading stories.

Stories are the antidote to prejudice

Now, if you're middle-class and connected to the internet, you can download stories with the touch of a button or the swipe of a screen.

Listen to the podcast to find out what it's like to grow up untouchable in Kolkata.

You can also hear about the challenges and wonders of raising a child with dignity and pride from an Australian Aboriginal man.

the story made us fall in love

Cracks are healed, divisions are dissolved

Stories make it easier for us to care about and discuss the deaths of people who are neglected in our society.

don't you

But guess what, I work at a place called Center for Stories.

My job is to help spread the stories about what it means to be black, to be a Muslim, to be a refugee, to be a controversial group, and to question the mainstream narratives.

But I started this job because, having been a social justice activist for so long, I'm particularly interested in how people tell nonfiction stories, not just as entertainment, but as catalysts for social action.

It's not uncommon for people to argue that stories make the world a better place.

But I've become increasingly concerned that even the most heartbreaking stories, especially those about people who no one cares about, often get in the way of doing social justice.

the narrator is not malicious

quite the opposite

In many cases, the narrator is a well-intentioned person like me, or perhaps you.

Listeners are often very empathetic and caring people.

Sometimes doing things with the best intentions can have unintended consequences, so I want to say that stories seem to have magical powers, and they really don't.

Now, let me tell you three things -- and it's the cliché -- why I think stories don't necessarily make the world a better place.

First, stories can create the illusion of togetherness.

Nothing makes me feel better than hearing a great story, like climbing that mountain, or making friends with a death row prisoner --

but not really

i'm not doing anything

Listening is important, but it's not enough to drive social action.

Second, I think we're usually drawn to characters and protagonists who are likable and human.

It's obvious, right?

If you love someone, you care about that person

but vice versa

If you hate someone, you won't even care about them

If you don't care, you think you have no reason to think about the environment that shapes your life.

i learned that when i was 14

Even if you don't like someone, you can actually accept their wisdom, and even if you don't like them, you can certainly help them.

I had my bike stolen while I was riding it.

(Laughter) I was biking across a field near Nairobi where I grew up, and it was really bumpy, so when you're on your bike, you don't want to feel like this...

I fell to the ground and looked up and there was this kid running away, sitting in the getaway car, and that was my bike. He was about 11 or 12 years old.

I instinctively shouted, "Mwizi! Mwizi!"

Means "thief" in Swahili

One by one, people came out of the wooden doorway and started chasing them.

Because it's Africa, the judgment by the mob has begun.

That's right?

I turned the corner and there was a kid caught, they caught him.

The suspect was apprehended and the child was told to return the bike and apologize.

This is also common African justice.

everyone said thank you

So we sat face to face and she looked at me and apologized but glared at me with uncontrollable anger.

i was really angry

This was the first time I faced someone who hated me because of the class I belonged to.

She looked at me and said, "Are you mad at me for having fair skin and even owning a bicycle?"

Being hated was a painful lesson, but the kid wasn't wrong.

I was a middle-class kid in a poor country.

I had a bicycle, but the child also lacked food.

There are times when messages that hurt your ears or messages that make you hate yourself are the ones you should listen to the most.

While there are lovable storytellers who steal everyone's hearts, there are hundreds of people who don't talk well and whose voices are harsh and never get the chance to wear nice clothes and stand on stage.

There are countless stories of angry bicycle thieves, but we can't ignore them just because we don't like them or because they're not the type of kid you'd want to adopt from an orphanage.

A third reason why I think stories don't necessarily make the world a better place is that we get so caught up in personal stories that we lose sight of the big picture.

When someone opens up about their shame, we admire them, but we don't always associate that feeling with oppression.

When someone says they're powerless, we nod as if they understand, but we don't associate it with discrimination.

The most important stories, especially for social justice, are stories that are both personal and political, and that can be considered and understood.

On the other hand, it's not just about the conflict between the stories we like and the kinds of stories we ignore.

We live in a society where more and more forces are at work, and stories are replacing the news for many people.

don't you

We live in an age where we see facts being devalued, emotions taking over, and analysis becoming tedious.

We live in an age where we care more about what we feel than what we actually know.

According to a recent Pew Research Center survey of trends in America, only 10 percent of adults under the age of 30 say they trust the media.

this is very serious

Because at the same time that storytellers are gaining credibility, much of the media is losing public credibility.

This is not a good thing, because stories are important and they give us different perspectives, but we still need media.

My years of experience as a social justice activist has taught me all too well that we need to connect the credible facts of the press with the powerful stories of our narrators.

That's what drives social justice forward.

And the final analysis is that justice makes the world a better place, not stories, right?

So if justice is what we're after, I don't think we should be focusing on the media or the narrator.

The focus should be on the listener, on the radio, on the podcast, on all of us.

And I'll conclude by telling you what you can do to make the world a better place.

First, to make the world a better place, audiences need to be more curious, more critical, and more likely to explore the social contexts that gave birth to the stories that they love so much.

Second, the way to make the world a better place is for listeners to perceive storytelling as an intellectual task.

And I think it's important to ask listeners to put a button on their favorite website, for example, a button that says, "If you like this story, click to support the cause the storyteller believes in."

“Click for storytellers to bring their next big idea to life.”

Because we are often obsessed with narrative platforms, but not necessarily with storytellers.

And finally, to make the world a better place, turn off your phone, step back from your screen, step out of your comfort zone, and step into the real world.

Alice Walker said, "Look at what you're building now.

If that doesn't overlap with the future I dream of,

The narrator helps us dream, but it's up to us to plan for justice.

thank you

(applause)

If I ask you to draw the atmosphere, what do you think of?

Most people imagine empty spaces, clear blue skies, and sometimes trees dancing in the wind.

I remember my high school chemistry teacher in very long socks, drawing on the blackboard diagrams of bubbles and bubbles connecting them, and explaining how they vibrate and collide in jumbled masses.

But in reality, we tend not to think about air at all.

Most of the time, we notice the air when our senses are uncomfortable, like a bad smell, or when we see something like smoke or fog.

but the air is always there

The air still touches us

even in the body

Air is in contact with your skin, and it's essential and familiar.

too easy to forget

what is air?

Air is an invisible mass of gas that surrounds the earth, attracted by the earth's gravitational pull.

I'm a visual artist, and I'm interested in the fact that air is invisible.

I'm interested in how we imagine air, how we feel air, how we innately understand its importance through breathing.

Life on Earth changes the composition of the air through gas exchange, just like we do now.

Let's all take a deep breath from now on

May I? You inhale, you exhale, and the air you just exhaled is 100 times more concentrated in carbon dioxide.

About 5 liters in one breath, 17 breaths per minute, 525,600 minutes in a year, so about 45 million liters of air are 100 times more concentrated in carbon dioxide than you alone.

That's about 18 Olympic swimming pools.

air is plural for me

It's as small as our breath and as big as the earth at the same time.

So it's kind of hard to imagine.

It's probably not possible, and maybe it's not important.

In my visual arts practice, I'm not trying to paint air, but trying to create intuitive, tactile air.

We're trying to expand the aesthetic notion of what it looks like: how air feels through your skin and lungs, how air feels through your skin and lungs, and how your voice sounds when it travels through the air.

I explore the heaviness, the density, the smell of air, but most importantly, there are many stories about different kinds of air.

This is a work I made in 2014

I've called it "Different Airs: A Diary of a Plant," and I'm going to recreate the atmospheres of different epochs in the Earth's evolution and invite the audience to come here to breathe with me.

To my surprise, it's completely different.

I'm not a scientist, but atmospheric scientists look for traces of atmospheric composition in geological data, know how rocks oxidize, and then apply that to geological information, and the overall interpretation provides recipes for creating the atmosphere of different ages.

As an artist, I use that recipe to recreate air using gaseous components.

I'm particularly interested in, for example, when life changes the atmosphere, but conversely, the atmosphere can influence the evolution of life, as happened during the Carboniferous.

That was about 300-350 million years ago

known as the Age of Giant Creatures

For the first time in the history of life, lignin evolves.

Lignin is the hard substance that makes up wood.

In effect, the trees produced their trunks during this time period, grew larger and larger, and spread across the globe, just releasing oxygen, and the oxygen levels were twice as high as they are today.

High oxygen levels make insects gigantic, including giant spiders and dragonflies with a wingspan of about 65 centimeters.

When I breathed in, the air was so clear and fresh.

It's not really flavorful, but it does give your body some energy boost.

Effective for hangovers

(Laughter) And here's another example of the atmosphere at the time of the mass extinction, about 252.5 million years ago, just before dinosaurs evolved.

It's a very short geological period, about 20,000 to 200,000 years.

It's a moment

It's the biggest extinction in Earth's history, bigger than the extinction of the dinosaurs.

Between 85 and 95 percent of the species died during this period, and there was also a rapid rise in carbon dioxide levels.

Oxygen levels during this time were less than half what they are today, about 10 percent.

Humans definitely can't survive in this atmosphere. One breath is fine.

And it's strangely comfortable to breathe

It's very quiet and warm and it tastes a little like carbonated water.

It's so comfortable, like a refreshing mist.

When we think about the air of the past, we naturally think about the air of the future.

Instead of speculating about air and creating what I think is the future of air, I discovered a man-made gas.

So it's something that doesn't exist anywhere in nature, and that's created by humans in laboratories for a variety of industrial applications.

Why is it the gas of the future?

This gas is a very stable molecule, and once released, it literally becomes part of the air without breaking down for 300 to 400 years.

Approximately 12--16 generations worth of time

This futuristic gas has properties enough to be felt by humans.

very heavy

It's about eight times heavier than the air we normally breathe.

It's so heavy that when you breathe, whatever you say, it's literally so heavy that it drips from your chin onto the floor and seeps into the crevices.

A gas that behaves like a liquid

Now, this gas also has a moral side.

Humans created this gas, the highest level greenhouse gas ever analyzed.

It's 24,000 times more potent in warming than carbon dioxide and has a lifespan of 12 to 16 generations.

Confronting this moral issue is at the heart of my work.

(in a low voice) It has another amazing property.

change your voice dramatically

(Laughter) When we started thinking, woo, there was a little bit left.

(Laughter) When you think about climate change, you don't think about giant insects or volcanic eruptions.

Things that immediately come to mind are receding glaciers and polar bears drifting on pack ice.

We think of pie charts, bar charts, and politicians endlessly talking to scientists in cardigans.

Maybe it's time to think about climate change on the same intuitive level that we feel the air.

Like air, climate change is happening simultaneously on different scales: molecular, respiratory and terrestrial.

Air is shapeless and cumbersome, and it touches our skin and is essential and familiar.

Yet it's so easy to forget

Climate change is humanity's collective self-portrait.

It reflects the decisions of individual people as well as governments and industries.

If there's one thing I've learned from looking at air, it's that it's always been there, even though it's changing.

Even if it doesn't foster the life we ​​recognize, it will foster another life.

If humans are the decisive factor in that change, I think it's important to bring the debate to the fore.

Invisible, humans leave traces in the highly reactive air.

thank you

(applause)

A kingdom's richest merchant was exposed for fraudulent dealings.

The merchant had put most of his fortune into a collection of 30 of the finest Burmese rubies, which the crowds in the square clamored to seize and repay the victims.

But this thug, along with his associates, made a convincing case in court that at least part of his fortune was obtained legally and in his service to the king.

The king pondered for a moment and handed down his sentence.

Since there was no way of knowing which rubies were bought with ill-gotten fortunes, the fines to impose on the merchants were determined by a brain game against the king's wisest adviser, yes you.

You will be told the rules in advance

The merchant can carefully distribute the rubies into 3 chests and the chests are placed in front of you.

You will be given three cards and you must write a number from 1 to 30 on each card and place one in front of each box.

and all the boxes are opened

If each box contains more rubies than the number written on the card, you can receive as many rubies as that number.

But if the number on the card is greater than the number of rubies in the box, the whole box belongs to the villain.

The king gave only two limits to the thugs' distribution of the rubies.

Put at least 2 rubies in each box. Put exactly 6 more rubies in one box than you put in another box. But you don't know which box it will be.

After thinking for a while, the merchant puts in the jewels and the box is brought to you.

What number would you choose to take as many rubies as possible from the thugs and pay the victims?

[Pause the video here and think for yourself]

[3 to answer] [2 to answer] [1 to answer] You don't want to be too greedy and exceed the number, right?

But there's a way to secure more than half of the villain's treasure.

The situation is similar to a competitive game like chess, but here you don't know what your opponent is doing.

To know the minimum number of rubies you can get with certainty, you need to know the worst case, where the merchant knows everything you do and distributes the rubies in such a way as to minimize your winnings.

You don't know which box has more rubies and which has less rubies, so you should write the same number on all of them.

Assuming you write 9 on all three cards

The villain may have 8 rubies, 14 rubies, 8 rubies.

In this case you will only receive 9 rubies from the middle box.

On the other hand, at least two boxes should contain at least eight pieces.

Here's why

First, let's do the opposite: suppose there are no more than seven items in each of the two boxes.

These can't be pairs that differ by 6, because each box should have at least 2 or more.

In this case, the third box would be 7+6, or 13 at most.

Even if you add up the contents of the three boxes, the maximum is only 27.

There are fewer than 30, so it's impossible in this case.

By the law of contradiction, we know that the two boxes contain at least 8 rubies.

If you write 8 on every box, you'll get at least 16 rubies, which is the maximum number of rubies guaranteed.

You can get back more than half of the villain's fortune in debt to the citizens.

Although he was able to keep some rubies in his possession, his fortune has clearly lost some of its luster.

Cybercrime is on the rise

occur everywhere

It's a hot topic on a daily basis

Over 2 billion records were lost or stolen this year.

About 100 million people had their health insurance information stolen last year, most of them Americans, including myself.

What's particularly worrisome about cybercrime is that in many cases, by the time it's reported, it's already been months.

So when you watch the evening news, most of the time, it's easy to think it's an act of espionage or an act of a homogenous state.

there is also

As you know, espionage is an internationally accepted practice.

But cybercrime is only one facet of the problem we face.

How many data breach incidents are explained as "the result of sophisticated attacks by a homogenous state..."?

Most of the time, this is just a reluctance of companies to admit that their information security controls are lax.

There's also a widely held myth that blaming a homogenous state for an attack will alienate regulators, at least for a while.

So where do these attacks come from?

The United Nations estimates that 80 percent of cyberattacks are by highly organized and very successful criminal gangs.

To date, cybercrime has become one of the world's largest black economies, now peaking at $445 billion.

Let's put this number in relative terms: $445 billion is more than the GDP of 160 countries around the world, and more than the GDPs of Ireland, Finland, Denmark, and Portugal.

So how does that work?

What are criminals' modus operandi?

I'll give you an example

About a year ago, our investigators investigated Dyre Wolf, a financial Trojan that looks mundane but is actually quite sophisticated.

Dyre Wolf infects computers of people who inadvertently open links in phishing emails

then do nothing immediately

Wait for the target to log into the bank's site

You log in, and criminals steal your credentials, and they steal money from your account.

It sounds terrible, but in the information security industry, cyberattacks like this are all too common.

But Dyre Wolf has two very different personalities. One is for small transactions, but it's a completely different persona for businesses that make large wire transfers.

For example, something like this happens

When you start processing a wire transfer, your browser pops up with a pop-up from your bank telling you that there's a problem with your account, and directing you to call the security department's number on the screen immediately.

so you call

After that, the operator will respond in English through automatic voice guidance.

"Yes Altoro Mutual Bank What do you need?"

You give your bank your name and account number over the phone, as you always do, and they go through a security check to verify your identity.

What most people don't know is that many large wire transfers require two authorizations, so the operator asks another person to answer the phone, and then completes the same authentication process.

It's normal, right?

There's just one problem: the operator is an impostor.

partner is a criminal

They had fake pages for English helpdesks and banking sites.

It's done so flawlessly that between half a million and one and a half million dollars each move into the criminal's coffers.

These criminal gangs operate like tightly controlled, legitimate businesses.

Employees work from Monday to Friday

I have weekends off

why do you know?

That's because our information security researchers have seen many spikes in malware on Friday afternoons.

The bad guys spend the weekend with their wives and kids, then they go back to work to see what happened to their targets.

The place where they operate is called the Dark Web.

It's a term used to refer to the bottom of the Internet, as opposed to the Surface Web, where criminals can operate anonymously and invisibly.

Here they sell malicious software and share information about new attack techniques.

You can buy anything here, from basic attack level products to very advanced products.

In fact, in many cases, even the level of service varies from pin to pin.

You can also check the reputation

Some of the products even come with a money-back guarantee.

Now, an environment like this, a marketplace, looks like Amazon or eBay.

You can see the products and their prices, ratings and reviews.

Of course, if you're buying cyberattack products, you're buying from reputable and trusted criminals, right?

(Laughter) It's no different than looking at Yelp or TripAdvisor before going to a new restaurant.

As an example

This is an actual screenshot image of the malware seller's page

Seller level is 4 Trust level is 6

Last year it received 400 positive reviews, and last month it had only two negative reviews.

There are even license terms

Here's an example of a site you visit when you want to change your identity.

They sell fake IDs and fake passports.

But here's a legally binding provision for buying a fake ID.

I want you to make jokes in general

What the hell are you going to do, sue me for breach of contract?

(Laughter) This happened a few months ago.

Our information security researcher was looking at a malware app targeting Android that we identified.

It is a product called "Bilal Bot"

In a blog written by an investigator, Bilal Bot was rated as a new product in beta stage that is ubiquitous in the criminal underworld -- a cheaper alternative to the much more sophisticated GM Bot.

The developers of Bilal Bot were unhappy with the content of this review

So here's the email I sent to the investigators, stating what they had to say and claiming, "I think you're reviewing an older version."

They asked me to update my blog with more accuracy, and offered an interview where I could explain in detail how the malware they had developed was so much better than the competition.

Look, you don't have to like what they're doing, but the entrepreneurial spirit at the heart of what they do deserves respect.

(Laughter) So what do we do to stop this from happening?

That said, it would be impossible to identify the mastermind. Remember, they operate anonymously beyond the reach of the law.

You can't prosecute the culprit

So I suggest that we need a completely new approach.

At the heart of it is the idea that we need to hit the bottom line of the bad guys.

To get an idea of ​​how this works, let's think about how we respond to epidemic outbreaks, like SARS, Ebola, bird flu, Zika.

What do you prioritize?

It's about knowing who got it and how it's spreading.

Now, governments and private organizations, hospitals and doctors are all doing their best to respond openly and quickly.

These collective altruistic efforts are aimed at stemming the spread of disease and informing uninfected people about how to prevent and get vaccinated.

Unfortunately, the current response to cyberattacks is something else entirely.

Organizations are much more likely to keep information about cyberattacks private.

I wonder why?

Because they care about competitive advantage, litigation or regulation for the organization.

Information Security Threat Intelligence Must Be Effectively Democratized

We need all of these organizations to open up and share the private information they've been hoarding.

Bad guys move fast, so we need to move even faster.

The best way to do that is to open up and share up-to-date data.

Consider what an information security professional looks like

They're the kind of people who have confidentiality built into their DNA.

I have to overturn that thought

We need governments, private organizations and information security companies willing and able to share information quickly.

Because if you share information, it's equivalent to vaccination.

If you don't share it, you're part of the problem, because you're increasing the likelihood that other people will fall victim to the same attacks.

Information sharing has even greater benefits

In near-real time, you'll be able to take action against criminal vectors and stop criminal plans.

It can reach targeted people much faster than criminals expected.

discredit criminals and tarnish their reputations and reputations

It keeps cybercrime from making money.

It changes the economic climate of the bad guys.

But someone has to lead the way, and change the mindset of the entire information security industry.

About a year ago, I developed a radical idea with my colleagues.

What if we at IBM took our internal data — one of the world's largest databases of information security threats — and looked inside?

It contained information about what happened in the past, but also what was happening in near real time.

What would happen if everything was published on the Internet?

As you can imagine, there was quite a reaction.

First, a lawyer came and asked, "Will there be any legal issues?"

Then companies came and asked, "Is there any commercial impact?"

And I was told by so many people that I must have lost my mind.

But there was one point that always came up in any conversation: the realization that if we don't try this, we are part of the problem.

So we did something unprecedented in the information security industry.

We started making the data publicly available.

Over 700 terabytes of actionable data on security threats, including real-time information on cyberattacks and their footprints that can be used to stop cybercriminals.

And to date, more than 4,000 organizations are leveraging this data, including half of the Fortune 100 companies.

The next step for us is to hope that all of these organizations will join the fight and share with us how and when they are being attacked.

We all have an opportunity to stop cybercrime, and we all already know how to do it.

We just have to imitate what happens in the medical world, how we deal with epidemics.

It means that we should disclose information and work together.

thank you

(applause)

I'm sure you all feel that this country is becoming more and more polarized, and that the gap between the left and the right is worse than anyone has ever experienced.

But you might be wondering if there's any research that backs up that intuition.

In short, unfortunately there is

Study after study shows that the gap between liberals and conservatives is widening.

Individuals are shutting themselves into their own political ideological shells, listening to different news, socializing only with like-minded people, and increasingly choosing to live in different places.

And most alarming is the growing hostility from both sides.

Liberals and Conservatives, Democrats and Republicans, increasingly hate each other.

you will see it in many ways

We don't want each other to be friends or dates

It's a pretty shocking statistic that even if you know someone, if you find out that the other person is someone else, you won't feel attractive, or you won't want to marry a child to someone who supports another political party.

In my lab, I'm talking to students about certain patterns of social behavior, and because I'm a movie buff, I often ask, "What movies represent this pattern?"

What kind of movie would be perfect for this politically polarized society?

It might be a catastrophe panic movie

It certainly looks like a catastrophe

or maybe a war movie

this is also perfect

But in my opinion, it's a zombie apocalypse.

(laughs) Right? that kind of movie

In the film, we see people wandering around in groups, unable to think for themselves, trapped in herd mentality, trying to spread the zombie infection and destroy society.

I'm sure everyone, myself included, thinks you're the good guy in a zombie movie, and you think that the people over there spread all the hatred and division. 'Cause we're Brad Pitt

Thinking freely, being on the side of justice, trying to protect what's important, I'm not a foot soldier in an army of undead zombies.

wrong

never be different

But here's the thing: What role do they think you're in?

May I?

I definitely think they're allies of justice in zombie movies, too.

You think you're Brad Pitt and you're a zombie.

who's to say they're wrong?

But what is certain is that we are all part of this.

So, fortunately, we can play part of the problem-solving role.

So what do we do?

How can we break this polarization in our daily lives?

How do you connect and talk to people you're politically opposed to?

It's this question that struck a chord with me and my colleague Matt Feinberg a few years ago, and we started doing some research on it.

The first finding that helps us understand polarization is that political divisions are underpinned by deep-seated moral divides.

One of the most robust discoveries in the history of political psychology, psychologists Jonathan Haidt and Jesse Graham, found behavioral patterns in which liberals and conservatives differed in their degree of support for various values.

Liberals, for example, are more supportive of values ​​such as equality, fairness, care for the vulnerable and protection from harm than conservatives.

Conservatives are more supportive of values ​​such as group loyalty, patriotism, respect for authority, and moral purity than liberals.

We thought that this moral divide might be the key to understanding how liberals and conservatives talk and why they often disagree.

So we conducted an experiment, where we recruited liberals to persuade conservatives to write papers in favor of same-sex marriage.

What we found was that liberals tended to argue against liberal morals, such as equality and fairness.

For example, their papers said, "Everyone has the right to love whoever they choose," and "Homosexuals should enjoy the same rights as other Americans."

When 69 percent of liberals wrote their papers, they wrote papers that resonated with their morals, and only 9 percent wrote papers that appealed to conservatives' morals, even though the goal was to persuade conservatives.

Conversely, we asked conservatives to write papers to persuade English to become the official language, traditional conservative political positions, and as a result, they did the same.

Fifty-nine percent said the papers resonated with conservative values, and 8 percent said essays that appealed to liberal morals, even though they were trying to persuade liberals.

Now I'm in trouble

Morality is a deeply rooted belief

People are willing to fight and die to protect this.

Who would want to give up this morality for something they don't even care to agree with?

When you're trying to persuade your conservative uncle, you're not going to succeed if you say things in a way that makes him change not only his opinion on certain things, but his morals.

As an effective way to

We believe we can use a technique called "moral reframing," and we studied this technique through a series of experiments.

In one experiment, we asked liberals and conservatives to read one of the three papers, and then surveyed them about their attitudes toward environmental issues.

The first paper was a relatively old pro-environmental idea that appealed to the liberal values ​​of protecting and caring for the vulnerable from harm.

For example, "We are harming our lands in all significant ways" or "It is imperative that we act now to protect our planet from further destruction."

A second group of participants read a different paper, one written to fit the conservative values ​​of moral purity.

At the same time, it was about environmental protection. For example, "It's very important to keep our forests, our drinking water, our skies in their purest form."

"We should consider the pollution that is happening here to be filthy."

"By reducing pollution, we can protect the pure and beautiful things here."

A third group was asked to read non-political papers.

to compare the data relative to this group

And we've done research, and we've found that liberals' attitudes about environmental issues don't seem to have much of an impact on what they read.

A strong attitude towards environmental protection was seen

All liberals are in favor of environmental protection.

Conversely, conservatives expressed more support for radical environmental policies and conservation when reading the moral chastity paper than when reading the other two papers.

Conservatives who read moral chastity papers, in particular, tended to believe in and be concerned about global warming, and the paper did not mention global warming.

it was just related to environmental issues

moral reframing had a strong influence

We conducted the same research studies on various political issues.

If you want to convince conservatives about liberal issues like same-sex marriage and universal health insurance, you'll do well if you talk to them about their values, like patriotism or moral purity.

I also checked the reverse.

If you want to persuade liberals about conservative policy issues, like military spending or making English the official language, they're going to tell you to involve liberal values ​​like equality and fairness.

The conclusion from all these studies was the same and clear: if you want to convince someone about a policy, you'll do better if you tie it to their deep-seated morals.

It goes without saying

Then what are you here for?

I wonder why? (Laughter) It's intuitive.

Still we are really struggling

They say they're going to convince them on political issues, but in the end they're just talking to themselves in the mirror.

So you're just repeating your own reasons for taking a particular political position, and you're not trying to persuade them.

When we think of moral arguments, we keep saying empathy and respect, empathy and respect.

And when we're mindful of empathy and respect, we can connect with each other, and we might be able to change someone's mind in this country.

So let's think again, what kind of movie are we in? It might have been on the chart earlier

Not a zombie movie, maybe-

It might be a movie about a duo of cops.

(laughs) Please keep that in mind.

(laughs) You know? A white and black cop duo, one is sloppy and the other is diligent

No matter what, we don't get along because we're so different

But in the end, they come together and work together and feel a stronger bond because the chasm they had to cross was so deep.

This kind of movie usually has the worst second act, where the two main characters get further apart than ever before.

It's like a representation of this country right now. Later in the second act -- (Laughter) they get torn apart, but they get back together.

It sounds auspicious, but I think if we want this country to follow the same path, we have to change.

I would like to appeal to you: Let's bring this country back together.

Politicians, media, Facebook, Twitter, electoral districts, no matter how much we are separated

let's do it because it's the right thing to do

And because this feeling of hatred and contempt plagues, ugly and corrupts our hearts every day, and that ugly heart threatens even the very foundations of society.

We must reach out and understand each other and this country.

I can't continue to hate and let people hate me

empathy and respect

empathy and respect

Shouldn't we at least do this much for our friends?

thank you

(applause)

How we started this, it has a lot to do with happiness.

When I was a kid, I was very introverted and worked alone.

And so, well, as a survival skill, I was going into very personal places and making things.

Making things for others, that's how I showed my love for them

I was able to shut myself up in my own space and put my ideas and passion into my own story.

So my hands and my creations are not only connected to the realm of ideas, but also to the realm of emotions.

And the ideas are so disjointed

I'm going to show you a lot of things, but they don't really connect to each other. They're all products of my brain, inspired by looking at life, looking at nature, seeing things, and having random, happy thoughts about those things.

I started exploring "movement" as a child

I was fascinated by the movement of things, so I started by making flipbooks.

This is something I made when I was probably in seventh grade, and when I was making this, there was a little rock, and there was a road for cars, and it jumped up into the sky, and the character (Laughter) jumped out of the car, and I was thinking about the trajectory of the car.

And of course, in childhood, there is always "destruction"

So this is how it ends (laughs) Unexplained violence

(Laughter) Well, that's how I started exploring and expressing movement.

So when I got to college, I started building pretty complex, delicate machines.

This was actually due to a variety of interests.

When I was in high school, I loved computer programming and the logical flow of events.

Also, I was very interested in becoming a surgeon or something, because you do manual work in a very focused way.

So I started taking art classes, and I started making sculptures, which combined working with my hands with great precision and all sorts of logical flow of energy through the system.

And with the wire -- in everything we do, visual and engineering decisions are made at the same time.

you can do them all

This kind of machine is very similar to painting

It's filled with a lot of little end products, like this little leg here, but it's just moving in circles and it doesn't really mean anything.

It's a pleasure just to have such a trivial thing

My relationship with engineering is the same as anyone else's: I love solving problems.

I like to find solutions, but the results are really quite ambiguous.

(Laughter) It's completely vague.

(Laughter) The next piece that appears is an example of something very complicated.

I like solving problems

I challenged myself to try and create all the mechanisms that would allow this little man to go back and forth by turning the crank in one direction.

When I started doing this, I didn't have a plan for the whole machine yet, and I had a feeling of how it would work, a feeling of shape, and how big it was going to be.

All that's left is to start from one place and make it to the end.

That little gear over there changes direction back and forth.

this is something i picked up somewhere

A lot of the things I make use stuff I picked up somewhere.

It's like I'm playing a visual pun all the time

When I see an object, I imagine its movement

So imagine what you can say

The next piece is a piece with a wishbone, and I came up with the idea when I was playing with this bone after dinner.

They say you shouldn't play while eating, but I always play with things.

So when I found this wishbone, I thought, 'He looks like a cowboy who's been on his horse too long.

(Laughter) So, as I was making that bone walk on the table, I thought, "Couldn't we make a machine that could make this walk?"

So you build this machine, you put it together, and the wishbone walks.

And because the wishbone is a bone -- it's an animal -- I think we can get into it.

here is the big picture

(laughs) (It's about this size.)

(Applause) These pieces are like puppeteers. What I picked up was a kind of puppeteer, and I'm the puppeteer.

I'll build a machine and it'll take over for me The machine can do what I want it to do

The next one, much more conceptual, is a little piece called "Collie's Yellow Chair."

I got the idea for this when I saw my son's little chair and it looked like it would explode.

So when I first envisioned it, it was like exploding at infinite speed, and the parts would go far, far away, and then gravity would pull them back to where they came from, at infinite speed, back to the center.

The pieces come together for a short time, and you realize the chair was there.

To me, it shows the transience of the present moment, and that's what I wanted to express.

Machines are an approximation of that phenomenon, of course, because you can't move matter at infinite speed and suddenly stop it.

This whole thing is about 120 centimeters wide, and the chair itself is about a few inches.

(Applause) This is kind of a funny conceptual thing, and yesterday we were talking about Danny Hillis' "10,000 Clock."

This one has a motor on the left that drives the gear train.

There are 12 pairs of 50:1 gears, but the speed of the final gear is so slow that it takes two trillion years to rotate once.

So I built this in concrete because anything is good

(Laughter) Because you can always go around.

(Laughter) Now, something else entirely --

I always think of myself in a different situation

I imagine myself as a machine

what do i like

I think it likes being soaked in oil

(Laughter) And all this machine does is bathe itself in oil.

(Laughter) (Applause) That's all -- it's just going to be really addicting to oil.

(Laughter) Around that time, I got a call from a friend who wanted to do an erotic art show, and I didn't have one.

But she wanted me to put it in an exhibition, so I came up with this

Well related, but much more erotic, isn't it?

We call it a "machine with grease"

It's ejaculating all the time, so -- (Laughter) it's a happy machine.

(Laughter) I'm so happy

From an engineering standpoint, this is just a four-bar linkage.

This is also something I picked up, but it's a small fan I found.

And I wonder, how can this fan open, how can I say things so easily?

In this case, I try to make something clear, but on the other hand I try not to look like some animal or tree.

"Procedure" is very important to me, because at the same time that I invented the machine, I also invented the tools to make the machine, and I've been into everything from the beginning.

This is a small wire bending tool

After years of bending wires with pliers into gears, I built this tool, and then I built another tool to center gears very quickly, and I created my own world of engineering.

After discovering the spot welder, my life completely changed.

(Laughter) This is the tool.

It's completely changed what I can do

I'm about to do some poor silver soldering.

They don't teach you silver solder like this at school

I like this method.

Real jewelers use very little solder

This is the finished gear

When I moved to Boston, I joined the World Sculpture Race Association.

(Laughter) Their assumption was that we wanted to show sculptures on the street, and there wouldn't be a subjective decision about who was the best.

The winner is the one who crosses the finish line first.

(Laughter) And so I -- this is the first racing sculpture I made -- and I thought, "Well, I can make a wheelbarrow, and then in my handwriting, I can write, 'Faster.'

(Laughter) But eventually, when I finished writing one word, I stopped and gave the card to someone on the street.

That's why I can't win the race because I'm always standing still

but it was very interesting

(Applause) Now, we only have two and a half minutes left -- let's play with this.

This is in some ways the most complete work for me.

Because I played the guitar a lot when I was a child.

When this idea came to me, I was thinking of doing an all-mechanical play, where you and I have an audience, the curtains are up, and you can have fun with the machines on stage.

So I imagined a very simple gestural dance between the machine and the chair...

When making this work, I always tried to find points that say something very clear, very simple, but at the same time very vague.

I think there's a point between simplicity and ambiguity where the observer can find something.

And when you think about it, all these works come from my own mind, from my heart, and I try so hard to find a way to make it come true.

It's always a struggle

It just is the thing

the object itself means nothing

Once it's recognized and in someone's mind, that completes the cycle.

And that's the most important thing to me, because ever since I was a child, I've wanted to pass on my passion and my love.

It's a whole cycle that springs up from within me and comes out and takes shape and somebody recognizes it.

So let's wait for that chair to come back

(Applause) Thank you.

(applause)

It's my job to build relationships.

Speaking of a profession that builds relationships, don't you think of nature as an "architect"?

isn't that

The reason is that most people think that architects design buildings and cities. But what architects design is actually relationships.

A city is a place where people gather for various exchanges.

In addition, urban buildings are very specific habitats, with unique insects, plants, animals, and climates of their own.

But today, urban habitats are out of balance.

Climate change and political and economic hardships have played a part in this, compounding the stress on cities and the people who live in them.

For me, the insights that ecology provides are important because ecologists don't just focus on one species, they also focus on the relationships between organisms and their environment.

They study how different ecosystems are interrelated, and in fact this balance itself, the web of life, sustains life.

Our team has applied ecological insights to architecture, studying how physical space deepens that relationship.

In the project I'm sharing with you today, the notion of building relationships is a key design driver.

this is an example

I was recently commissioned to design a social justice leadership center called the Arcus Center.

They wanted a building that could break down the walls that divide existing groups and, in doing so, expand the possibilities for meaningful conversations about social justice.

The students were looking for a place for cultural exchange.

I thought it would be appropriate to prepare a meal together.

I also wanted to welcome people from other communities,

And it thought that if there was a fireplace, people would gather around it and start conversations.

And everyone wanted people on the outside to know how social justice works.

This kind of space didn't really exist before, so I searched around the world for examples of buildings as community meeting places.

Community meetinghouses are places where specific relationships are created, for example, in this elders' meetinghouse in Mali.

The ceiling is so low that everyone's line of sight is at the same height.

very egalitarian

'Cause no one can stand up and take over the rally

I'll hit my head then

(Laughter) At the center of any gathering, there's always a place where people can sit in a circle and face each other.

And we designed that space in the middle of Arcus Center, and put the fireplace and the kitchen in the center.

Putting a kitchen and a fireplace in a building like this was difficult because of the building code, but it was a very important part of the concept, so we included it.

This central space is also used as a place to hold large gatherings and meet one-on-one for the first time.

The building is like a three-way fork, giving people the chance to meet and strike up a conversation.

You can go see what people are doing in the kitchen

We can sit around the fireplace and talk

You can study together in large groups or small groups, and this building naturally gives you the opportunity to do that.

The building process itself was a process of building relationships.

It's called cordwood masonry, and it's a way of building that uses firewood like bricks.

Anyone can easily do it with a low-tech and simple construction method That is the point

The construction process itself is a social activity.

And it's also kinder to the planet. Trees take in carbon, grow, and give out oxygen. The walls of this building are packed with carbon, and it's not released into the atmosphere.

So building this wall will help reduce carbon emissions.

I chose this method of construction because it connects people and it connects people and the environment.

Does it work as expected

Are you creating and nurturing relationships?

How would you rate it?

First of all, more people are coming to the center, and more people are applying for Arrcus Fellowships as a result of fireside chats and events throughout the year.

In fact, since the building opened, the number of applicants has increased tenfold.

This building does its job and nurtures relationships.

So I've shown you how architecture can connect people in the form of lateral extension.

I wondered if we could apply this concept to relationships in the wider society, or upwards, to skyscrapers.

Skyscrapers don't contribute much as social buildings.

Can be seen as isolated and introverted

You only meet people in those awkward elevators.

I've designed skyscrapers in several major cities, and it's been based on building new relationships.

This is a building called Aqua

This is a residential skyscraper in Chicago that caters to urban, career-minded young people and married couples who have just finished raising children, and many of the residents have just moved to the city.

The challenge was whether the building itself could create an environment where it would be easy for people to get to know their neighbors, even if the rooms themselves were vertically aligned.

So we've developed a way to turn balconies into new social spaces.

The plank-like floors are diverse and change little by little as you go up the floors.

This way, you can see the people in other rooms from the balcony.

the balcony is out of place

Lean out from the balcony and say "hey"

It's like talking to your neighbors across your backyard.

In order to make balconies more comfortable for as long as possible throughout the year, we used digital simulations to study the wind. The shape of the balcony created the effect of dispersing and redirecting the wind, making it calmer and more comfortable on the balcony.

So just by going out onto your own balcony, or out onto the third-floor terrace, you're still in contact with the outdoors, even if you're way above ground level.

The building itself plays a role in creating a community within the building and in the city at the same time.

It's actually working

We're seeing more and more people meeting over the terraces of buildings, and I've heard (Laughter) that couples are being born.

Like love, architecture has a positive social impact on the local community, where people actually come together and start big projects together, such as this community organic garden on the roof terrace.

I've shown you that skyscrapers can connect people, but what about public buildings?

How can we create better social cohesion in public buildings and spaces? And why is it important?

Public buildings don't do very well when designed from the top down.

About 15 years ago in Chicago, an old police station was being rebuilt, and we built this same building across the city.

The intention was good, to treat each area equally, but the local people didn't feel like they contributed to the process, or that this building belonged to them.

There was equality in that everyone was given the same police station, but there was a lack of fairness in terms of meeting the needs of each community.

This fairness is an important issue

In the world of architecture, there's a debate about whether architecture can do anything to improve social relationships.

I believe that all methods are needed to improve social relationships, and architecture is one of them [policy → design → trust].

[Policy -> Design -> Trust ] Reforms are proposed to restore trust

I asked if our team could make a positive contribution to change in the design and inclusive design processes.

We asked ourselves: can design help restore trust?

So in North Lawndale, near Chicago, I consulted with the residents and the police, who thought the police station looked like a terrifying fortress surrounded by parking lots.

In North Lawndale, residents are terrified of the police, terrified of going to or around a police station, or even reporting a crime.

So we brainstormed, got both the residents and the police involved, and came up with a whole new idea for the police station.

It's called "Police Station"

"Police" is a Greek word that means a place of local community.

The idea behind this term is that if we can increase the opportunities for positive social interaction between the police and the local population, we can rebuild that relationship, and at the same time, help revitalize the community.

Instead of the police station being a scary fortress, we're going to have places in the police station where people come and go more frequently -- places where people start conversations, like barbershops, coffee shops, or athletic fields.

It turns out that both the police and the children love sports.

This is a direct statement from both the community and the police, and my role as the designer was to connect the dots and suggest a first step.

So with the help of the city and the parks department, we were able to raise funds to design and build a half court in the police station parking lot.

It's just the first step

What are the effects of rebuilding trust?

According to residents of North Lawndale, children use the court every day, and they organize tournaments like this, sometimes with the police.

Now there's even a basketball in the police station that kids can borrow.

They recently asked me to expand the court and build a park on the site.

And the voices of local parents were amazing.

They used to be afraid to even go near the police station, but now they say they feel safer on this police station court than on other courts, and that their children feel safer playing here.

So maybe in the future, in a public space inside the police station, you can go get a haircut at the barber shop, or reserve the community room for a birthday party, go get your driver's license renewed, or use an ATM.

It could also be a place to socialize with neighbors or with police officers.

This is not a utopian fantasy

It's about how we design to restore trust and trusting relationships.

Parks, libraries, schools and other public buildings in any city could be reconfigured as places of interaction.

But to rebuild those buildings for the future, we need the help of the people who live there.

It takes courage to get the cooperation of the residents.

But maybe that's because architecture school doesn't teach you how to work with people in the design process.

Although we were taught to protect our designs from critics,

I think that will change

I believe that if we focus our design intentions on building positive, deeper relationships within and through the building, we can do more than just build a building.

You can reduce the stress of living in the city and the division between residents.

start a new relationship

We can help stabilize this planet we share.

Do you understand?

Being an architect is really a relationship-building profession.

(laughs) Thank you very much.

(applause)

Thank you for giving me the opportunity today to speak to you about the biggest international topic of your professional life and the most important global challenge that the world will continue to face in the future and for the long term.

The topic, of course, is the rise of China.

Never before has so many people's lives grown so rapidly and in so many dimensions.

The challenge is the ramifications of China's growth, which will disrupt the United States and the international order that it leads and guards.

The last 100 years, as historians now call it, were the "American century."

Americans are used to being at the top of every hierarchy.

So for many Americans, the prospect of other nations becoming as powerful as, or even stronger than, America is a threat to their existence.

To understand the nature of this competition, it's helpful to look at the relationship between the two countries in the context of world history.

In the last 500 years, 16 new powers have threatened the hegemonic position.

12 of them ended up in war.

November marks the 100th anniversary of the end of the war that engulfed so many nations and caused historians to create an entirely new category of "world war."

November 11, 1918 — At 11:00 a.m., the gunfire of World War I ceased, killing 20 million people.

Everyone here is educated and they know about the rise of China.

So I want to look at the impact of China's rise on America, on the international order, on the possibility of war and peace.

I've been teaching at Harvard for many years, and I've come to realize that it's important to stop every now and then to make sure people are keeping up.

So I'm going to take a short break here and give you a quiz, and of course it won't affect your grades.

let's do it

The problem is, 40 years ago, in 1978, China entered the global economy.

At that time, what percentage of the billion Chinese were living on less than two dollars a day?

Guess what 25%?

50%？

75%？

90%？

What do you think?

The correct answer is 90%

Nine out of 10 people lived on less than two dollars a day.

40 years later in 2018

what happened to this number?

What are your expectations?

let's see

Today, less than 1 in 100 people

And China's leaders promised to bring the remaining tens of millions of people's living standards above the norm in the next three years.

this is a miracle

unbelievable

On the other hand, ignoring hard facts is much more difficult.

Twenty-five years later, a country that didn't even appear in any of the international rankings has grown rapidly, matching and surpassing its rival, the United States, in some areas.

Therefore, the challenge that will affect the world in the future is that the seemingly ever-growing China is increasingly likely to provoke the greatest conflict in history with the seemingly immovable United States.

To help you understand this challenge, I'll introduce you to great thinkers, introduce you to big ideas, and raise the big questions that arise.

A great thinker is Thucydides

It's a difficult name to pronounce, isn't it? Some people have trouble pronouncing it.

Now let's say together 1, 2, 3, Thucydides

Thucydides again

what kind of person is he?

he is the father and founder of history

he wrote the history book for the first time

It's titled "War History," and it tells the story of the Peloponnesian War that took place in Greece 2,500 years ago.

You can tell everyone you know today, "I know a great thinker.

I can even pronounce my name correctly Thucydides."

Now, speaking of this war that destroyed ancient Greece, Thucydides famously said, "The rise of Athens and the terror of Sparta against it made war inevitable."

The rise of one and the reaction of the other created negative emotions of pride, arrogance and paranoia that led both sides to war.

This gave me a big inspiration: the Thucydides Trap.

"The Thucydides Trap" is a term I coined a few years ago to clarify his findings.

The Thucydides Trap is a dangerous dynamic that emerges from the threat of rising powers to replace hegemonic powers, such as Athens and Sparta, Germany and Great Britain 100 years ago, and what is happening between China and the United States today.

Henry Kissinger said, "Once you understand the concept of the Thucydides trap, you can develop an eye for understanding what's really going on, separate it from the news and the noise of everyday life."

Now the most important question in the world today is, are we repeating history?

Or can we use our imagination, our common sense, and our courage to find a way to resolve the conflicts between nations without going to war, which is clearly a catastrophe that no one wants? is that

Allow me five minutes to explain this, so that later this afternoon, when the latest news about U.S.-China relations rolls out, you'll have a better understanding of what's going on, and you'll even be able to explain it to your friends.

Now, as you can see from the inverted rich-poor pyramid, China has indeed grown rapidly.

in the blink of an eye

Former Czech president Vaclav Havel would best describe it.

"Everything happened so fast that there is no time to be surprised."

(Laughter) To remind myself of my amazement at that time, I sometimes look out of my window in Cambridge, and it's the bridge that spans the Charles River between Kennedy School and Harvard Business School.

In 2012, the Massachusetts government announced that the bridge would be replaced over the next two years.

2014 construction was not finished

In 2015, the state government said it would take another year.

2016 is not over yet, the state government said there is no set date for when the construction will be completed.

And finally, it ended last year with three times over budget.

Now compare this to a similar bridge in Beijing that I drove across last month.

It is a bridge called Sangenbashi

In 2015, the Chinese decided to replace this bridge.

In fact, the traffic on this bridge is twice as much.

How long did it take you to finish the work?

It's 2015. What are your predictions?

Guess what— three years? let's see

(Laughter) The correct answer is 43 hours.

(Audience: "Oh!") (Laughter) Of course, in New York, that would be impossible.

(Laughter) Behind this speed of construction are purpose-driven leaders and governments that can do it.

The most ambitious and effective leader in the international community today is Chinese President Xi Jinping.

he doesn't hide what he wants

Six years ago, when he became president, he said his goal was to "Make China Great Again." (Laughter) Long before Donald Trump, he had that slogan.

To that end, Xi Jinping has set specific targets and specific schedules for 2025, 2035, and 2049.

By 2025, China will dominate 10 advanced technology areas in key markets, namely self-driving cars, robotics, artificial intelligence, and quantum computing.

By 2035, China will be an innovative leader in all advanced technologies

And by 2049, when we celebrate the 100th anniversary of the founding of the People's Republic of China, it will be undoubtedly the best country in the world, including what Xi Jinping called a "strong army."

These are all ambitious goals, but as you can see, China is already well on its way to achieving them.

And don't forget that the world is changing fast.

30 years ago the world wide web hadn't been invented yet.

Who will feel the effects of China's rise most directly?

America is clearly the best in the world right now.

As China grows stronger, richer, and more technologically advanced, it will inevitably come into conflict with America's status and prerogatives.

Now, hot-blooded Americans, especially redneck Americans like me from North Carolina, find this picture funny.

America is number one, and that's America.

But again, the cruel truth is too hard to ignore.

Four years ago, Senator John McCain asked me to testify before the Senate Armed Services Committee on this matter.

So I created the diagram you're looking at right now, so that you can compare the size of the U.S. and Chinese economies like kids on the ends of a playground seesaw.

After 2004, China's economy was half the size of the United States.

By 2014, the GDPs of both

At this rate, China will grow 1.5 times by 2024.

The effects of this structural change will be felt everywhere.

For example, in the current trade dispute, China is the United States' largest trading partner among major Asian countries.

This reminds me of the words of a Greek historian,

The Thucydides Trap Casebook from Harvard University looks back over the last 500 years and presents 16 examples of emerging powers threatening hegemonic powers.

12 of these ended up in war.

What's tragic about these is that the leaders in most of them didn't want to go to war.

So why does war develop?

That's because one of them gets caught up in the provocation of a third party, and it becomes a vicious cycle that pulls both of them in a direction they don't want.

It seems impossible, but it's true

That's the world

Remember World War I

What sparked the war was the assassination of the heir to the throne, Archduke Franz Ferdinand, in which Serbia was declared war on by the Emperor of Austria-Hungary, engulfing various allies and two months later leading to war across Europe.

Imagine if Thucydides were looking at the world today

what would he say?

Can we find a more hegemonic leader than Donald Trump?

(Laughter) Or a better emerging country leader than Xi Jinping?

He'll scratch his head and say no doubt there's no more interesting agent than Kim Jong-un of North Korea.

Each one seems to be trying to do their job faithfully in their respective roles.

Finally, let me conclude with one of the most important questions, starting with the question that will have the most profound consequences for the rest of our lives: Will the United States and China bow to the forces of history and head for a war that will devastating both sides?

Or can we muster our imagination and our courage to find a way to survive together, to lead together in the 21st century, or, as Xi Jinping calls it, to create new power structures?

For the last two years, I've been working hard on this question.

In fact, I've had the opportunity to talk to all the relevant government leaders -- government leaders in Beijing, Washington, Seoul, Tokyo -- and I've talked to thought leaders in both the arts and business fields.

I wish I could tell you more

The good news is that leaders are becoming more aware of this Thucydides dynamic and the dangers it poses.

The bad news is that nobody has a good plan to get out of this repeating history.

So it's very clear to me that we need ideas that step out of the conventional state of thinking. We really need different pages and dimensions of thinking.

Many of you in the audience are the most creative minds in the world who wake up in the morning and think not only about what they want to do with their world, but how to create the world as it should be.

So I hope that when this thought permeates and you think about it, some of you will come up with some bold, actually interesting ideas that will make a difference in the world.

Just remember that even if you do come up with it, it won't be the first time.

It's a story that happened just after World War II.

We brought together some of the brightest minds, not only from government agencies, but also from the cultural and business worlds, from the United States, Europe, and beyond, to bring their imaginations together.

What we have imagined and created is a new international order, a world without hegemonic wars, a world of unprecedented prosperity, an order in which we can all live.

great story

Interestingly, when this proposal first came out, all of the ideas that led to this conclusion were rejected by foreign political organizations as naive or unrealistic.

My favorite is the Marshall Plan

After World War II, Americans were exhausted.

Unmobilized 10 million military personnel and used them to solve urgent domestic problems

But as people came to realize the devastation in Europe and the aggression of Soviet communism, the United States ultimately decided to tax 1.5 percent of its GDP annually for four years and send money back to Europe to help rebuild the country, including Germany and Italy, countries whose armies killed Americans.

that's great

In this vein, the United Nations was also established

that's great

Universal Declaration of Human Rights

the world bank too

NATO (North Atlantic Treaty Organization)

All are necessary elements of an order for peace and prosperity.

So, in short, what we need is to repeat this.

And I think we now need a lot of imagination and creativity that history has taught us. Finally, I would like to give you the words of the philosopher Santayana: "Those who do not learn from the past will repeat their mistakes."

thank you

(applause)

How many of these people are doing creative things — designers, engineers, entrepreneurs, artists, or just imaginative?

Raise your hands (cheers) Most of them do.

I have something to say to those people

In the next 20 years, the way we work will change more than it has in the last 2,000 years.

I believe we are entering a new era in human history.

There were four major eras in human history, depending on how we worked.

The hunter-gatherer era lasted for millions of years

Then there are thousands of years of farming.

200 years of industrialization

The current information age is only a few decades old.

And now we are at the beginning of a new and great era for humanity.

Welcome to the "Age of Expansion"

In this new era, our natural abilities will be augmented, with computational systems helping us think, robotic systems helping us with our tasks, digital nervous systems going far beyond our innate senses and connecting us to the world.

Let's start by talking about cognitive augmentation.

How many of you are reinforced cyborgs?

(Laughter) I think you could say that we're already augmented.

Imagine someone at a party asking you something you don't know.

If you have something like this, you'll know the answer in seconds.

But this is still only a primitive beginning.

Even Siri is just a passive tool.

In fact, for the last 3.5 million years, our tools have been completely passive.

Just do what you tell them to do and nothing more

Mankind's first tool was only to cut where it was struck.

The chisel only cuts where the sculptor specifies.

Even the most advanced tools do nothing without explicit instructions.

This is something that I often find frustrating, but we've been limited by the need to tell tools what we want.

But I'm like Scotty from Star Trek.

(Laughter) I want to have a conversation with a computer.

You can say, "Let's design a computer car," and the computer will come out and show you the car.

I say, "Please make it faster and not German," and the computer does exactly what you want it to do.

(Laughter) This conversation is a long way off, but it's not as far away as you might think, and we're already working on it.

Tools are making the leap from passive to generative.

Design generation tools use computers and algorithms to synthesize shapes and create new designs on their own.

all you need is goals and constraints

let me show you an example

This is an example of a frame for a drone, and all we do is tell it what it needs, like it has four propellers, it should be as light as possible, it should be aerodynamically efficient.

And then the computer searches for the totality of all possible solutions that meet the given criteria -- millions of possible solutions.

This requires a large computer.

It creates designs that we would never have thought of ourselves.

Computers come up with their own answers. No one draws anything for them, they start from scratch.

By the way, it's no coincidence that the drone's frame resembles the pelvis of a flying squirrel.

(Laughter) Because this algorithm is designed to work like evolution.

I'm excited to see this technology in action in the world.

For the past two years, Autodesk has been working with Airbus on a concept model of the plane of the future.

still a long way to go

I recently created something like this using design generation AI.

This is a 3D printed room partition, designed by a computer.

It's half the original weight and stronger, and it's going to start being used in the Airbus A320 later this year.

Computers can now generate their own unique solutions to well-defined problems.

but it's not intuitive

You have to start from 1 each time because you don't learn.

not my dog ​​maggie

(Laughter) Maggie is actually smarter than the most advanced design tools.

what does it mean

Maggie understands that if the owner is on the leash, it most likely means a walk.

How did you learn that?

Because every time the owner picked up the leash, he would go for a walk.

So Maggie was doing three things: paying attention, remembering what happened, and creating and holding patterns in her mind.

Interestingly, this is exactly what computer scientists have been trying to do with artificial intelligence for the last 60 years.

In 1952, a computer was built that could play tic-tac-toe.

it was a big deal

45 years later, in 1997, Deep Blue defeated chess champion Kasparov.

In 2011, Watson beat two former champions on the quiz show Jeopardy, which is much more difficult for a computer than chess.

Instead of following a set procedure, Watson had to make inferences to beat his human opponents.

And two weeks ago, DeepMind's AlphaGo beat the world's best player in the most difficult game of Go.

There are more moves in Go than there are atoms in the universe.

AlphaGo had to develop intuition to win.

In fact, even the developers themselves didn't know why AlphaGo did that.

things are going very fast

In the span of a lifetime, what a computer can do has progressed from child's play to the highest degree of strategic thinking.

What's happening here is that the computer that was like Spock is now like Kirk.

(Laughter) It's a shift from pure logic to intuition.

Would you like to cross this bridge?

Many people would say, "No way!"

(Laughter) It takes a fraction of a second to make that decision.

It's like they knew this bridge wasn't safe.

Deep learning systems are now gaining that kind of intuition.

In the near future, you'll be able to show your creations and designs to a computer and get feedback, saying, "Buddy, you can't do this. You've got to start over."

Or you could ask, "Will people like this song?" or "Do you like this new flavor of ice cream?"

And more importantly, we'll be able to use computers to tackle problems that we've never faced before.

For example climate change

Humans aren't coping very well, so any help would be appreciated.

And that's what I'm talking about: technology is augmenting human cognitive abilities, enabling us to envision and design things that were simply beyond the reach of our unenhanced mortals.

So how do we build these new crazy things that we're inventing and designing?

The age of human expansion is not only about the virtual and intellectual realms, but also about the physical world.

How will technology augment humans?

In the physical world, by robotic systems.

There is certainly a fear that robots will take over human jobs, and in some areas it will.

But I'm more interested in the idea that humans and robots working together can extend each other to open up new frontiers.

This is our Applied Technology Lab in San Francisco, and one of its main areas of research is advanced robotics, specifically human-robot collaboration.

This is our robot Bishop

It's experimentally set up to help workers on construction sites with repetitive tasks, like drilling holes in walls for outlets and light switches.

(Laughter) The human partner uses simple words and simple gestures to indicate what to do. Like talking to a dog, Bishop does what he's told to do with perfect precision.

We want humans to do what humans are good at: perception, perception, decision-making.

Let the robot do what the robot is good at: precise, repetitive tasks.

This is another interesting project that Bishop did.

This project, called HIVE, is experimenting with the experience of humans, computers, and robots working together to solve very complex design problems.

man works as a worker

They move around construction sites and work with bamboo materials, which, by the way, are very difficult materials for robots to work with because of their different shapes.

Robots do the work of stretching this fiber, which is almost impossible for humans.

And artificial intelligence is in control

It directs humans and robots to each task and manages thousands of elements.

And what's interesting about this is that building this pavilion would not have been possible without the complementary efforts of humans, robots and artificial intelligence.

Let me show you another project that's a little crazy.

Together with Amsterdam-based Joris Rahman and the team at MX3D, we're going to create the world's first autonomous bridge through design generation and robotic 3D printing.

Right now in Amsterdam, Joris and artificial intelligence are designing a bridge.

Once the design is complete and you've given the execution instructions, the robot will begin to 3D print the bridge out of stainless steel, and will continue to do so autonomously, without human assistance, until the bridge is complete.

Computers will extend our ability to imagine and design new things, and robotic systems will help us manufacture and build things that we couldn't build before.

What about the ability to feel and control those things?

What about the nervous system of our creation?

The human nervous system tells us everything that's going on around us.

But the nervous systems of our creations are very primitive.

For example, if a car steps on a hole in the roadway at an intersection in a city, it doesn't call the City Roads Authority on its own.

The building doesn't tell the designers if the people inside like it or not. Toy makers don't know how their toys are actually being played, where they're being used, whether they're being entertained.

Barbie doll designers probably envisioned this kind of lifestyle for their dolls.

(Laughter) But what if Barbie was really so lonely?

(Laughter) If designers knew what was really going on with their designs, whether it was a road or a building or Barbie, they would be able to use that knowledge to create a better experience for their users.

What's missing is the nervous system that connects us to everything we design, build, and use.

What if that kind of information flows from your published work?

We spend a lot of money and a lot of effort trying to convince people to buy what we make. Last year it was $2 trillion.

If you can have that connection with what you design and build, after it's out there, after it's sold, after it's been published, it's going to change the way you do business.

The good news is that we're already working on a digital nervous system that connects to what we design.

On one project, we're working with two guys from the Bandito Brothers in Los Angeles.

One of the things they do is build crazy cars that do crazy things.

These guys are really crazy — (Laughter) in a good way.

What we're doing is putting a nervous system into the body of a traditional racing car.

You put dozens of sensors on it, you have the best drivers in the world, and you drive like crazy in the desert for a week.

The car's nervous system captures everything that happens to the car.

There are four billion data points, recording every force the car is subjected to.

Then I did something crazy

We input the data obtained in this way into a design generation AI called Dreamcatcher.

If you give a design tool a nervous system and tell it to build the ultimate car, what can it do?

You get something like this

This is something a human could never design.

It's designed by a human being augmented with design-generating AI and a digital nervous system that can actually be manufactured by robots.

If such an "age of augmentation" is our future, and humans are being augmented intellectually, physically, and cognitively, what would that look like?

What would that fairyland look like?

In the world to come, things will be cultivated rather than manufactured.

it will be grown rather than built

From isolated to connected

Mining will change to agglomeration

You will learn to respect autonomy rather than demand obedience.

The world will change dramatically with augmented capabilities.

The world will be more diverse, more connected, more dynamic, more complex, more adaptive, and of course more beautiful.

The things that will appear in the future will be things that have never been seen before.

because they form

Because it's a new collaboration between technology, nature and humans.

That seems like a future worth looking forward to.

thank you

(applause)

Every summer, my family and I travel across the globe, to India, a country of cultural diversity, 4,800 kilometers away.

India is a country notorious for its intense heat and humidity.

The only way for me to beat the heat is to drink lots of water.

Now, in India, my parents always reminded me to drink only boiled water or bottled water, because we don't have access to clean drinking water as easily as we do here in the United States, just by turning on the tap.

So my parents have to make sure the water is safe to drink.

But not everyone is as lucky as we are to have clean water.

Even in India, where my grandparents live, I saw people standing in long lines in the hot sun on busy streets to get buckets of water from the faucets.

I've even seen children my age fill clear plastic bottles with dirty water from roadside rivers.

Seeing these children, forced to drink water that is too dirty to touch, has changed the way I see the world.

Seeing this unacceptable social injustice, I couldn't help but want to find a solution to the world's clean water problem.

I wanted to know why these children were lacking water, which is essential for life.

That's when we learned that we were facing a global water crisis.

Now, it may come as a surprise to you that 75 percent of the planet is covered by water, but only 2.5 percent of that is fresh water, and less than 1 percent of the fresh water on Earth is available for drinking.

The demand for clean water is increasing with population growth, industrial development and economic growth, but our freshwater sources are rapidly depleting.

According to the World Health Organization, 660 million people in the world lack access to clean water.

It is the leading cause of death for children under the age of five in developing countries, and UNICEF estimates that 3,000 children die every day from water-related diseases.

So after returning home in the summer of my eighth grade, I wanted to combine my passion for solving the global water crisis with my scientific interests.

So I thought the best thing would be to turn my garage into a lab.

(Laughter) I actually turned my kitchen into a lab at first, but my parents kicked me out.

I read a lot of academic papers about water-related research, and I learned that in developing countries, a technique called solar water disinfection, or SODIS, is being used to purify water.

SODIS puts contaminated water in a clear plastic bottle and then exposes it to the sun for six to eight hours.

Ultraviolet light from the sun destroys the DNA of these harmful pathogens and purifies the water.

SODIS is really easy to use, and it's energy efficient, but because it uses only solar energy, it's very slow, and it can take up to two days on cloudy days.

So a new method called photocatalysis was recently introduced to speed up SODIS.

What exactly is a photocatalytic reaction (photocatalysis)?

Let's break the words down: "photo" means "sunlight" and "catalyst" means "something that speeds up a reaction."

So photocatalysis speeds up this solar sterilization process.

When sunlight hits photocatalysts like TiO2, or titanium oxide, they actually produce reactive oxygen species like superoxide, hydrogen peroxide, and hydroxyl radicals.

These reactive oxygen species are able to remove all contaminants, including bacteria and organic matter, from drinking water.

Unfortunately, there are some drawbacks to the current use of photocatalytic SODIS.

The current method is to take a clear plastic bottle and put this photocatalytic coating on the inside.

But photocatalysts like titanium dioxide are often used in sunscreens to block UV rays.

So when you put a coating on the inside of these bottles, it actually blocks some kind of UV light, making the process less efficient.

Also, these photocatalyst coatings don't bond tightly to plastic bottles, which means that if they run off, people can swallow the photocatalyst.

While titanium is safe and inert, it's really inefficient when the photocatalyst continues to deplete like this, and after only a few uses it has to be replenished.

So my goal was to overcome these shortcomings of current treatment methods and create a safe, sustainable, cost-effective and environmentally friendly way to purify water.

A science fair project that started in eighth grade has now grown into a photocatalyst composite for water purification.

This composite is titanium oxide bonded with cement.

Composites, like cement, can be transformed into many different shapes, making them very versatile.

For example, it can be made into a thin stick that you can easily put in your own bottle, or it can be made into a permeable filter that can purify water for domestic use.

By coating the inside of existing water tanks, we can purify more water and deliver it to people in the area for a longer period of time.

Well, it hasn't been an easy road for me all this time.

As you know, I didn't even have a nifty lab.

I was 14 years old when I started, and I didn't want my age to stop me from pursuing my interests and my scientific pursuits, and I wanted to solve the global water crisis.

Water is more than just a universal solvent

water is a universal human right

That's why I've been working on this science fair project since 2012 to bring this technology out of the lab and into the real world.

And this summer, I started a social enterprise called "Catalyst for World Water," which aims to solve the global water crisis through catalytic cleansing.

(Applause) A single drop of water can't do much, but when it's collected, it can sustain life on this planet.

Just like water droplets come together to form an ocean, we must come together to tackle this global problem.

thank you

(Applause) Thank you.

(applause)

My inbox has been flooded with hate and slanderous emails for years.

In 2010, I started replying to those types of emails, inviting them to have coffee and talk.

I've met hundreds of people

I want to talk to you about the important things I learned from those people.

I was born in Turkey to Kurdish parents, and my family moved to Denmark when I was very young.

In 2007, she ran for the Danish parliamentary elections to become the first female member of the minority parliament.

And I won, and I soon realized that some people didn't like me.

For example, an email that begins with, "What is a Muslim woman like you doing to our Congress?"

didn't reply at all

I just deleted the email

I thought there was nothing in common between the sender and me.

they didn't understand me and i didn't understand them

One day, a colleague of mine said to me, it's better to save hate mail.

"Because if something happens to you, it will be a clue to the investigation."

(Laughter) It's not "if", it's "if something happens."

(Laughter) Sometimes, malicious letters were even delivered to my home.

As I became more involved in public debate, so did the number of hate mail and threats.

After a while, I moved in secret, and I had to be extra careful to protect my family.

Then in 2010, the neo-Nazi harassment began.

Harassment from a man attacking a Muslim woman on a street corner.

Harassment escalated

My phone kept ringing when I went to the zoo with my kids.

it's a neo nazi

I feel like the man is near

decided to go home

As soon as I got home, my son asked, "Why are you so hated? He doesn't know you."

"Some people can't help it," I said.

At the time, I thought it was a really sensible explanation.

I think most people would answer in the same way.

Those people - they're dumb, they're brainwashed, they're ignorant.

We are good and they are bad

A few weeks later, I was at a friend's house, completely pissed off by all the hate and racism.

So my friend called them up and suggested that we visit them.

If you say "I'll be killed"

"I won't be rude to the Danish parliamentarians," he said.

"And if you get killed, you're a martyr."

(Laughs) "In other words, no matter how you fall, you won't lose."

(Laughter) It was a piece of advice I hadn't considered. When I got home, I turned on my computer and opened the folder where I kept all the hate mail.

there were literally hundreds

The beginning of the email reads: "Terrorist" "Muslim woman" "Mouse" "Whore"

I decided to reach out to the person with the highest number of emails.

his name was ingolf

I'm only going to contact you once to say that I've at least tried.

To my great surprise, he answered the phone

I yelled, "My name is Ozram, and I get a lot of hate mail.

we don't know each other

I'm going to visit your house, so why don't we talk over a cup of coffee? " (smile)

the phone is silent

Then he said, "I'll have to ask my wife."

(laughs) What?

Does a racist have a wife?

(Laughter) And then a few days later, I visited him at his home.

I'll never forget the moment he opened the front door and held out his hand for a handshake.

i was very disappointed

(Laughter) Because he was a far cry from what I imagined him to be.

What I envisioned was a terrifying figure, a dirty, messy house.

I was wrong

The smell of coffee wafted through the house, and I found the exact same coffee set that my parents had.

I ended up staying at his house for two and a half hours.

we found a lot in common

Even the ways of holding prejudices were similar

(Laughter) Ingolf said that the bus he was waiting for stopped 10 meters away because it was driven by a "Muslim bastard."

I also remember

When I was younger, when the bus I was waiting for stopped ten meters away, I was convinced that the driver was definitely a racist.

Since returning home, this experience has evoked very mixed feelings.

On the one hand, Ingolf was a good man.

He was easy-going and easy to talk to, but on the other hand, I was impatient to realize that someone with a decidedly racist way of thinking had so much in common with me.

Eventually, bitterly, I realized that I was just as prejudiced as the person sending the hate mail.

That was the beginning of what we called #DialogueCoffee.

It's basically an attempt to sit over coffee and face people who say bad things about me and try to understand why they hate people like me, even though they don't even know me.

I have been doing this for eight years

Most of the people I reached out to met me.

Most of them are men, but I've also met women.

I made it a rule to always meet at their house over there, so that I could be the first to let them know I trusted them.

I always brought food with me because eating together helped us find common ground and made us feel at peace with each other.

I learned an important lesson in this effort.

The hate mailers were workers, husbands, wives, parents like me and you.

That's not to say that the behavior is acceptable, just that I've learned to reject hateful views, but not those who express them.

And before we started the coffee dialogue, I discovered that the person I was visiting was also afraid of strangers, just as I was afraid.

During these activities, one theme recurred.

Whether it's a humanist, a racist, a man, a woman, a Muslim, an atheist.

Everyone seemed to think that other people were to blame for overgeneralizing groups and hate issues.

They should stop demonizing themselves

Politicians, media, neighbors, the driver of the bus that stops 10 meters away is to blame.

i said "how are you

What can you do? ' and the response is usually something like, 'What can I do?

without influence

I have no authority.”

I know that feeling

For most of my life, I also thought I had no power or influence, even when I became a member of the Danish parliament.

But now I know it's actually different.

We all have power and influence where we are, so never, never, never underestimate your potential.

During my visit to #DialogueCoffee, I learned that people of all political beliefs can vilify others who view them differently.

I have experience

When I was a child, I hated foreigners.

At that time, I had an extreme religious view.

But socializing with Turks and Danes and Jews and racists has made me immune to my prejudices.

I grew up in a working-class family, and throughout my life, I've met many people who wanted to argue with me.

it has changed my view

It shaped me as a democratic citizen and bridge builder.

If we want to prevent hate and violence, we need to have dialogue with as many people as possible, for as long as possible, and as openly as possible.

This can only be achieved through debate and critical dialogue, and only by pursuing non-villaining dialogue.

I have a question for you

For a few days after you get home, be honest with yourself and think about it.

It should be easy because no one else knows

the question is this

who do you think is the bad guy

Do you think that US President Trump's supporters are a deplorable bunch?

Do you think people who vote for Erdogan in Turkey are fanatical Muslims?

Do you think voting for Le Pen in France is a stupid fascist?

Do you think Americans who vote for Bernie Sanders are childish hippies?

(Laughter) All of these expressions have been used to denigrate them.

Does this sound like an idealist to you?

I would like to ask you all

By the end of this year, talk to someone you think is the bad guy, someone you disagree with politically or culturally, someone you think you have nothing in common with.

Invite such a person to #DialogueCoffee

Earlier Ingolf ―

Find your Ingolf Contact him or her and ask to meet for #DialogueCoffee

When you start #DialogueCoffee, don't forget the following: First, if you get rejected, don't give up

Sometimes it took almost a year to visit #DialogueCoffee

Second, acknowledge the other person's courage.

you are not the only one brave

The person who welcomes you home is brave, too.

Third, don't interrupt judgment in the middle of a conversation.

Most of the conversation should be about what you both have in common.

Bring your own food

Finally, let's end the conversation on a positive note, because we'll meet again.

You can't build a bridge in a day

In the world we live in, many people have rigid, often extreme views about others, even though they don't know much about them.

You will find more prejudices in the other person than in yourself.

and remove the other person from your life

delete hate mail

Speak in the category that you should only engage with people who are similar to you and despise others.

When I unfriend people on Facebook and meet people who discriminate or dehumanize groups or people, when I meet people who discriminate or dehumanize groups or people, I don't engage in dialogue to challenge their views.

That's how healthy democratic societies fall apart when we don't meet our personal commitments to democracy.

We tend to take democracy for granted

it's not

Conversation is the most difficult thing in a democracy, and the most important thing.

it's a challenge from me

find ingolf

(Laughter) Start a conversation.

It's true that there is a chasm between people, but we all have the ability to build bridges across that chasm.

I'll end by quoting a friend: Sergioto Uzan lost his son Dan Uzan in a terrorist attack in 2015, when a Jewish church in Copenhagen was attacked.

Sergioto rejected the idea of ​​revenge and said,

"Only goodwill among men defeats evil.

Good intentions demand courage."

Be brave my friend

thank you

(applause)

As an archaeologist, I am often asked what my favorite discovery is.

The answer is simple, my husband, Greg.

(Laughter) We met in Egypt during my first excavations.

It was my first experience of discovering something unexpected and wonderful.

It was the beginning of a great archaeological partnership.

Years later, I proposed to him in front of our favorite couple, the 4,600-year-old statues of Prince Rahotep and Princess Nofret in the Cairo Museum.

If I were to ask Greg to stay with me for the rest of my life, I thought it would be appropriate to say it in front of two people who had vowed to be together forever.

It's a symbol of persistence. When we look at two people, we're looking in the mirror.

It powerfully shows us that our common humanity does not change.

The thrill of archaeological discovery is just as powerful as love, because it's hard to imagine someone more captivating than ancient history.

Archaeologists have dedicated their lives to unraveling ancient mysteries Under the scorching sun, in the arctic winds, deep in the rainforests.

many seek

someone found

Everyone believes in the temple of possibility — that one discovery could change history.

On the first day of excavation in Egypt, I worked in a 4,200-year-old cemetery called Mendez, in the northeastern part of the Nile Delta.

I'm just happy in the picture