Wearing mascara and wearing a bulletproof vest

I like cross fit training and cross stitch

I like to fly from a helicopter, but I also like to bake cookies.

They are compatible every day. They took this to the battlefield.

On the battlefield of life and death, one thing to remember is that even if you go to the front as a woman, you still have to be a full-fledged soldier.

When Amber went out for a night mission and was talking to the women in the house, she noticed that there were snipers targeting the Afghan and American forces entering the house.

Another night, Tristan noticed bomb parts lying around the house where the troops were waiting.

On yet another night, a female soldier from another unit demonstrated her abilities by finding an intelligence device hidden in a baby's damp diaper against a member who apparently doubted her abilities.

Isabel, a female soldier in another unit, found what the unit was looking for one night, and won the Special Service Infantry Officer's Impact Award because if she hadn't been there, they wouldn't have found what they were looking for that night.

Through various night activities, not only ourselves but also our successors and

I even made the male soldiers I worked with recognize my abilities.

There are many stories of women who helped men succeed.

In their case, it was the men who wanted them to succeed and supported them.

The Army Special Forces commander who trained them has gone to war 12 times.

He said he was at a loss as to what to do when he was ordered to train women.

In the summer of 2011, eight days into their training, "We are witnessing history. It may be the legendary Tuskegee Airmen."

he said to his colleague

(Applause) The woman at the center of the women's unit was called "our top."

She's a lively petite blond woman who barely reaches 160cm.

But she's got everything as GI Jane and the soul of Martha Stewart.

She loves to cook for her husband, whom she met at a reserve training camp in Kent, who encourages her to do her best and confidently push herself to the limit.

She loves to carry 20+ kilos, run marathons, and work as a soldier.

She had a bread machine in her office in Kandahar, and she would bake buns and then go to the gym and do 25-30 pull-ups.

People call her when they want boots or want to eat home-cooked food.

She never boasts, you can tell by the way she acts.

She's famous for choosing the hard right thing over the easy wrong thing.

Also, when you climb a rope about five meters long, you use only your physical strength, and after you climb, you apologize, because in Special Forces training, you were supposed to use both hands and feet to climb the rope.

(Laughter) Some of the female soldiers go home and talk about their experiences.

Some cannot return home

On October 22, 2011, Lieutenant Ashley White was killed along with two Special Forces members, Christopher Honus and Christopher Domay.

With her death, secret plans were made public.

After all, the taboo against women going to war is deeply rooted.

At her funeral, the U.S. Special Forces Commander attended and praised not only Ashley White's bravery, but the bravery of every female soldier in the unit.

"Let's be clear, these women are soldiers. They've written another chapter on the role of women in the U.S. military."

Ashley's mother is a teacher's assistant and a school bus driver, but she bakes cookies on the side.

My mother doesn't remember many of those hopeless days mixed with grief and pride.

I remember only one incident

A strange woman came in with a girl and said, "Mr. White, I brought my daughter because I want her to understand what a hero is.

And I want my daughter to know that even women can be heroes."

It's time to celebrate the underappreciated female heroes who have the guts, the compassion, the guts to push themselves beyond their limits.

It is extremely rare for a strong bond between women to transcend time and become part of history.

They proved that there are various soldiers

Women can be heroes too

thank you very much

(applause)

This is my great uncle, my father's father's brother, his name is

It was Joe McKenna

He was a young husband, a semi-professional basketball player, and a New York City firefighter.

According to family records, he was a big workaholic, and in 1938 he decided to kill time at the fire station one day off duty.

Not to waste the day, he started polishing all the brass -- the railings of the truck body, the fittings on the walls -- until a large, heavy piece of metal from the end of a fire hose fell off the shelf and hit him.

A few days later his shoulder started to hurt.

Two days later, I had a fever.

the heat keeps rising

His wife took care of him, but nothing changed, and he went to the local doctor and saw nothing.

The family stopped a taxi and took him to the hospital.

The nurses immediately determined that he had an infection, which the hospital might have called "septicemia" at the time.

That's because what we use today to treat infections didn't exist yet.

The first experiments with penicillin and antibiotics were three years later.

Those who contracted the disease were lucky to either recover or die.

my great uncle was out of luck

He was hospitalized for a week, shivering, dehydrated, confused, organ failure, and comatose.

His condition became so hopeless that the fire department lined up to give him blood transfusions, in an attempt to dilute the bacteria that were proliferating in his blood.

He died without any effect

was 30

If you look back in history, most people died like my great-uncle.

Most people didn't die from the lifestyle diseases like cancer and heart disease that plague us in the West today.

They didn't die from these diseases because they didn't live long enough to get them.

They died of wounds -- whether they were injured in a sledgehammer, or shot on the battlefield, or had an accident in one of the new factories of the Industrial Revolution, the infections that started in those wounds usually claimed their lives.

All of this changed when antibiotics came along.

An infection that was a "death sentence" suddenly turned into a recovery in a matter of days.

It seemed like a miracle, and we've been living in the golden age of miracle drugs ever since.

And now that era is coming to an end.

My great-uncle died at the end of the "pre-antibiotic era."

We stand today on the threshold of the post-antibiotic era, the beginning of an era when simple infections like the one Uncle Joe had can kill us all over again.

now it already exists

Because of a phenomenon called drug resistance, some people are dying from infections again.

In a nutshell, it's something like this

Bacteria compete with each other for food and resources by creating lethal compounds that inhibit each other.

Some bacteria have evolved defenses against this chemical attack to protect themselves.

When we first made antibiotics, we took those compounds into the lab and made derivatives of them, and the bacteria responded to our attack as they always do.

What happened next was this: penicillin was used in 1943, and by 1945, resistant strains had emerged and were widespread.

Vancomycin appeared in 1972, and resistant strains emerged in 1988.

Imipenem appeared in 1985, and resistance emerged in 1998.

One of the newest drugs, daptomycin, was created in 2003, and the following year, 2004, it became resistant.

For 70 years, we've been playing cat-and-mouse, and our drugs are getting resistant, the next drug, the next drug, and now the game's over.

Bacteria develop resistance so quickly that pharmaceutical companies decided it wasn't in their best interest to create antibiotics. So infectious diseases spread all over the world, so that out of the 100 or more antibiotics on the market, two of them work, but they have side effects.

that's the situation

In 2000, the U.S. Centers for Disease Control and Prevention (CDC) identified a case in a North Carolina hospital, an infection that was resistant to all but two drugs.

Known today as KPC, the epidemic has spread across all but three states of the United States, throughout South America, Europe and the Middle East.

In 2008, Swedish doctors diagnosed a man from India with another infection that was then resistant to all but one drug.

The gene that produces that resistance, known as NDM, has now spread from India to China, Asia, Africa, Europe, Canada and the United States.

It may be natural to hope that the infection is a special case, but the reality is that 50,000 people in the United States and Europe die each year from infections that are unresponsive to any drug.

The Review on Antimicrobial Resistance, a project supported by the UK government, estimates that there are currently 700,000 victims worldwide each year.

It's a staggering number, but there's a good chance that we don't feel threatened. Our victims are patients in hospital ICUs, end-of-life hospices, and we tend to think that the infection originated far from us, far from us.

In a way that we never thought of, and that we could never have imagined, antibiotics underpin almost everything in modern life.

If you don't have antibiotics, here's what you're going to lose.

Then there are treatments that place a foreign body inside the body: stent treatment for infarction, pump treatment for diabetes, dialysis, and joint replacement surgery.

Brave baby boomers need new hip and knee replacements

A recent study suggests that without antibiotics, one in six people would die.

The next thing is probably not being able to have surgery.

Many surgeries are prophylactically administered with antibiotics.

Without that protection, we would lose the ability to cut inside our bodies.

You can't have heart surgery, you can't have a prostate biopsy, you can't have a caesarean section.

We must be careful about infectious diseases that we now consider trivial.

Once upon a time, strep throat caused heart failure.

Skin infection led to limb amputation

In the cleanest hospitals, 1 in 100 maternal deaths from infections occurred.

3 out of 10 children died from pneumonia.

More than anything else, we will lose reliable ways to live our daily lives.

If you knew that any injury could be fatal, would you ride a motorbike, ski down the slopes, climb a ladder to decorate your Christmas lights, or let your child slide down to home plate?

A British police officer named Albert Alexander, who was the first to receive the penicillin shot, got infected by something very simple, but the infection got so bad that his scalp was oozing pus, and he had to have his eyeballs removed.

He scratched his face with a thorn as he walked into his garden.

According to the British project I mentioned earlier, it's currently estimated to kill 700,000 people a year worldwide, and if it's not brought under control by 2050, the death toll will soon reach 10 million a year.

How did we get to the point where we had to foresee such a frightening number?

It's a hard question to answer, but we did it ourselves.

Resistance is an inevitable biological process, but we are responsible for accelerating it.

It was accelerated by the waste of antibiotics, which in retrospect was terrifyingly careless.

Penicillin was sold over the counter until the 1950s.

In many developing countries, you can still buy most antibiotics over the counter.

In the United States, 50% of the antibiotics given in hospitals are unnecessary.

45% of doctor's prescriptions are for antibiotic-resistant conditions.

it's just about medical

Most carnivorous animals on this planet are routinely given antibiotics, not to treat disease, but to fatten them up and protect them from captive environments.

Eighty percent of the antibiotics sold each year in the United States are used on farm animals, not on humans, and resistant bacteria develop in farm runoff, dust and meat shipments.

Fish farming, especially in Asia, also relies on antibiotics for apple, pear, and citrus fruit growth to protect them from disease.

Bacteria can pass DNA between each other, much like travelers check their bags at the airport, so once we've let them build that resistance, we don't know where it will spread.

this was predictable

In fact, it was predicted by Alexander Fleming, who discovered penicillin.

He was awarded the Nobel Prize for his discoveries in 1945. In an interview shortly thereafter, he said, "Those reckless men who fiddle with penicillin therapy are morally responsible for the deaths of those who fall ill from infections caused by penicillin-resistant bacteria."

And he continues, "I hope this abuse can be avoided."

can we avoid it?

There's a company working on a new antibiotic, and it's the most powerful drug that "antibiotic-resistant bacteria" has ever seen.

We need these new drugs so badly. We need incentives -- grants for development, preferential patent terms, rewards, incentives to encourage other companies to make antibiotics again.

but that's not enough

Somehow--because bacterial evolution always wins.

Bacteria produce a new generation every 20 minutes.

It takes 10 years for pharmacy to get a new drug.

Every time we use an antibiotic, we give bacteria millions of opportunities to develop resistance, millions of opportunities to develop resistance.

There is still no drug that bacteria have not been able to defeat.

It's an asymmetrical battle, but we can change the outcome.

We can establish a system to automatically and specifically collect data about how antibiotics are used.

We can set up barriers in our drug ordering system so that every prescription is double-checked.

We can demand that agriculture stop using antibiotics.

We can create a surveillance system that tells us where resistant strains have appeared.

These are technical solutions

It's not enough without your support

Antibiotic resistance arose from habit

We all know that changing habits is the hardest thing to do.

But in the real world, we've done it in the past.

People were throwing trash in the streets, not wearing seatbelts, and smoking in public buildings.

I won't do that now

We don't pollute the environment, we don't cause catastrophic accidents, we don't expose others to the possibility of cancer, because we've decided that these things are expensive, harmful, and not good for us.

we changed social norms

We can change the antibiotic paradigm.

The emergence of antibiotic-resistant bacteria seems like an overwhelming problem, but if you've ever bought a fluorescent light bulb because you're worried about global warming, or you've read the label on a box of crackers because you're worried about deforestation for palm oil, then you already know what it's like to take small steps to tackle an overwhelming problem.

We can take this step in the use of antibiotics as well.

And if you're not sure how effective it is, you can get by without antibiotics.

You can also hold off asking for antibiotics until you know the cause of your child's ear infection.

In any restaurant, in any supermarket, you can ask where this meat came from.

We promise each other that we'll never buy chicken, shrimp or fruit that's grown on antibiotics, and if we do, we can delay the arrival of a world without antibiotics.

but we have to do it quickly

Penicillin ushered in the era of antibiotics in 1943.

In just 70 years, we've come to the brink of catastrophe.

We don't have 70 years to get through this difficulty.

thank you

(applause)

I got into brain research because of my older brother, who has a brain disorder called schizophrenia.

As a sister, and later as a scientist, I wanted to know why my schizophrenic brother's brain, when I can connect dreams with reality and make dreams come true.

Can't you connect your dreams to the same ordinary reality as everyone else, and become delusions?

So I decided to devote myself to researching serious mental illness.

I moved from my home state of Indiana to Boston, where I joined Francine Benes' lab at the Harvard Department of Psychiatry in search of an answer to one question.

"Brains diagnosed as normal versus those with schizophrenia," "Schizoaffective disorder," "Brains diagnosed with bipolar disorder," "What biological differences?"

We've mapped the circuits in the brain to see which cells communicate with which cells, with what chemicals and in what amounts.

During the day, I was doing research like this, which was very fulfilling, and at night and on weekends, I was traveling all over the place with NAMI, the Family Association for the Mentally Disabled.

But on the morning of December 10, 1996, I woke up to find myself brain-damaged.

Ruptured a blood vessel in the left brain

Over the course of four hours, I saw my brain lose its ability to process information, and that morning I had a major hemorrhage, and I couldn't walk or talk.

I couldn't read, write, or remember my life.

I was essentially a baby in an adult body.

If you've ever looked at the human brain, you know that the two brain hemispheres are completely separate.

I brought you a real human brain

this is the real human brain

This is the front of the brain, and the spinal cord hangs in the back, and it's inside the head like this.

As you can see, the two cortices are completely separate.

In a computer analogy, the right brain functions like parallel processors and the left brain functions like a single processor.

The two brain hemispheres communicate through the corpus callosum, which is made up of 300 million nerve fibers.

But apart from that, the two brain hemispheres are completely separate.

Because they process information differently, each brain hemisphere thinks differently, has different interests, and, dare I say it, a different personality.

That's it. Thank you. It was fun.

For the right brain, the present is everything

“This place, this moment” is everything

The right brain thinks in pictures and learns kinesthetically from the movements of your body.

Information, in the form of energy, pours in from all of our sensory systems at the same time, creating a giant collage of how this present moment looks, smells, tastes, feels and sounds.

Through my right-brain consciousness, I am connected to all the energies that surround me.

Through our right-brain consciousness, we are energetic beings connected to each other as a family.

Right now, right here, right now, we are brothers and sisters on this planet working together to make the world a better place.

In this moment we are perfect and whole and beautiful

our left hemisphere is a whole different entity

Our left hemisphere thinks linearly and systematically.

For the left brain, the past and the future are everything.

The left hemisphere is designed to pick out details from this giant collage of the present moment, and pick out details within those details, and then pick out details about details.

And then you classify them, organize all the information, connect it with everything you've remembered about the past, and project it into all the possibilities of the future.

And the left brain thinks in language.

Continuous brain chatter connects the inner world with the outer world.

That little voice whispers to me "On my way home-" "Don't forget to buy a banana"

“I will be there tomorrow morning”

Computational intelligence reminds you to do your laundry

But most importantly, that little voice says to me, "I am," and as soon as the left brain says, "I am."

I am cut off.

separated from others

And that part was what I lost the morning of my stroke.

The morning of my stroke, I woke up with a terrible pain behind my left eye and the pain was

Like the feeling you get when you bite into ice cream

It's a sharp pain, it grabs me, releases me, then grabs me again

freed for me

Experiencing pain itself was rare, so I thought it would go away eventually.

I got up and jumped on a full-body cardio rowing machine.

I was trying so hard to do this, but my hand holding the bar looked like the claws of a monster, and I thought, "This is so weird."

And I looked down at my body and thought, "Wow, I look weird."

My consciousness shifted away from my normal perception of reality as being on a machine, and it was like I was watching myself exercise from some strange place.

It's all very strange and gives me a headache

As I got off the machine and walked around the living room, everything in my body felt like it had slowed down, every step was so stiff.

It's very conscious, it's a clumsy walk, it seems like it's cognitively limited, so I've focused my attention only within my body.

As I entered the bathroom and was about to take a shower, I heard voices conversing inside my body.

A small voice said, "The muscles over there are shrinking"

“Take it easy”

I lost my balance and leaned against the wall

And when I looked at my arm, I realized that I no longer knew the boundaries of my body.

I didn't know where I started and where I ended. The atoms and molecules on my arm blended with the atoms and molecules on the wall and joined together.

The only thing I could feel was the energy.

and asked myself

"What's wrong with me? What's going on?"

The left brain whispering has completely ceased.

There was total silence, as if someone had taken the TV remote and hit the mute button.

At first I was shocked by the silence in my head, but then very quickly

I was fascinated by the great energy around me

No longer knowing the boundaries of my body, I felt myself expanding and becoming one with all the energies.

it was wonderful

All of a sudden, my left brain came back and said, "Hey, I'm in trouble!"

“Trouble! I need help!”

Repeat “Very hard!”

So I said, "Okay, is there a problem?"

But I'm quickly pushed back into my previous consciousness, and I affectionately call this space La La Land.

it was a wonderful place

You're completely cut off from the chatter of your brain that connects you to the outside world.

In this space, all the stress related to work disappeared.

I felt my body become lighter

All the relationships in the outside world and all the sources of stress associated with them were gone.

I felt peace and contentment

Imagine what it would be like to be freed from the emotional burden of 37 years!

(laughs) Oh! what a happiness happiness it was so nice

Then the left brain came back, "Hey! Pay attention!"

"I have to call for help!"

I thought, “I have to concentrate.”

I got out of the shower and I thoughtlessly put on my clothes and walked around the apartment thinking, "I have to go to work." But can I drive?

And at that moment, my right arm was completely paralyzed, and I realized

"I can't believe it! I had a stroke!"

The next moment I thought, "Wow! Great! Great!"

“Examine your own brain from the inside” “Not many brain scientists have the chance”

(Laughter) And then I thought, 'But I'm so busy!' (Laughter)

"I don't have time to have a stroke!"

"But you can't stop a stroke-" "Just do this for a week or two-" "Then get back to normal."

“I have to contact my workplace for the time being”

But I couldn't remember the phone number at work, so I remembered that it was on my business card, so I went to my study.

I took out a pile of business cards about 8 centimeters

I looked at the top card, and in my heart I knew exactly what my card looked like, but I didn't know if it was my card, and all I could see was pixels.

The pixels of the letters were mixed with the pixels of the background and the pixels of the symbols, and they were indistinguishable.

So I waited for the "wave of clarity"

When that wave came, I was able to reconnect with my normal reality, and it was sorted out, this is not this, this is not.

It took me 45 minutes to finally make it a third of the way through the pile of business cards.

During that 45 minutes, the hemorrhage had spread further to the left side of the brain.

I don't understand numbers anymore, I don't understand phones anymore, but that's the only plan I have.

so put the phone down here

I put the business card down here, and I compared the squiggles on the business card with the squiggly lines on the phone buttons.

But I was swept away to La La Land again, and when I came to myself, how far did I press the number?

I don't remember, so I used my stump-paralyzed arm to cover the phone number on my business card so that when I came back to reality, I would know that I had typed this number.

When I finally dialed all the numbers and listened, my colleague who picked up the phone said, "One-one-one-one."

So I said to myself, "Jill, I need your help!"

But what came out of my mouth was "one one one one one"

“No I look like a golden retriever too”

I didn't realize until I tried that I couldn't speak or understand language.

he knew i needed help and he arranged for me

Some time later, I was in an ambulance from a hospital in Boston to Massachusetts General Hospital.

I'm curled up like a fetus From a little air balloon

Like the last breath of air, I felt my energy evaporate and my soul give up, and in that moment I was no longer

I knew I was no longer the choreographer of my life

If the doctor hadn't saved my body and given me another chance, I probably would have died.

I woke up that afternoon and was surprised to find myself still alive When I felt my soul giving up

I was saying goodbye to my life

My mind was suspended between two contrasting realities from my sensory system.

The incoming stimulus is nothing but pain

The light burned my brain like wildfire The sound was so loud I couldn't make out the voices in the noise I just wanted to run away The state of my body

I didn't recognize it. It felt like my body was expanding, like a spirit that had just been released from a lamp.

My soul flew free like a great whale, gliding through a sea of ​​calm happiness.

heaven i found heaven

I remember thinking that it would be impossible to squeeze this grown-up version of myself into a small body again.

But I thought, "But I'm still alive!"

"And found heaven, I found heaven—"

"If you're still alive, everyone who's still alive --" I realized, "Heaven can be found."

I envisioned a world filled with beautiful, peaceful, caring, loving people, knowing that they could always come to this place.

That you can intentionally walk from your left brain to your right brain and find this peace

I realized how great a gift this experience could be, how powerful an insight it could give to the living, and that helped me in my recovery.

Two and a half weeks after the hemorrhage, surgery removed a golf-ball-sized hematoma that was compressing my language center.

It's me and my mom. She's my angel. It took me eight years to fully recover.

Now who are we? We are dexterous hands and

It's the life force of the universe with two cognitive minds.

And we have the power to choose who we want to be and how we want to be in this world at every moment.

Right here, at this moment, I can tap into the consciousness of my right brain.

where I am the life force of the universe

The 50 trillion beautiful molecules that make up me, the united energy of life.

Or you can go into your left-brain consciousness and choose to be a solid individual, separate from the larger currents and other people.

I'm Dr. Jill Bolte Taylor, an intelligent neuroanatomist. These two are the "we" in me.

Which one would you choose? Which one do you choose when?

we spend more time in the right brain

I believe that if we choose to live in channels of deep inner peace, there will be more peace in the world, and our planet will be a more peaceful place, and I thought this was an idea worth spreading.

1885 Karl Benz invents the automobile

At the first public test drive of the year, and it's true, he hit a wall.

For the next 130 years, we've been trying to get rid of the least reliable part of this car: the driver.

strengthen the body

With seatbelts and airbags, over the last decade or so, we've been trying to correct this driver defect by making cars smarter.

What I'm going to talk about today is the difference between the approach of addressing this problem with driver assistance systems and the approach of making the car fully autonomous, and what the benefits are.

I'm also going to show you a self-driving car that we're building and how it sees and reacts to the world around it, but first, let's talk about what the problem is.

It's a big problem. Every year, 1.2 million people die in road accidents worldwide.

In America alone, 33,000 people die each year.

In layman's terms, this is equivalent to a 737 airliner crashing every weekday.

it's hard to believe

Cars are marketed to look like this, but this is what driving actually looks like.

The weather is bad and everyone wants to do other things while driving.

The reason is that the traffic situation is getting worse.

Between 1990 and 2010, total vehicle miles traveled in the United States increased by 38 percent.

Roads will only increase by 6 percent, so the change in traffic isn't just a sensory thing.

In the last 20 years, it's actually gotten noticeably worse.

This comes at a cost to people.

The average commute time in the United States is about 50 minutes, and when you multiply that with the working population of 120 million, you get 6 billion minutes of wasted time commuting to work each day.

It's a big number, so let's paraphrase it.

If you divide 6 billion minutes by the average human life expectancy, that's 162 lives that are wasted every day for this mere travel time.

It's hard to believe

On top of that, there are people who don't have the privilege of sitting in this traffic jam.

his name is steve

I'm a very capable person, but I'm blind. Instead of driving 30 minutes in the morning to work, I have to ask friends and family to take two hours to get me on public transport or to send me.

They don't have the freedom of movement that we do.

this has to be done somehow

A lot of people think that if you build a driver assistance system and improve it over time, you'll eventually have a self-driving car.

But it's like saying that if you keep jumping hard, you'll one day be able to fly.

you have to do something fundamentally different

I'm going to show you three ways that self-driving cars are different from driver assistance systems.

First let me tell you what we experienced.

In 2013, we tested self-driving cars for the first time with civilians on board.

100 Googlers, but people outside of this project.

I handed him a self-driving car, and he used it on a daily basis.

Self-driving cars, but with reservations.

I tested it enough, but it still malfunctioned sometimes.

So after two hours of training, I had them sit in the driver's seat and let them use it, and the feedback they got was encouraging for someone trying to bring a new product to the world.

everybody liked it

There's this guy who drives Porsches all the time, and at first he said, "This is ridiculous, I don't know what you're thinking."

I ended up saying, "Everyone should own this car, not just me, because we're all terrible drivers."

It's a nice word to hear, but it's been amazing to see what people in self-driving cars are doing inside.

This is one of my favorite anecdotes about a person driving a car and looking at his phone and realizing that the battery is dying, he turns around like this, he looks in his backpack, he takes out his laptop, he puts it on the seat next to him, he turns around again, he digs in his backpack, he takes out the charging cable, he plugs the laptop into the phone.

I charged my phone

All this time the car was going over 100 kilometers an hour.

It's incredible

I saw this and thought I had the answer

As technology advances, driver reliability declines.

Making the car smarter over time won't do what you want it to do.

let's get a little technical

The horizontal axis of this graph is how often the car brakes when it shouldn't.

You can generally ignore this axis, because if you're driving around town and the car stops randomly, no one will buy it.

The vertical axis is how often the car should brake to prevent an accident.

In the lower left corner is an old-fashioned car.

Cars don't brake on their own, they don't do stupid things, they don't prevent accidents.

If you wanted to create a driver assistance system, like automatic collision avoidance braking, and you could take a lot of different technologies and get this graph, and you could achieve some kind of behavioral characteristic, but you can't prevent all accidents, you don't have the ability to do that.

We might be able to halve the number of accidents, which is great, because we're halving traffic accidents.

17,000 fewer people die each year in America.

But if you want to build a self-driving car, you need the technology to make the curve look like this.

We're going to put more sensors on the car, and we're going to basically pick a point where crashes don't happen.

Collisions, if they do occur, are extremely infrequent.

You can look at this and argue whether the transition should be gradual.

Let's look at this from another angle

How precisely does this technology have to behave correctly?

Green dots are driver assistance systems

In the United States, a human driver makes a fatal mistake every 100,000 miles.

By contrast, a self-driving car makes about 10 decisions per second, about 1,000 per mile.

These two points are eight spaces apart on a logarithmic scale.

10 to the eighth power

It's like comparing how fast I run to the speed of light.

No matter how hard I try, I will never get there

there is a very big gap

Finally, there's the issue of how the system handles uncertainty.

Will this pedestrian cross the road?

I don't know, and I don't know any algorithm, that driver assistance systems can't take action, because it's unacceptable to brake unexpectedly.

A self-driving car, on the other hand, if the pedestrian doesn't know what they're doing, slows down, waits, and then responds appropriately.

So it's a lot safer than driver assistance systems.

Now that I know the difference between the two systems,

Let's talk about how self-driving cars see the world.

The white one is our car

We start by knowing where we are in the world, matching the map with the sensor data and overlaying what we see on the map.

The purple boxes are the other cars on the road. The red box at the end of the road is the bicycle.

Now we know the situation with the car, but that's not enough, we need to predict what's going to happen next.

A small truck ahead on the right is about to change lanes to the left to get around a blocked road ahead.

You don't just have to read what one truck is doing, you have to read everyone's thoughts, and this is a very complicated problem.

Based on that, we decide how to move, what path to take, and how to change speed.

Follow the road Turn left or right Hit the brake or accelerator

Where it boils down to two numbers

Sounds easy, doesn't it?

When I started working on it in 2009, it looked like this

Our car is in the middle, and the other cars on the road are represented as boxes.

You have to know roughly where you are and where the other cars are.

understand the world geometrically

As we started driving around town, the problem became much more difficult.

Pedestrians crossing in front of cars, cars crossing in front of you, you go in all directions, there are traffic lights, there are pedestrian crossings.

It's a lot more complicated than it used to be.

Once you can deal with that, you have to be able to deal with construction sites.

Here it's being moved to the right by the road cone on the left, not just the construction site itself.

We also have to be careful of people walking around it.

If there's a traffic violation, the police will come, and you need to be able to understand that a car with flashing lights on the roof isn't just a car, it's a police vehicle.

The orange box at the end of the road is a school bus, which also needs special treatment.

People on the road have different expectations, and when a cyclist raises his hand, he wants to change lanes and give way.

If you see a cop standing on the street and posing like this, you have to understand that it means stop, and when you give the signal to go, you have to go.

The way we do this is by sharing information between cars.

The first rough model was that if one car saw a construction site, it would alert the other cars so they could change lanes and get around the problem.

but we have a deeper understanding

So far, we've seen data from other cars -- hundreds of thousands of pedestrians, bicycles, and cars -- so we can figure out what each one looks like, and then use that to infer what other cars and pedestrians might look like.

And more importantly, we were able to build a model of how each would be expected to behave.

Here the yellow box is a pedestrian crossing in front of you.

The blue box predicts that it will dodge our car to the right on a bicycle.

You can expect the bikes coming from over there to follow the road.

Here you have a car making a right turn, and here you have a car in front of you that is about to make a U-turn, and you anticipate that move and act in a safe manner accordingly.

It's fine if it's all the things you've seen before, but in the real world, you'll come across things you've never seen, and this was just two months ago.

I met you while driving through Mountain View.

(Laughter) Nowhere in the Motor Vehicle Manual does it say how to deal with this situation.

Ducks aren't the only ones to deal with.

The bird suddenly flew forward, but the car handled it just fine.

We've got bikes here that you don't usually see outside of Mountain View.

Of course, we also need to adapt to other cars, including mini-sized ones like this.

Look to your right, someone is getting out of the truck.

The green box of the car on the left is just around the corner and it's turning right.

When I tried to change lanes, the car on my left also changed lanes at the same time.

I'm giving way because a car is driving at a red light.

Bicycles come in here ignoring the traffic light.

Of course, we will respond as if there is no danger.

And on the road, sometimes people do things that they don't understand, and a car comes right in between two self-driving cars.

You'll want to say, "What are you thinking?"

(Laughter) Now that I've shown you so many different cases in rapid succession, let's take a little closer look at one case.

In the case of the bicycle, as you can see in the video below, the bicycle is still out of sight, but the car has grasped the bicycle, the blue box on the far left, captured using a laser.

This is a little confusing, so let's turn around and take a closer look at the laser data, and if you look really hard, you'll see some dots on the corners of the road, this one, and the blue boxes represent the bikes.

The traffic lights for bicycles are already yellow.

But the bike is coming into the intersection

The light on my side is green, and it's red on the other side, and I'm expecting this cyclist to come across the road.

Unfortunately, the car next to us wasn't paying as much attention as we did.

Luckily the bike got around and crossed the intersection.

Now let's move forward

As you can see, we've made some really great progress with this technology, and we're very confident that we can bring it to market.

We do 5 million kilometers of simulator testing every day, so you can see how experienced this car has been.

We can't wait to bring this technology to the road. We believe that self-driving cars, not driver assistance systems, are the way to go. This is a very urgent issue.

During the time I'm giving this talk, it's calculated that 34 people in the United States have died in car accidents.

When will this be released to the world?

It's a very difficult question, so it's hard to give a definitive answer.This is a picture of my two sons.

My eldest son is 11 years old, and that means he'll have his driver's license in four and a half years.

Our team is doing everything we can to make sure that doesn't happen. (Laughter)

thank you

(Applause) (Chris Anderson) Can I ask you one question?

(Chris Urmson) Go ahead.

CA: It's amazing what your cars are capable of.

There's a lot of debate going on right now about driver assistance systems versus fully self-driving cars.

Companies like Tesla are opting for driver assistance systems.

And you said that this is a dead end, and that improving driver assistance systems is not going to lead to self-driving cars, because the driver is going to think, "Looks okay," and turn around, and it's going to be bad.

CA: That's right. I'm not saying that driver assistance systems are worthless.

In the transitional period, it could save a lot of lives. But if we're aiming for radical change, like allowing a blind person like Steve to go anywhere, or maximizing safety, or eliminating parking craters from the city by having cars find their own parking spots, self-driving cars are the only way forward.

CA: I'm watching the future with great interest.

(Armson) Thank you. (Applause)

Storytelling has naturally changed in the nearly 2,500 years since Aristotle defined what tragedy is.

The role of storytelling, he said, was to evoke emotion in the listener by recreating the way people lived.

As you know, stories have played their part very well ever since.

But there are aspects of life that stories can never truly replicate.

it is to choose

Choices are very important in our daily lives.

Each of us is characterized by our choices.

Some of the choices we make have very serious consequences that change the rest of our lives.

But in a play or a novel or a movie, the characters simply make choices predetermined by the author, and we, as listeners, have no way of acting on the consequences of those choices, and we can only watch.

One idea that has always fascinated me as a storyteller is to reinvent this choice in the field of fiction.

My dream was to put the listener in the shoes of the main character and make their own choices and, in so doing, tell their own story.

To make this happen, I've dedicated the last 20 years.

Today, I want to introduce you to this new way of telling stories, which is essentially interactive.

I could show you the theory behind it, but it's kind of abstract and maybe a little boring, so let's do a little demonstration.

I'd like to invite people who come to the TED room to actually tell their own stories.

I've prepared an interactive scene for you to play with.

Vicky - please Vicky - will control the protagonist for us.

Everyone here please make a choice

Neither Vicky nor I know what will happen, because it all depends on your choices.

This is a scene from a new game called "Detroit: Become Human", set in the near future, where technological advances have made it possible to create androids that look like humans.

We're going to be this character named Connor, who's an android, and he's just as dexterous with coins.

There's a blue triangle mark on the chest that all androids have, so let Vicky handle it.

You can walk around, you can go anywhere, you can look around, you can interact with things around you, you can make choices and you can tell your own story.

here's the first choice

the fish are falling to the ground

what should I do?

Help or leave me alone?

Your time is limited and you have to decide quickly.

what should I do?

(audience) Help!

(Cage) Help? Are you going to help the fish?

(pop) (Cage) Yes, I helped.

It's an android that loves animals.

let's move on

There's a hostage crisis going on right now.

(Woman) Please help my daughter!

uh, is it an android?

(staff) let's go

(Woman) Terrible

Why don't you send me a real human?

(Cage) She seems unhappy.

My daughter is being held hostage by an android, so she's obviously in a state of shock.

Let's continue exploring this building.

SWAT forces are on duty.

First, let's find Captain Allen.

that's the top priority

okay we can move freely

Because Vicky is operating it.

Oh, it looks like this is Captain Allen, and he's on the phone.

(Connor) Captain Allen I'm Connor

It's an android sent by CyberLife.

(Allen) Shoot anything that moves

Two of my friends got killed

He's easy to catch, but he's on the edge of the verandah, and if he falls, so does the hostage.

(Cage) Now, let's decide what to ask the captain.

what would you choose?

Mutant name? Mutant behavior? mental shock?

(Connor) Did he get some kind of mental shock recently?

(Allen) I don't know. Does it matter?

CA: We need information to find the best approach.

(Cage), this is my second choice.

what would you choose?

(audience) action

In (cage) the behavior of mutants

(Connor) Was he acting strange before?

(Allen) Hey, what's important is helping the kids.

CA: I can't seem to get any information from him.

something must be done

let's go back to the lobby

Hey, it looks like there's a room on the right

you may get some information here

you have a tablet

let's see

(Girl) This is Daniel, the coolest android in the world.

daniel say hello

(Daniel) Hello

(Girl) Best friend, we'll always be together [mutant name Daniel]

CA: This is just one example of how to play, there are many more.

Depending on the choices you make, you can see different actions, different consequences, different endings.

Now you know what my work looks like as an interactive artist.

A unidirectional artist can think in terms of time and space, but an interactive artist must deal with time, space and possibility.

You have to navigate a huge tree structure, and each branch of the tree structure is a new storyline.

Think of all the possibilities that could happen in that scene and try to imagine everything that could happen.

You have to think of a myriad of variables and conditions and possibilities.

As a result, a movie script would be about 100 pages, and an interactive work like this would be 4,5,000 pages.

I hope you've seen what my work looks like

So what you're saying here is that it's a one-of-a-kind experience, because it's the result of collaboration, because the writers outline the plot, and the players make their own decisions, craft their own stories, and become co-writers, co-actors, and co-directors of the story.

Interactive storytelling is a revolution in how stories are told.

With the emergence of new platforms such as interactive television, virtual reality and video games, this could become a new form of entertainment and even a new form of art.

I am confident that in the near future, the next generation of talent will enable us to create more moving and meaningful interactive experiences.

Such a medium awaits the likes of Orson Welles and Stanley Kubrick, and no doubt those talents will soon emerge and flourish.

I believe that interactive storytelling can become a game-changing art, much like cinema did in the 20th century.

thank you

(applause)

When you're a kid you can be anything When you're a kid you can be anything

As you grow older, it becomes very difficult to hold on to your dreams.

When I was four years old, I got my first yacht ride.

I will never forget the excitement of approaching the shore.

I remember the feeling of being on an adventure when I climbed onto the yacht and peered into the tiny cabin for the first time.

But the most amazing thing was the freedom I felt when I put the sails up.

It was the greatest sense of freedom a four-year-old could ever imagine.

And I decided that someday, somehow, I would sail around the world.

I did what I could to get closer to that dream.

When I was 10, I saved money for school lunches.

For eight years, I ate mashed potatoes and baked beans every day, both for fourpence and free gravy.

Every day, I piled coins on top of my piggy bank, and when the piled change reached a pound, I put it in the bank and crossed out one of the 100 squares I had written on a piece of paper.

and finally bought a small yacht

I spent hours sitting on a yacht in my garden dreaming of achieving my goals.

I read all sorts of books about sailing, and eventually my school told me, "You can't be a veterinarian with these grades," so I quit school at 17 and started training to sail.

Imagine how it feels four years later in a boardroom to finally interview for the realization of your dream.

It felt like a life-changing moment, and to my surprise, his answer was yes.

Still in high spirits, I attended my first design meeting, the design meeting for my yacht, which will sail solo, non-stop, around the world.

From the first meeting to the finish of the race, everything was as I imagined.

As I thought, there were good parts and bad parts.

Dodging an iceberg at 6m

I climbed to the top of a 30m mast nine times.

Overturned in crosswinds in the Antarctic

But sunsets and wildlife There's nothing more captivating than a world without people

Three months later, at the age of 24, I finished second.

I was drawn to it from the bottom of my heart, and less than half a year later, I decided to circumnavigate the world again.

To do this, I needed another yacht, bigger, wider, faster and more powerful.

As for how big it is, it's big enough to climb inside the mast to the tip.

23m long and 18m wide

Affectionately named Moby

It's a multihull boat

When Moby began construction, many attempted a non-stop solo round-the-world voyage in a multihull, but none succeeded. But during construction, a Frenchman not only succeeded, using a vessel 25 percent larger than Moby, but broke the record from 93 days to 72 days.

My goals have gotten much higher

Sailing this type of ship is exciting.

This is sailing training off the coast of France.

I remember it well because I was one of five crew members.

Everything was fine, and five seconds later, the world was pitch black and the windows were submerged in water. Five seconds flew by.

You can see how far the five of us are from the sea surface.

Imagine being thrown alone in the Antarctic Ocean, about 3-4,000 kilometers offshore.

it was christmas day

I slowly made my way through the Antarctic Ocean south of Australia.

it was a horrible situation

The waters I'm heading to are 3000km away from the nearest town.

Antarctica is the closest land mass, and the closest person might be the crew of the overhead space station.

(Laughter) Right in the middle of an unnamed ocean.

If you were to call for help, it would take four days for the ship to come, and another four days for the ship to return to port.

Helicopters can't get there, planes can't land

Slowly advance in front of a huge storm

In a storm with winds of 150 km/h, neither the ship nor I can handle it.

The waves were 10-15 meters high, and the spray from the crumbling wave crest flew horizontally like snow in a blizzard.

If you don't have enough speed, the storm will swallow you up and capsize or shatter you.

We were literally hanging on to life and holding on to the edge.

Desperate speed was fraught with danger.

When it comes to driving a car at 30, 45, 60km/h

Less stress and more focus

You can even play the radio

80, 100, 120km/h Further acceleration to 130, 145, 160km

Grasp the handle with a whitened fist

Now that car is off the road at night, no wipers, no windshield, no headlights, no brakes.

That's what they do in the Southern Ocean.

(Laughter) (Applause) Imagine, it's hard to sleep in that situation, even as a passenger.

but not a passenger

You can't stand on a yacht by yourself, you have to make all the decisions.

I am exhausted both mentally and physically.

Change sails 8 times in 12 hours

The mainsail weighs three times my weight. Every time I change sails, I break down in sweat and fall to the floor.

It's a place where extreme conditions like this go hand-in-hand with absolutely wonderful conditions.

After a few days, we exited the low pressure system.

Despite the great difficulty, we made it through the storm at record-breaking pace.

The skies cleared and the rain stopped The terrible sea, restless and moving like a heart, transformed into the most beautiful mountains in the moonlight.

It's hard to explain, but when you go out to sea, your mode changes.

Your yacht becomes your whole world.What you bring with you when you leave is all you have.

Even if I were to say to you now, "Go to Vancouver and get everything you need to survive for three months," that would be a very difficult task.

Food, fuel, clothes, toilet paper, toothpaste, etc.

With that stuff in place, when we set sail, we'll make do with the last drop of diesel or the last bag of food.

No other experience could have taught me more clearly what the word "limited" means.

it's all there is

no more

It wasn't until after I got off the yacht that I set a record and crossed the finish line that I felt finite.

(Applause) All of a sudden, the dots connect.

The same is true for the world economy.

We are completely dependent on finite resources that we only have once in human history.

It was like finding something hidden under a stone unexpectedly and having a choice between putting the stone aside and taking a closer look, or putting it back in its place and pushing towards my dream job, a voyage around the world.

i chose the former

He put the stone aside and embarked on a new learning journey, talking to business owners, experts, scientists and economists, trying to understand how the global economy worked.

Curiosity led me to a special place

This is a picture taken at the burner of a coal-fired power plant.

Coal, which powers the world's energy needs, was fascinated by me, and I had a similar family lineage.

My great-grandfather was a coal miner and worked underground for 50 years of his life.

This is a picture of my great-grandfather, and if you look at this picture, you can see that it was a different time.

You don't wear trousers with a high waistband these days. (Laughter) This is a picture of me with my great-grandfather.

My great-grandfather told me about underground friendships and how miners used to collect sandwich ears to give to the ponies who worked with them underground.

feels like it was yesterday

While I was on my learning journey, I saw the World Coal Association website, and in the middle of the page, it said, "There's 118 years of coal."

It's beyond my lifespan, so I thought it would be a much brighter number than the oil forecast.

But when I did the math, my great-grandfather was born 118 years ago, and until I was 11 years old, I sat on my great-grandfather's lap.

And then I made a decision that I never thought I'd have: I decided to leave the sport of solo voyages and focus on the biggest challenge I've encountered: the future of the global economy.

I quickly realized that it wasn't just an energy issue.

It was also a matter of resources

In 2008, I came across a scientific study that looked at how many years of precious resources we had left underground: 61 years for copper, 40 years for tin and zinc, and 29 years for silver.

Even if these numbers aren't exact, matter is finite.

can only be used once

The speed at which we use resources is accelerating exponentially.

As the world's population grows, the plentiful supply of goods has erased 100 years of gradual declines in the prices of basic commodities in just 10 years.

this affects us all

In 2011, it led to price volatility. A typical European car company lost half of its operating profit in a completely out-of-control situation when raw material prices rose by 500 million euros.

The more I found out, the more my life began to change.

I have learned to refrain from movement and consumption.

We felt that we should refrain from action.

But the idea didn't come to me

didn't make sense

I felt that we were just buying time.

So that things can be used for a little longer

Even if you change, it won't solve the problem

can't even fix the system

Consumption patterns will inevitably change, but my interest was, "How do we change? What actually works?"

I felt that the system was fundamentally flawed in how we lived. Ultimately, our operating system -- the way our economy works, the way it was built, is itself a system.

Understanding complex systems at sea was essential.

I had to give different inputs and process them and understand the system to win.

it was necessary to understand the meaning

When I look at the global economy, I also realize that it's a system, and it's inefficient in the long run.

And over the next 150 years, I realized that we had perfected a de facto linear economy, where we take material out of the ground, make things, and then throw them away.

This is a fundamentally unsustainable economy in the long run. If you know you have a finite amount of material, how did you create an economy that uses it up so quickly that it creates waste?

Life has existed for billions of years and has continued to use resources effectively.

It was a complicated system, but there was no waste.

everything was metabolized

It wasn't a linear economy, it was a circular economy.

I felt like I was a kid in that garden

For the first time in this new journey, I knew exactly where I was going.

If we can create an economy that uses things instead of using them up, we can create a future that truly works for the long term.

i was thrilled

this is a worthwhile job

Once you set a destination, all you have to do is figure out how to get there. With this in mind, in September 2010, I founded the Ellen MacArthur Foundation.

Based on a variety of disciplines, we presented a model of industrial symbiosis, a use-value economy, a sharing economy, biomimicry and, of course, circular design.

Matter is defined as technical or biological, and waste is fully included in the plan to create a system that can work in the long term.

What does this economy look like?

You don't buy luminaires, you pay for lighting services Manufacturers take back their products and remake them into more efficient luminaires.

What if the packaging materials were so non-toxic that you could dissolve them in water and drink them? never become waste

If the engine could be reused, parts could be recovered, which could dramatically reduce energy demand.

What if we could recover and reuse the circuit board components, and in the next step, we could essentially recover the resources in the product? What if the next step was to completely recover the resources in the product?

If you collect food waste or human feces

How about turning it into fertilizer, heat, or energy? What if we finally reconnected our nutritional systems and rebuilt our natural capital?

And a car - I want to go around

no need to own

As a car of the future, wouldn't it be nice if there was a service that provides us with a means of transportation?

It's all great, but these aren't just ideas, they're realities today, and they're at the forefront of the circular economy.

Our challenge going forward is to spread and scale the circular economy.

How do we go from linear to circular?

We wanted to work with the world's most prestigious universities, the world's top companies, the world's largest platforms, and governments.

Working with the world's top analysts to ask: 'Can a circular economy decouple growth from resource constraints?

Can the circular economy rebuild natural capital?

Can the circular economy replace the current use of chemical fertilizers?

The answer to this is separable, and amazingly, it can replace up to 2.7 times the current fertilizer.

The most inspiring thing about the circular economy is that it motivates young people.

When young people look at the economy through circular glasses, they realize that even if they look at the same economy, there are brand new opportunities.

They're going to use their creativity and their knowledge to rebuild whole systems, and that's just around the corner. The sooner we do this, the better.

Is it achievable in our lifetime?

Is it possible?

i believe i can

If you look at my great-grandfather's life, he could do anything.

When my great-grandfather was born, there were only 25 cars in the world, and cars had just been invented.

When my great-grandfather was 14, the first plane ever flew.

Now there are 100,000 commercial flights every day

When my great-grandfather was 45, the first computer came out.

A lot of people said it wasn't fashionable, but 20 years later it's microchips, and today there are thousands of microchips in this room.

Ten years before my great-grandfather died, the first mobile phones came out.

It wasn't exactly a cell phone, but now we have real cell phones. When my great-grandfather passed away, the Internet came along.

We can do anything, and more importantly, we have a plan.

thank you

(applause)

The truth is, the best thing that happened to me after I left the White House was a cartoon by The New Yorker.

A little boy looking up at his father and saying, "When I grow up, I want to be a former president."

(Laughter) As a former president, I'm very lucky because I get to go to more places and meet more people from all over the world than almost anyone else in the world.

In addition to the 50 states in the United States, my wife and I have traveled to more than 145 countries around the world, and the Carter Center has programs in 80 countries around the world.

When I visit a foreign country, I usually meet not only kings and presidents, but also villages in the most remote parts of Africa.

The goal of the Carter Center as a whole is to promote human rights, and looking at the state of the world makes one thing very clear: the number one human rights violation in the world, strangely under-reported, is the abuse of women and girls.

(Applause) There are several reasons for this, starting with this topic.

First of all, it's the misinterpretation of the scriptures -- the Old Testament, the New Testament, the Koran -- all of which have been misinterpreted by men in positions of authority in synagogues, churches, and mosques.

Because of their interpretation of the norm, the status of women before God was reduced to second, inferior to that of men.

This is a serious issue, but it's not usually addressed.

A long time ago, in 2000, I turned 70 as a member of the Southern Baptist Church. I still teach Sunday School every week, and I will be teaching this Sunday, but in 2000, the Southern Baptists decided that women were second in rank, subordinate to men.

They issued a religious decree that effectively prevented women from being priests, pastors, deacons, or chaplains in their churches. If a class that a woman is teaching is at the Southern Baptist Seminary and there are boys in it, she can't teach because there's a verse in the Bible -- there are over 30,000 verses in the Bible -- and women shouldn't teach men.

But at the heart of it all is a misinterpretation of the Bible to keep men on the edge.

This is a pervasive problem because of men's power.

Why should we pay the same amount for the same job?”

Another serious problem driving mistreatment of women is the tendency to resort to violence, which is increasing significantly around the world.

For example, in the United States, abuse of the poor is on the rise, especially with large numbers of blacks and minorities incarcerated.

When I was governor of Georgia, 1 in 1,000 Americans was in prison.

Today, 7.3 out of every 1,000 people are in prison.

seven times more

Since I left the White House, the number of black female inmates has increased by 800%.The number of black female inmates has increased by 800%.

Japan is one of the developed countries that still has the death penalty.Japan is one of the developed countries that still has the death penalty.

Supporting the death penalty ranks among the worst for human rights Countries for supporting the death penalty rank among the worst for human rights

I'm in California right now, and I did the math the other day, and California is spending about $5 billion on 13 death sentences.

So in California, about $40 billion is spent on one person's execution.

Nebraska passed a bill to abolish the death penalty this week, because it's very costly.

I'm going to address the most concerning forms of abuse against women.

one is genital mutilation

Genital mutilation is a horrible thing, but it's unknown to American women. In many countries, as soon as a baby girl is born, someone called a cutter completely cuts off the genitals, using a razor to remove the outer part of the female genitalia without even disinfecting it.

In more extreme cases, but not infrequently, the opening is stitched to allow only urination and menstruation.

Once she's married, the same cutter will come and open the orifice to enable sexual intercourse.

illegal in most countries, but not uncommon

For example, in Egypt, 91 percent of women living there have been genital mutilated.

Over 98% of women in some countries are cut before they reach full maturity.

A terrible pain for the women of those countries A terrible pain for the women of those countries

Another very serious problem is honor killing, which is also based on a misunderstanding of the scriptures and is not mandated by the Koran, but where families execute women for being raped, marrying men their fathers disapprove of, or sometimes dressing inappropriately.

This is done by the family, and when a woman is seen as a family shame, the family becomes a murderer.

Not long ago, a United Nations study in Egypt found that 75 percent of honor killings against women were committed by fathers, uncles and brothers, and 25 percent by women.

Another problem in the world, particularly related to women, is slavery, or what we call human trafficking these days.

In the 19th and 18th centuries, 12.5 million slaves were sold from Africa into the New World.

Thirty million people are now in slavery.

The State Department produces a report every year under the direction of Congress. The State Department reports that 800,000 people cross borders and are sold into slavery each year, and 80 percent of those sold are women and are sexual slaves.

At this moment in America, there are 60,000 people in captivity or slavery.

In Atlanta, Georgia, where the Carter Center is located, where I teach at Emory University, 200 to 300 people are sold into slavery every month.

Worst in the country for human trafficking

Atlanta's airport is the busiest in the world and attracts many travelers from the southern hemisphere.

If a brothel owner buys a brown or dark-skinned woman, she can buy it for 100,000 yen.

For fair-skinned women, it's several times that. Today, the average brothel in Atlanta and the United States makes about $40,000 per prostitute.

Prostitution in Atlanta, Georgia exceeds total drug trafficking

This is a very serious problem, but the fundamental problem with prostitution is that all the brothels in America are known to local officials, police officers, police chiefs and mayors, and yet they continue to exist.

All of this has become one of the worst problems in the world, with an increasing number of women being trafficked and enslaved in every country.

Sweden is doing a good job

About 15 or 20 years ago, Sweden changed its laws so that women are no longer prosecuted for sexual slavery, women are no longer prosecuted for sexual slavery, brothel owners, pimps and male clients are prosecuted, and (applause) prostitution has decreased.

America takes the opposite position

In the United States, 25 women are arrested for every man arrested for illegal sex trafficking.

I've already mentioned Canada, Ireland, Sweden, but France and other countries are moving towards the Swedish model.

We can do this

We have two institutions that are highly respected in our country: the military and the university system.

The military is currently investigating rape cases.

The final report said 26,000, and that's the number in the military, 26,000.

About 3,000 cases -- [10 percent] -- have actually been prosecuted. And that's because the commander of any organization -- whether it's a submarine, an Army battalion, or a Marine Corps company -- has the authority under the law to decide to prosecute a rapist.

Such laws should be changed

Roughly one in four female college students in America is raped before they graduate, and it's now made public by my book and others.

According to the Justice Department, more than half of rapes are committed by serial rapists on college campuses, because outside the college system if you rape someone you can be prosecuted, but on college campuses you can rape with impunity.

perpetrators are not prosecuted

This is what is happening in our society.

Another very serious abuse of women is that we don't have equal pay for men and women. You know that.

When I became president, the pay gap was 39%.

(Applause) (Laughter) But there hasn't been any progress in the last 15 years. We've had a wage gap of about 23 or 24 percent for the last 15 years.

These things continue

Fortune 500 companies have 23 female CEOs out of 500. Not to mention, they are paid, on average, less than other CEOs.

this is what is happening in our country

Another problem America has is that it's the most militant country on earth.

Our country has been at war with about 25 countries since World War II.

We also fought ground battles from time to time.

Fly high and drop bombs on people

now attacking with drones

About 25 countries have been at war since WWII About 25 countries have been at war since WWII

We didn't go to war for four years, I won't say when. We didn't go to war for four years.

Anyway, these acts of violence and misunderstanding of the scriptures are the root cause of the abuse of women and girls.

The other root cause, of course, is that men generally don't care at all.

(Applause) It's true.

Men may say they are against the abuse of women and girls, but they silently accept their privileged status.

For 100 years, legal racism existed, from the end of the Civil War in 1865 until the passage of the Civil Rights Act by Lyndon Johnson in the 1960s.

But during that time, many white people didn't think racism was right.

Even if they say, "I'm against discrimination against women and girls," they enjoy a privileged position.

It's hard to tell this to them -- the majority of men who run universities, the majority of men who run armies, the majority of men who control governments around the world, the majority of men who run major religions.

What do we basically do now?

The best thing we can do today is to demand that women who come from powerful countries like America and Europe and who have power and freedom of speech take responsibility for ending racism against women and girls around the world.

The average Egyptian woman doesn't talk much about her daughter's genital mutilation. She doesn't talk much about her daughter's genital mutilation.

I didn't go into the details of that

What the women here at this conference want their husbands to realize is the need to protect their daughters and granddaughters from abuse on campus, in the military, in the future job market.

I have 12 grandchildren, four children and 10 great-grandchildren, and I think a lot about them, and I wonder what challenges they might face in terms of equal rights, not only if they were living in Egypt or other foreign countries, but if they were in the United States. Join me in advocating for the rights of women and girls around the world.

thank you very much

(applause)

My colleagues and I are fascinated by the science of moving points.

What are these points?

we are all ourselves

We move around our homes, our offices, we shop and travel around the city and around the world.

Wouldn't it be great if we could understand all these movements?

What if we could find a pattern here, a meaning, an insight?

Luckily, we live in an age where we are really good at getting information about ourselves.

Whether it's sensors, video or apps, it can track movement in stunning detail.

Sport is the best way to get that movement.

Whether it's basketball, baseball, soccer, or futsal, it's installed on the playing field to film and track the movements of the players at intervals of less than a second.

So what we're doing is converting athletes - as you can imagine - into moving points.

Like any other raw data, we get a huge number of moving points, which is cumbersome and not very interesting.

But a player's movements contain things that, say, a basketball coach wants to know.

The problem is that it's impossible for a coach to watch each game in sequence and memorize and analyze it.

What a human can't do, a machine can do

The problem is that machines can't see the game from the perspective of a coach.

no, at least not until now

So what have we taught machines to learn?

started in a simple way

Taught me how to pass, shoot and rebound

Do you know if you are a basketball fan?

Then we tackled something a little more complicated.

Post-up, pick-and-roll, isolation, etc.

Most players know this, but it doesn't matter if you don't.

And now the machine can also pick up on plays like down screens and wide pings.

It's basically a play that only the pros know.

We taught the machine to see from the coach's point of view.

How did you do that?

If you asked a coach to explain the pick-and-roll, they would probably explain it to you, but it's very difficult to incorporate that into the algorithm.

A pick-and-roll is a four-person, two-on-two, dance-like move.

We will move like this

The screener (the player who guards the defense) goes to the side of the ballman's defense and guards all the way, and then the two move and it's like this, Jah! this is the pick and roll

(Laughter) It's a difficult example to algorithmize.

The screener gets in the way, but if you don't stop when you get close, it's probably not a pick and roll.

Conversely, even if you stop, if you don't get close enough, it won't be a pick and roll.

Even if you approach and stop, it won't be a pick-and-roll under the ring.

It may be a pick and roll because of my mistake

It makes it difficult to judge because it depends on exact timing, distance and location.

Luckily, machine learning does a better job of describing what we know than we can.

How? let me show you an example

Say to the machine, "Good morning, Mr. Machine.

Here's some pick and roll and some that aren't.

See the difference."

The key to solving this problem is capturing the distinguishing features.

If you were to learn the difference between apples and oranges, you would say, "Why don't you look at the colors and shapes?"

The question we have to solve is what the difference is

What are the key features when a computer tracks a moving point?

Capturing all the information -- relative and absolute position, distance, timing and velocity -- that's the essence of the science of moving points. The proper term to use is "spatio-temporal pattern recognition."

It's my first word, so I might bite my tongue

The point is, the concern for NBA coaches is not whether there was a pick and roll, but how.

It means that the play happened

Why is it important? Let's dig a little deeper

The pick and roll is probably the most important play in modern basketball.

How you set it up and how you defend it basically determines the outcome of many games.

So there are many variations in this movement, and it's very important to understand the variations, and that's why this device is so useful.

I'll show you an example

I'm trying to pick and roll in a two-on-two battle.

Ballman moves have takes and rejects.

Screeners have rolls and pops

Ballman defense, on the other hand, is either over or under.

The screener's defense is either show or up-to-touch or soft. And then the defense comes together and switches and brids.

It's easy to understand, but it's actually very complicated.

Players are complex and twisty, so it's difficult to accurately capture variations in play -- to reproduce play with precision -- so coaches rely on human judgment.

Despite these difficulties in spatiotemporal pattern recognition, we succeeded in analyzing them.

Coaches trust our machine's ability to recognize play.

So far this year, almost every team in the NBA league has software in machines that track the moving points of a basketball.

Not only that, but we were able to advise a change in strategy to win a very important game, which is really exciting, because coaches who've been in the league for 30 years are now embracing machine advice.

Beyond the pick and roll is also great.

Computers started out simple, learned more and more complex things, and now they know a lot.

To be honest, I know very little of what I've learned myself, but there's nothing special about being smarter than me. I've wondered, can a machine surpass a coach?

Can you know more than humans?

Now the answer is "yes"

Coaches want players who shoot well

It's easier to score when I'm near the goal and no one is near

Conversely, if you're far from the goal and surrounded by opponents, it's harder to make a shot.

But we weren't able to quantify how good or bad a shot was.

until now is

So here's the return of spatio-temporal pattern recognition, and we've analyzed each shot.

The question is, 'Where's the shot? What's the angle with the ring?

What is the defensive position? What is the distance?

What angle are you standing at? "Etc

Even with multiple defenders, you can follow player movements and predict shot types.

Player speed allows us to build a predictive model of what kind of shots will be taken in these situations.

Why is this important?

I'm going to analyze shooting, which used to be a one-dimensional thing, but now I'm going to break it down into two factors: the quality of the shoot and the quality of the shooter.

Check out this bubble chart. It's essential for TED, right?

(Laughter) Each dot is an NBA player.

The size of the dot represents the size of the player, and the color represents the position.

The horizontal axis is the probability of a successful shot.

Moving left increases the difficulty, moving right decreases the difficulty.

The vertical axis is the player's shooting ability.

The higher you go, the better the player, and the lower you go, vice versa.

For example, if you have a player who normally shoots 47 percent of the time, that's all the information you have before.

But now we can say that the average player in the NBA has a 49 percent chance of making a shot, and this player is 2 percent lower.

47%, but it's important to have different combinations.

If you're thinking about acquiring a 10 billion yen player who hits 47%, it's an important factor whether it's a player who makes difficult shots successful or a player who shoots high chances even if the quality of the shots is low.

Machine learning doesn't change how you see the players, but it changes how you see the game.

A few years ago, there was a game at the NBA Finals that was a blast.

20 seconds behind Miami chasing 3 points

The loss of the series was imminent

A player named LeBron James shoots a 3-point shot to tie the score.

got off

Chris Bosh rebounds and passes to Ray Allen, who Allen

Sinking a 3-point shot and going into overtime

I won the match and won the final.

It was one of the most exciting matches in history.

When you know how many shots each player has in each moment, how likely they are to rebound in each moment, you can look at this scene in a whole new way.

Unfortunately, I can't show you the video from that time.

I recreated that play for you guys about three weeks ago during the weekly game we were playing.

(Laughter) I recreated the movement of the player I analyzed.

This is us. This is the park in Chinatown, Los Angeles, where we play every week.

and shoot

I'll show you the moment and the results of the analysis.

The difference is we, not the professional players, and I do the announcements, not the pros.

please bear with me

Miami chasing 3 points

Miami chasing 3 points

20 seconds left

Jeff dribbling

Pass to Josh and shoot 3 points

[Calculating shot success rate] [Shoot quality] [Rebound probability] Missed!

[Rebound Probability] Noel rebounds

pass to dahlia

[Quality of shot] 3 point shot is decided!

Tie with 5 seconds remaining

the crowd is thrilled

(Laughter) It was a play like this

(Applause) It's kind of like this.

(Applause) In the NBA, the odds of that happening are about 9 percent, and we can know that.

It's a secret how many times I spent recreating this play.

(laughs) Okay, I'll tell you! was 4 times

(Laughs) Dahlia Great!

But it's not that video footage like this or analysis of every moment in every NBA game is important in and of itself.

you don't need a team of experts to track your movements,

The fact that you don't have to be an expert to analyze behavior.

And it doesn't have to be limited to sports, we're always on the move, everywhere.

We are on the move at home, in the office, shopping, traveling, in the city and around the world.

What do you know and what can you learn?

Instead of a pick-and-roll, the machine will probably catch the movement and let me know when my daughter takes her first steps.

It can literally happen at any time

It could also be used to improve the design of buildings and cities.

I believe that by advancing the science of moving points, we will be able to move better and smarter, and advance.

thank you very much

(applause)

Five years ago, I stood on the TED stage and talked about my work.

But a year later, I was leaving a pub with a friend one night when a terrible accident happened in Scotland.

As I was walking down a forest path, I suddenly felt a strong impact, and when I received the second impact, I fell to the ground.

I had no idea what had happened

I later found out that as soon as I opened the gate to one of the yards, there was a wild stag rushing at me along the sidewalk.

The deer's antlers pierced my trachea and esophagus into my spinal cord and fractured my cervical vertebrae.

My best friend found me on the floor, and I was screaming for help through a hole in my neck.

My best friend and I stared at each other, and I couldn't speak, but my best friend understood what I was thinking.

she said "breathe"

As I was told, concentrating on breathing, I was very calm, but I knew I was going to die.

I was happy with the situation, because I had always tried to do my best.

So I calmed down and started working on breathing in and out, breathing in and out.

When the ambulance arrived, I was very conscious, and I analyzed everything on the way to the hospital.

I analyzed them and thought, "This might help."

and fainted

Once I was taken to a nearby hospital, I was taken by helicopter to Glasgow, where my throat was treated and I slipped into a coma.

I was in a parallel world while I was in a coma.

It was like a messed-up mix of Westworld and Black Mirror.

but that's another story

A local TV station reported live from the front of the hospital that a Cambridge scientist had fallen into a coma, but had no information about the scientist's life, death, or the extent of his injuries.

A week later I woke up from my coma

Awakening itself was a miracle

Even more miraculously, there was no residual impairment in thinking, motor, breathing, or swallowing.

In three and a half months, those functions were restored.

But there was one thing that was irreversible: privacy.

A tabloid published an article about gender.

I'm transgender, not a big deal

Well, you might be interested in my hair color and shoe size.

The last time I spoke here -- (Applause) -- (Applause) I didn't talk about gender because it's not fun.

But one Scottish newspaper ran a headline that read, "Young scientist impaled by male deer."

Five other papers had similar headlines.

I felt resentment for a moment

calm down quickly

And what crossed my mind was the phrase, "Those who turn against women who shouldn't be enemies, and eventually get their heads cut off."

(Laughter) I'm a kind ninja.

I don't know exactly what ninjas do, but I have a wild image of them sneaking through the darkness, crawling through sewer pipes, running along roofs, and sneaking up behind people without even realizing it.

Ninjas don't show up to their enemies, they don't protest, they just focus on one plan.

I, too, have come up with a plan from my hospital bed to reduce the chances of this happening to other people, by using the current system and sacrificing my privacy.

We plan to tell 10 million people what newspapers have told 1 million people.

People think they're defensive against angry people

They didn't attack the newspapers, so they weren't defensive.

I wrote a kind and sober letter and sent it to the newspaper.

The Sun in the UK, like Fox News in the US, thanked me for my "modest request."

What I wanted wasn't an apology, a retraction of the story, an award of damages, but an admission that we committed a violation of journalistic ethics, that we were wrong to write that way.

In a series of exchanges, I got to know the reporters, and they started to get to know me.

we strangely became friends

Since then, I've even had a glass of wine with Philippa of The Sun.

Three months later, the newspaper accepted all of their demands, and on Friday, the case came to an end with a statement of apology.

It was the end for newspapers.

The next day, I appeared on the evening news for a segment entitled "Six British Newspapers Admit Journalism Violations."

The moderator asked me, "Don't you think it's a reporter's job to present facts in a shocking way?"

He replied, "I fell to the ground in the forest with a deer stabbing me in the horns.

Shocking enough? ”

(Laughter) So now I came up with my own headline.

I like this: "The deer trampled my throat, the newspaper trampled my privacy."

It was the number one hit article on BBC News Online that day.

was very pleasant

After that week of speaking out in the media, with a new voice and opportunity, I started spreading a message of love and compassion.

The moment I felt anger and hatred toward newspapers and reporters, I realized that I had a bigoted view of them.

I needed to have a dialogue with these people without running into criticism.

I tried to understand them, and in doing so, I came to understand myself.

Six months later, I was asked to join the committee that regulates the press.

And then, a few times a year, I sit with Daily Mail editor Paul Daker and others over tea and sweets, and they ask me, "By the way, Kate, how are you doing these days?"

i respect them

And now I'm one of three Citizens' Representatives with voting rights, not because I'm different, but because my opinion is as important as everyone else's.

It's ironic that sometimes people in the printing industry, which is in decline, ask me to meet them, and I talked about interactive printing at TED.

Beware of the bigotry in yourself and make friends among your enemies

thank you

(applause)

I'm going to start today with a poem written by my friend from Malawi, Eileen Billi.

Eileen is only 13 years old, but when I was looking through the collection of poems we wrote, I found her poetry very interesting and inspiring.

let me tell you that

The title of this poem is "Marry When You Want"

(Laughter) "Marry when you want.

My mother can't force me to marry her either.

my father won't let me marry

No uncles, aunts, brothers and sisters can force me to marry.

No one in the world can force me to marry

get married when you want

Even if I'm beaten, even if I'm chased away, no matter how bad things are done to me, I'll get married when I want.

Marry when you want, not before you're fully educated, but when you're fully grown

Marry when you want

You might think it's a strange poem, written by a 13-year-old girl, but in the country where Eileen and I were born, the poem I just gave you is the cry of a warrior.

i am from malawi

Malawi is one of the poorest countries, very poor and gender equality in that country is questionable.

Growing up in that country, I couldn't make my own life choices.

I couldn't find any personal opportunities in life.

Let's talk about two different girls Let's talk about two beautiful girls

These two grew up under the same roof

eat the same

Sometimes they took turns wearing the same clothes, even the same shoes.

But their lives took two different paths.

one is my sister

My sister got pregnant at just 11 My sister got pregnant at just 11

that's painful

Not only my sister was hurt, but I was also hurt.

I've been through some tough times too.

In my country's culture, when you reach puberty, you go to a rite of passage camp.

The camp teaches you how to sexually please men.

There's a day called "a very special day," when men hired from the community come to the camp and sleep with the girls.

Imagine the trauma these girls go through every day.

most girls get pregnant

You can even get HIV/AIDS and other contagious sexually transmitted diseases.

my sister got pregnant

My sister is only 16 now, but she has three children.

Her first marriage didn't last, and neither did her second.

this other girl

she is wonderful

(Laughter) (Applause) I said she was great.

because she is so extraordinary

That girl is me. (Laughter) When I was 13, they said, "You're old enough, you're going to rite of passage camp."

I said, "Eh?

I'm not going to that place,' he said.

the woman said to me

"You're a stupid and stubborn girl

Not respecting the traditions of our society and community.”

I said no because I knew where I was going

Because I knew what I wanted in life

As a young girl I had many dreams

I wanted to get a good education so that I could find a decent job in the future.

I was thinking of myself as a lawyer in a big chair I was thinking of myself as a lawyer in a big chair

It was an image that kept repeating in my mind every day.

One day, I realized that I wanted to contribute a little something to the community.

But every day after I refused to go camping, the women used to say to me, "You're so grown up, your sister has a baby.

how are you ”

It was the noise that I hear every day, the words that girls hear every day when the community doesn't do what they demand of everyone.

Compared to my sister's life, I said to myself, "There's something you can do.

We can change things that have been happening in our communities for a long time."

I gathered together girls who were like my sisters who had children who couldn't go to school and who had forgotten how to read and write.

I said, "We can both remember how to read and write, how to hold a pen, how to hold and read a book."

It was a meaningful time spent with them.

I didn't know them very well at first, but they told me their private stories -- things that we face every day as young mothers.

And then I thought, maybe we can take all this stuff that's happening to us and show it to our mothers, our traditional leaders, and tell them.

It was terrifying, because for traditional leaders, what has been there for so long is already a convention.

It's hard to change, but it's worth trying.

so we tried

It was very difficult, but I pushed through.

So what I'm trying to say is that in my own community, for the first time, a girl really tried to reach out to a traditional leader.

(Applause) The first outreach in my community led to a call for legislation, and it was the first ordinance in our community to protect girls.

we don't stop there

Steady progress

I decided not only to fight for girls in my community, but also to fight in other communities.

When the child marriage bill was introduced in February, we went to parliament.

Every day, members of Congress would come in and tell them, "Support the bill."

We don't have the technology that this venue has, but we all have mobile phones.

So I said, "Let's get the congressman's phone number and send him an email."

we did it and it worked

(Applause) When the bill passed, I replied to the email saying, "Thank you for supporting the bill."

(Laughter) The president signed the bill into law, and it worked.

Now Malawi has raised the legal age of marriage from 15 to 18.

(Applause) I'm glad the ordinance passed, but let me tell you this: there are countries where 18 is the legal age to marry, and you hear women and girls screaming every day?

Girls' lives are wasted day by day.

Now is the time for leaders to keep their promises.

By keeping this promise, you keep the girls' problems in mind every time.

Our problem is a priority. We should know that there are women in this room. We are not just women, we are not girls.

there's more you can do

Malawi and other countries have another problem: existing laws only become laws when they are enforced.

Laws that have just been passed, or laws that were originally in other countries, need to be made public at the local level and at the level of their communities.

Every day we face tough challenges in our communities.

When those little girls know that the law will protect them, they will stand up to protect themselves, because they know there is a law to protect them.

And the other thing I want to say is this: It's great that girls and women have a voice, but we can do more.

Male advocates have to jump in there and join the movement.

this is a collaboration

Our demands are what every girl needs: quality education, above all, not to get married at 11.

Moreover, I believe that together we can transform the legal, cultural and political frameworks that deny the rights of girls.

I stand here today proclaiming that we can end the long history of child marriage.

Now is the time for millions of girls around the world to be able to say, "Marry when you want."

(Applause) Thank you. (Applause)

For over a decade, I've been researching how humans structure and visualize information.

I noticed an interesting change

For quite some time, humans believed there was a natural order in the world, which is the "great chain of existence," known in Latin as "Scala naturae," organized top-down, usually with God at the top, followed by angels, aristocrats, commoners, animals, and so on.

This idea is based on Aristotle's ontology, which divided everything we know about things into opposing categories, as you can see.

Interestingly, over time, this idea incorporated a branching tree structure, known as the Porphyrian Tree, which is the oldest known tree of knowledge.

The tree structure is such a powerful metaphor for conveying information that it has gradually become an important vehicle for picturing different bodies of knowledge.

The tree structure is also used to depict morality, and the well-known "tree of virtues" and "tree of vices" is a beautiful map of medieval Europe.

To represent kinship, a tree structure is also used to represent the various kinships.

This structure is also used to represent genealogy, and is probably the most famous prototype of the tree diagram.

Many of you have probably seen a family tree.

Many of you may have something drawn like this.

They even use tree structures to represent laws, representing various decrees and decisions made by kings and rulers.

And finally, we sometimes use this structure to represent a well-known scientific metaphor, namely, all living things known to man.

Ultimately, the tree structure became a powerful visual metaphor, because it embodies many aspects of human aspirations, such as order and balance, unity and symmetry.

Now, however, we are faced with a new, complex and intricate challenge that cannot be comprehended by a simple tree diagram.

So now, a new metaphor is emerging to replace tree diagrams in visualizing different bodies of knowledge.

This metaphor gives us a new perspective on understanding the world around us.

This new metaphor is the network metaphor.

The shift from trees to networks can be seen in many domains of knowledge.

We see this shift in how we understand the brain.

Once upon a time, we thought of the brain as a modular, centralized organ where specific areas were responsible for a range of behaviors and actions. But as we learned more about the brain, we began to see it as a grand symphony of hundreds and thousands of musical instruments.

This beautiful image was produced by the Blue Brain Project, and here you can see 10,000 neurons and 30 million connections.

Even this only describes a tenth of the mammalian neocortex.

And you can also see the shift in how we perceive the structure of knowledge.

This magnificent "Tree of Knowledge" or "Tree of Science" is attributed to the Spanish scholar Ramon Ruy.

Ruys was, in fact, the pioneer of the science-as-tree metaphor. We use this metaphor every day.

But what I consider to be the most beautiful tree of knowledge is the one drawn by Diderot and d'Alembert in a French encyclopedia in 1751.

A true foundation of the French Enlightenment, this gorgeous illustration has been adopted as a table of contents for an encyclopedia.

Each field of knowledge is depicted as a branch of a tree.

But knowledge is much more complicated

This shows the links between Wikipedia entries.

These two maps, and the others created on Wikipedia, are probably the largest rhizome-like structures ever created by humans, and when you look at them, you can see how human knowledge is intricately interdependent, like a network.

An even more interesting shift occurs in the depiction of human social connections.

This is a typical organizational chart

I'm sure you've all seen diagrams like this in your own company.

It's hierarchical, and you can usually start with the CEO at the top and work your way down to the individual employees at the bottom.

It's just that every human being is unique, and sometimes this rigid structure just doesn't work.

But the Internet radically changes this paradigm.

This is a great map of how Perl programmers work together online.

Perl is a popular programming language, and it shows how diverse programmers exchange files and collaborate on projects.

And what you're seeing here is a completely distributed process, no leader in the organization, it's a network.

An even more interesting shift is in terrorism.

A major challenge in understanding terrorism today is that we have to deal with small, distributed and independent organizations, with no leader to lead the whole process.

Let's see how we visualize

This diagram shows all the terrorists involved in the 2004 Madrid train bombing.

This diagram divides the network into three years, and each year is represented by a vertical plane.

The humans that make up the network are represented by year and connected by blue lines.

It's true that there are no specific leaders, but they are probably the most influential people in an organization, because they are the ones who know what's going on, what's going on, and what the organization's purpose is.

The shift from trees to networks is also reflected in the way we classify and organize species.

The diagram on the right is the only diagram that Darwin published in "The Origin of Species," which he called the "Tree of Life."

In fact, Darwin's surviving letter to the publisher explains in detail the importance of this diagram.

essential to the theory of evolution

But in recent years, scientists have made the discovery that there is a network of bacteria that pervades this tree of life, and that these bacteria connect previously disparate species into what scientists now call the "web of life" or "network of life."

And finally, the transformation is also reflected in how we think about ecosystems on Earth.

The simple predator-prey diagram we learned in school no longer works.

Here's a more accurate picture of the ecosystem.

It was created by Professor David Lavigne and depicts the interaction of cod with nearly 100 species off the coast of Newfoundland, Canada.

Now we are finally able to capture the complex and interdependent nature of the ecosystems that fill our planet.

These network metaphors are a recent emergence, but they're already taking many forms and forms, and are becoming dominant visual taxonomies.

it's becoming the grammar of a new language

This is one of the aspects that fascinates me.

This is 15 different typologies that I've collected over time, and it shows the incredible visual diversity of this new metaphor.

let me show you an example

The top row is called "radial convergence," a visualization model that has become very popular over the last five years.

On the top row, on the far left, the first project is the gene network, then the IP addresses, the network of PCs and servers, and then the network of Facebook friends.

Few themes are so disparate, but they use the same metaphor, the same visual model, to illustrate the infinite complexity of the subject.

Here are some examples of the ever-growing number of visual taxonomies in the networks that I collect.

Networks aren't just a scientific metaphor.

Researchers and scientists, as designers, attempt to portray many complex systems that have influenced traditional art disciplines such as painting and sculpture and many different artists in many ways.

And the aesthetic impact of networks is so great, so beautiful, that they've become a cultural meme, driving a new art movement that I've called "networkism."

There are many different influences within this art movement.

This is just one of many examples, but you can see how art is influenced by science.

On the left is an example of IP mapping, a computer-generated IP address, a diagram of a server or a PC.

The work on the right is "Transient Structures and Unstable Networks" by Sharon Molloy, in oil and enamel on canvas.

These are also Sharon Molloy's works, and they're very beautiful, intricate paintings.

I'd like to show you another interesting example of the intersection of science and art.

The left is "Operation Smile"

This is a computer-generated diagram from SNS.

On the right is "Field 4" by Emma McNelly, drawn entirely in graphite on paper.

Emma McNally is one of the leaders of this art movement, and she paints these striking imaginary landscapes, and you can tell they're inspired by traditional network visualizations.

But networkism is not just a two-dimensional movement.

This is one of my favorite projects in this new movement.

The title says it all: "Like a Droplet on a Spider's Thread: Galaxies Forming Along the Thread."

I feel tremendous power in this project.

The author, Tomas Serracino, used this vast space to create a gigantic installation made entirely of elastic ropes.

As you move through this space, you bounce the ropes, and the whole network moves, just like a real organic network.

This is an example of taking networkism to new heights.

It's a work by Japanese artist Chiharu Shiota, and it's titled "In Silence."

Like Serracino, she fills her rooms with elastic ropes and dense networks of black yarn and thread, and in many of her works, as you can see, sometimes she incorporates objects, sometimes even people.

But networks aren't just new trends, they can't be dismissed so easily.

Networks embody concepts like decentralization, interconnection, and interdependence.

This new way of thinking is essential to solving many of the complex problems facing us today, from deciphering our brains to understanding the vastness of the universe.

On the left is an image of a neural network in a mouse, which at this scale is very similar to that in humans.

The right is "Millennium Simulation"

This is the largest and most realistic simulation of the creation of the universe.

It can reconstruct the history of 20 million galaxies, outputting about 25 terabytes of data.

Coincidence or not, this parallel between the very small scale of knowledge in the brain and the very large scale of knowledge in the universe is striking and intriguing to me.

Because, as Bruce Mau said, "When everything is interconnected, everything matters, good or bad."

Thank you very much

(applause)

At a bar in downtown Berkeley in the heat of the summer, it was past business hours, and my friend Polly, a fellow bartender, and I.

I always had a drink after the store was over, but that night was different.

"I got pregnant

I haven't figured out what to do yet," I told Polly.

The answer came back without hesitation, "I've fallen before."

She was the first to tell me that she had had an abortion.

I was only a few months out of college at the time, and not long after I had a new boyfriend, I found out I was pregnant.

I thought about what to do, but to be honest, I didn't know at all how to make a decision.

I don't know what the right decision is

I was worried that if I let it go, I would regret it later.

Coming of age on a Southern California beach, I grew up in the midst of the abortion debate.

I was born in a trailer on the third anniversary of the Rowe v. Wade decision.

All the neighbors are surfers and Christians

Believe in God, care for the less fortunate, protect the clean sea

everyone was anti-abortion

As a child, I found abortion to be so sad that I decided that I would never do it.

But I ended up having an abortion

I stepped into an unknown world

But I'm so grateful to Polly that day I'm not the only one She made me realize it's okay to talk about abortion

Abortion is common

According to the Goodmarker Institute, one in three American women will have an abortion at least once in their lifetime.

But in America, over the last few decades, there's been little debate over whether abortion is about fetal life or maternal choice.

It's a highly politicized and polarized topic.

But while the abortion debate is heating up, it's rare for us women, whether fellow women or human beings, to discuss the abortion that's happening to us.

there is a gap

In the gap between what is happening in politics and real life, there is a question of friend or foe.

The current situation is that bloodthirsty thinking is prevalent.

It's not just about abortion

There are so many topics that are important but should not be touched.

That's why it's my life's mission to transform the arena of battle into a place of discussion.

There are two main ways to start

One is to listen carefully

The other is to tell the story

15 years ago, I co-founded an organization called "Exhale" to listen to people who have had abortions.

The first thing I did was create a telephone helpline, and I'm going to give emotional support to the person who calls, whether it's a woman or a man.

No criticism, no politics, these services didn't really exist at the time, seriously.

We needed a new system that would allow us to receive all the content of telephone consultations received here.

For example, the story of a feminist who regrets having an abortion.

The story of a Catholic who says he's glad he had an abortion

I've had personal experiences that I can't categorize.

You shouldn't have to choose between pro-abortion and anti-abortion here.

Rather, I wanted to let people know that the whole world is on their side, because it's a very private experience.

That's why I advocated "emphasis on dialogue."

This way of thinking is not just about abortion, but also about difficult problems that people around the world have struggled with for a long time, like immigration, religious acceptance, and violence against women.

We also deal with very personal issues that only you, your family, your closest friends will understand.

Someone with a terminal illness, someone whose mother has just died, someone with a disabled child who can't talk to anyone.

Listening and speaking are the most important characteristics of "emphasis on dialogue"

listening and talking

It sounds good

Sounds easy, don't you think anyone can do it?

It's a big mistake. It's very difficult.

"Dialogue-focused" is difficult because it touches on issues that everyone struggles with and issues that no one wants to talk about.

How wonderful it would be if I could say that if I chose "emphasis on dialogue," I could break through the status quo in a funny way, or that, while listening to and talking in a place like a flower garden, there would be moments when the scales of my eyes would fill my eyes with emotion.

I'd like to say that there's a feminist welcome party waiting for you, or a place waiting for people to stand by your side in hard times, like friends you haven't seen in a long time.

If you feel that no one cares about you after all, you may end up feeling hurt or exhausted.

Also, when we really listen to someone's story, it's like listening to a story that requires us to change our own perspective.

There's no right time, no right place to start an awkward conversation

There is absolutely no such thing as everyone having the same background, the same point of view, and the same opinion about the same thing.

So let's start with listening, how can you become a better listener?

There are many ways to do this, but I'm going to show you just two.

One is to ask open-ended questions

Ask yourself or someone you know, "How do you feel now?"

"What was that like?"

"What do you want to do now?"

Another trick to good listening is to speak in the other person's language.

If someone is talking about a personal experience, take their word for it.

If someone is talking about their abortion experience and they say "baby," use "baby."

When you say "fetus," use "fetus."

If someone says they're neither male nor female, call them that.

If someone says they look like a man but they're a woman

Let's treat her like a good woman

By using the words of the person who's talking about you, you're telling them that you're interested in who they are and what they're going through.

It's the same thing I expect from others when I'm in a position to speak.

I will never forget what happened at one meeting in Exhale, about a young volunteer who often gets calls from Christian women who talk about God.

Some volunteers are of faith, but she wasn't.

It felt a little weird at first to talk about God on the phone.

Those who want to get used to it

At home, he stood in front of the mirror and said "God".

"God"

"God"

"God"

"God"

"God"

"God"

I said it over and over again until I felt comfortable saying it.

Using the word God didn't make me a Christian, but it made me much better at listening to Christian women.

Now, another "dialogue-focused" activity is sharing your story, but there's a problem that can arise when you tell others about yourself, and that's that the listener might make a different decision when put in the same situation as you.

For example, while talking to someone about abortion, the listener may have decided to have a baby in the same situation.

I might have put you up for adoption

You may or may not have told your partner or parents

The fact that you felt sadness and loss may have given that person peace of mind and confidence.

Just this is good

Empathy is born the moment you imagine yourself in someone else's shoes.

It's not like we have to reach the same ending

“Dialogue focused” does not seek agreement or uniformity

Create a culture and society that values ​​the individuality of each person

We value our flaws and shortcomings as part of our humanity.

This way of thinking allows us to see each other's differences with respect rather than fear.

It creates the empathy we need to move out of ways that hurt each other.

Notoriety, insults, prejudice, discrimination, and oppression all hurt people.

"Focus on dialogue" spreads easily, and in fact, the more you do it, the more it spreads.

Last year I got pregnant again

I was looking forward to giving birth this time.

During my pregnancy, I was asked, "How do you feel?" more times than ever before.

(Laughter) No matter what I said, whether it was the best, the excitement, the fear, or the panic, someone always said something like, "So did I."

It was the best

It was a welcome to a new world that was very different from the way I talk about my mixed feelings about my abortion.

Because "Dialogue Focused" is real stories about real people, it changes the way abortion and many other political and stigmatized issues are understood and addressed.

Subjects range from sexuality to mental health to poverty to incarceration.

You can't just put black and white on each person's experience, because each person can be wildly different.

"Dialogue-focused" focuses on the human experience to respect and support the person in any case.

thank you

(applause)

What if you could heal your wounds faster by taking medicine or getting a vaccine, just like you cure a cold?

Today, if you have surgery or have an accident, you're hospitalized for weeks, usually with scars and the painful side effect of not being able to regenerate healthy, intact organs.

I'm working on creating substances that encourage tissue regeneration in the immune system.

Just as vaccines encourage the body to fight disease, it should be able to trigger the immune system to regenerate tissues and heal wounds faster.

It might seem magical to suddenly regenerate a body part, but there are creatures that can do it.

Some lizards can regenerate their tails, salamanders can completely regenerate their arms, and even humans can regenerate after losing more than half of their liver.

To make this magic more real, I'm researching how the body heals wounds and regenerates tissue under command from the immune system.

From a scraped knee to an annoying sinus infection, your immune system protects you from danger.

I'm an immunologist, and using my knowledge of the immune system, I've been able to identify key factors in healing cuts and bruises.

While looking at the biomaterial that we were testing for its ability to regenerate muscle, our team noticed that after wounds were repaired with this biomaterial, immune cells were abundant in the material and the surrounding muscle.

So, in this case, instead of directing immune cells toward pathogens to fight bacteria, they were directing toward wounds.

What we found was that certain immune cells -- helper T cells -- were present inside the implanted biomaterials, and they were essential for wound healing.

It's like when you broke a pencil when you were a kid and you tried to tape it back together.

If you don't have these helper T cells, instead of healthy muscle, you'll have fat cells inside your muscles, and if you have fat inside, your muscles will be weak.

Instead of creating these scars, the immune system is able to regenerate the body and restore it to the state it was in before the injury.

The substance I'm working on is something that alters the immune system's response to encourage it to make new cells.

We know that whenever something is implanted in the body, the immune system reacts.

It's the same with pacemakers, insulin pumps, and the substances engineers use to make new cells.

When you implant a biological material, or scaffold, to make new cells, the immune system creates tiny spaces made up of cells and proteins that alter the function of stem cells.

Whether the weather changes our daily behavior, whether it's going for a run outside or binge-watching series on Netflix at home, the immune environment of the implanted scaffolding can also change how stem cells grow and develop.

If you send the wrong signal -- like the Netflix signal -- you create fat cells, not muscle.

These scaffolds can be made from a variety of materials, from plastics to naturally occurring materials, including nanofibers of varying thicknesses, porous sponges, and gels of varying stiffness.

We can make substances that give different signals over time We can make substances that give different signals over time

So by giving them the right setting, cues, and props, you can create a Broadway show with cells, and these can vary from organization to organization, much like a producer would change sets for "Les Miserables" and "Little Shop of Horrors."

I mimic the way the body responds to injury and encourages regeneration by combining specific signals.

In the future, we might have band-aids that don't leave scars, or muscle fillers that can change shape, or vaccines that heal wounds.

When I wake up tomorrow, I won't be healed like Wolverine.

Next Tuesday will still be impossible

But if we combine these advances with research into the immune system, which builds tissue and heals wounds, we may see products on the market that work with the body's defenses to help regenerate itself.

thank you

(applause)

On the way here, I had an interesting conversation with the person sitting next to me on the plane.

He said, "There seems to be a shortage of jobs in America. They're making jobs like this: cat psychologist, charismatic dog trainer, tornado chaser."

Shortly after that, he asked me, "So what's your occupation?"

"Something like a peacebuilder?" I replied.

(Laughter) Every day, I work to raise the voices of women and shine a light on their real-life experiences in the peace process and conflict resolution. Through my work, I've learned that the only way to ensure women's participation globally is to bring back religion.

this is a very serious issue for me

As a young Muslim woman, I am proud of my faith.

It gives me the strength and faith to act every day.

That's why I'm here - in front of you.

But I can't overlook the damage done in the name of religion, not just in my own religion, but in the major religions of the world.

The misrepresentation, misuse, and falsification of scriptures affect our societies, cultural norms, legal systems, and our daily lives in ways that we don't even notice.

My parents immigrated to Canada from Libya, North Africa, in the early 1980s, and I'm the middle of 11 children.

yes 11 people

But growing up, I saw my parents, both religiously devout and devout believers, praying and praising the grace that God had given them, and I mean, of course, my other children.

they were fair people

Through my cultural eyes, I am not subject to religion

I was treated equally.

I was never taught that God discriminates by gender.

My worldview was shaped by my parents who saw God as a merciful and beneficial friend and supporter.

Now, of course, the environment I grew up in had more benefits than that.

Being one of 11 siblings means Diplomacy 101. (Laughter) People still ask me which school I graduated from, "Did you graduate from the Kennedy School of Government?"

Then he looks at them and says, "No, I graduated from the Muravit School of International Relations."

It's extremely exclusive. If you want to go to school, you'll need my mother's permission.

Luckily my mother is here

But being one of 11 children with 10 siblings can teach you a lot about power structures and cooperation.

You'll also learn to concentrate - you'll speak faster and less often, because you'll always be interrupted.

Learn the importance of sending messages

If you want the answer, you have to ask the right question.To keep the peace, you have to say no.

But the most important lesson I learned growing up was to "get to the table."

When my mother's favorite lamp broke and I was trying to find out who broke it and how, I had to be there to protect myself.

Of course, I'm not saying that from my own experience.

In 2005, when I was 15, I graduated from high school and moved from Saskatoon, Canada, to my parents' hometown of Zawiya, Libya, a very traditional city.

I'll tell you, I had only been to Libya on vacation before, and for me, a seven-year-old girl, it was magical.

I went to the beach while eating ice cream and had a great time with my relatives.

It turns out that this time it's not the same for a 15-year-old young woman.

I quickly became aware of the cultural and religious aspects.

The word "haram" means "religiously forbidden," and "ive" means "culturally unsuitable," and the words are interchanged lightly, as if the two words mean the same thing and carry the same weight.

I found myself questioning my role and my ambitions in conversation after conversation with classmates, colleagues, professors, friends and even relatives.

Even the foundation my parents had given me was shaken, and I found myself questioning the role of women in the faith.

At the Muravit School of International Relations, discussion is very important. The number one rule there is to do research.

Khadijah financed the early days of the Islamic movement.

without her we wouldn't be here

So why didn't you try to learn about her?

Why didn't you try to learn about these women?

Why were women being displaced from their position of leading the teachings of our faith?

If we are equal in God's eyes, why are we not equal in human eyes?

The lessons I learned as a child come back to me

The people who make the decisions, the people who get to manage the message, are at the table, and unfortunately in all of the religions of the world, those people aren't women.

Religious institutions are dominated by men and run by male leaders, and until we change the system, they will create similar policies. Women's full economic and social participation cannot be realistically expected.

our religious foundations are crumbling

My mother said, "You can't build a straight house on a crooked foundation."

When the 2011 Libyan revolution broke out, my family was on the front lines.

In the midst of that war, something wonderful happened, and although it was only temporary, it was almost a cultural shift.

For the first time, I felt not only accepted, but encouraged by what I was doing.

it was needed

Myself and the other women were able to sit at the table.

We're not just holding the outstretched hand, we're not the go-between

participate in decision making

It was an irreplaceable presence to share information with each other.

I wanted this change to last forever, and I thought it should.

I know it's not that easy

It took only a few weeks for the women I worked with at the time to return to their roles.

That's how they got a lot of support for their views.

First, I focused on strengthening women's economic and political empowerment.

I thought it would lead to cultural and social change.

Not really a lot, but a little bit.

I decided to use their defense as an attack and began quoting and emphasizing Islamic scriptures as well as theirs.

In 2012 and 2013, my organization led the largest and most widespread movement in Libya.

We entered homes, schools, universities and even mosques.

We've spoken directly to 50,000 people and reached hundreds of thousands more through billboards, television and radio commercials, and posters.

You wonder how a women's rights organization could possibly have made it possible in a community that originally opposed our very existence.

used the scriptures

We used Quranic verses and prophetic sayings, like the Hadith saying, "Your best is best for your family."

"Don't let thy brother oppress others"

Friday prayers, conducted by local community imams, were the first to promote women's rights.

We also discussed taboo subjects such as domestic violence.

policy changed

In one community, the Universal Declaration of Human Rights, which was opposed because it wasn't written by a religious scholar, I went so far as to show that the same principles as the Declaration are in our scriptures.

In fact, the United Nations is just copying our doctrine.

By changing the message, we can have a new story to advance the rights of women in Libya.

This movement is now spreading to other countries, and it's really not easy.

Liberals will call us the worst conservatives using religion.

Conservatives will tell you all sorts of things.

I've heard all sorts of things, "Your parents must be ashamed of you." No, they're my two biggest fans.

And although I still firmly believe that women's rights and religion are not mutually exclusive.

we need to sit at the table

We must not give up our position because our silence allows for the relentless persecution and abuse of women around the world.

By declaring that we will fight for women's rights and fighting extremism with bombs and armed conflicts, we will completely undermine local social activity.

Confronting distorted religious messages is not easy.

Although everyone will be insulted, ridiculed and threatened alike.

you need to do it

We have no choice but to take back the message of human rights and the tenets of our religion, for us, not for the women in our families, not for the women in this room, not even for the other women, but for the society that women's participation will change, the society that women's participation will change.

It's the only way we can do it. Our only choice is to sit at a table and stay there.

thank you

(applause)

One of my childhood memories is that I tried to wake up one of my family members, but he didn't wake up.

At a young age, I didn't know why, but as I grew older, I realized that there was drug addiction in the family, and later cocaine addiction.

I've been thinking about this a lot lately, partly because it's been exactly 100 years since drugs became illegal in the United Kingdom and the United States.

It's been 100 years since I made the really big decision to punish and torment this addict, thinking it would motivate him to stop and had a deterrent effect.

A few years ago, I was trying to figure out if there was anything I could do to help people I care about who were struggling with drug addiction.

I realized that there were a lot of very fundamental but unanswered questions, like what is the real cause of addiction?

Why do we continue with ineffective remedies? Is there a better solution than the current one?

So I did some research, but I couldn't find the answer I was looking for, so I decided to meet people around the world, drug people and researchers, to see if there was anything I could learn from their stories.

I never thought I'd end up traveling 30,000 miles, meeting so many different people, Brooklyn in Brownsville, from a transgender who sells meth to a scientist who studies whether mongooses enjoy being given psychedelics -- although it turns out that mongooses actually like psychedelics under certain conditions -- and even Portugal, the only country to have decriminalized all drugs, from marijuana to meth.

Eventually, I realized something that completely blew my mind: most of what we know about addiction is wrong. If we take the new evidence about addiction seriously, there will be much more to change than drug policy.

But first, let's check what we think is common sense.

Start with the middle row

Let's say you all did heroin three times a day for 20 days.

There are some people who look like they want to try it

(Laughter) Don't worry, just imagine.

Have you imagined it?

What will happen?

I've been told for the last 100 years that this is what happens.

Heroin contains an addictive substance, and if you keep taking it for a while, your body will become dependent on it and physiologically need it, and after 20 days, you're all addicted to heroin.

I thought so too

But it wasn't until I heard the following story that I realized something was wrong with this theory.

If I left this room and had an accident and broke my hip, I'd be taken to the hospital and given a lot of diacetylmorphine.

This drug is heroin

It's way better heroin than you can buy on the street side, and drug dealers sell it mixed.

The actual heroin content is very small, whereas doctor-supplied heroin is chemically pure, and you're given it for quite some time, right?

there are a lot of people here

You may be overdosing on heroin without realizing it, and it's happening to everyone in the world watching this talk.

If the common sense of addiction that we think is correct,

What happens to people who ingest various addictive substances through medical treatment? It's supposed to be a drug addiction, which has been studied quite carefully.

nothing actually happens if your grandmother has hip surgery

(Laughter) When I heard this, I thought it was pretty funny, because it's the complete opposite of what I've been hearing and what I've heard so far, and I've changed my mind when I met Bruce Alexander, a psychology professor in Vancouver.

You've done a great experiment, and it's helped me to understand a lot more about this subject.

It actually came about as a result of a series of experiments that were conducted long ago in the 20th century. It's a very simple experiment.

Get a mouse, put it in a cage and place two water bottles.

One was just water, the other was water mixed with heroin or cocaine, and the rats would choose the drugged water.

It almost certainly kills itself. You guessed it, right? We all imagine something like this

But in the '70s, when the professor looked into this experiment, he realized something, "There's nothing else in the cage with the rats in it.

There's nothing to do in this place but drag

Let's change the environment a little bit." He built another cage and called it "Rat Paradise."

It's like heaven for rats.

Lots of cheese and colored balls, lots of tunnels

The decisive thing is that I have a lot of friends, so I can mate a lot.

Place two water bottles like normal water and drug-filled water there.

And here's where something really interesting happened: drugged water was unpopular in this "rat's paradise."

almost never drank

Zero impulsive drinking mice

Zero overdose

They overdosed by almost 100% in cages in solitary confinement, compared to 0% in cages where rats live happily social lives.

Seeing this result, Professor Alexander initially said, "Maybe it's just rats, not as much as we'd like.

It's very different from humans,' I thought. But luckily, there were also experiments on humans, using exactly the same principles, at exactly the same time.

what is the vietnam war

In Vietnam, 20 percent of American soldiers used heroin heavily, and if you look at the news reports at the time, people were very worried about this, and they said, "Oh my God, after the war, there will be hundreds of thousands of junkies on the streets of America."

Soldiers who took heroin heavily were followed up.

The Journal of General Psychiatry did a very thorough study. So what happened? Soldiers didn't need rehab, they didn't have withdrawal symptoms.

95% stopped taking the drug

If the general theory about drug addiction is correct, then this result is strange.

What if addictive substances weren't the problem? start to think

What if the root cause of addiction lies in the cage?

What if addiction is an adaptive response to the environment?

Professor Peter Cohen, from the Netherlands, said on the subject that calling it an "addiction" in the first place is wrong.

Shouldn't we call it "connection"?

Humans are animals that naturally crave empathy and connection with others, so healthy, happy humans build relationships through touch.

It could be gambling, it could be porn, it could be cocaine, it could be marijuana. It's human nature to want to connect.

Humans are like that

At first, this didn't make sense to me. What helped me understand it was, for example, the bottle of water sitting at my desk.

There are a lot of people here, and everyone has a water bottle.

Take a moment away from drugs and the war on drugs

It wouldn't be weird if all the water bottles here were vodka, and it's perfectly legal, right?

It wouldn't be strange if everyone in the room was drinking, maybe they'll really drink after this (laughs), but that's not the case.

People in the audience can afford to pay a hefty admission fee to come to a TED talk, and my guess is that they can afford to drink vodka for half a year starting tomorrow.

But it won't ruin your life

You shouldn't feel that way, not because someone is stopping you.

I think it's because I have friends and relationships that I want to cherish.

I love my job and there are people I want to cherish

because they have healthy relationships

All the evidence has led me to believe that the biggest cause of addiction is the pain of living every day.

this has very serious implications

The most obvious one is the war on drugs.

In Arizona, I met a group of female inmates who were forced to dig graves while wearing T-shirts that read, "I'm an ex-drug addict," and being jeered at by passers-by.

Now, the story of the prisoners is a particularly extreme example, but almost everywhere in the world, people with addictions are treated to some degree in the same way.

punished, scorned, stigmatized

It's a system that creates barriers that keep people from reconnecting.

An excellent Canadian doctor, Dr. Gabeau Mathet, said to me, "If you want to create a system that makes drug addiction worse, create a system like this."

I went to find out why it was successful.

In 2000, Portugal had one of the worst drug problems in Europe.

1% of the population is addicted to heroin, which is pretty crazy.

We impose punishment, and addiction is shameful and despised, etc. But the problem of drug addiction is getting worse every year.

We can't go on like this, we've got more and more heroin addicts all over the country Get together scientists and doctors and form a committee

I decided to find a real solution, and I formed a committee led by a brilliant person named Dr. Hoao Grao.

After examining a body of new evidence, I came to the conclusion that we would decriminalize all drugs, from marijuana to methamphetamine.

This way of dealing with drugs is very different from the way we think in the United States and the United Kingdom.

We have welfare facilities where addicts live, and we use psychotherapy, which is fine.

The biggest action in Portugal was the exact opposite of ours: mega-scale programs that gave addicts job opportunities and microloans for addicts who wanted to start their own businesses.

For example, a person who used to be a mechanic

Once he's recovered enough to work, we'll introduce him to a repair shop and offer him half of his wages if he's hired for a year.

The goal is for every addict in the country to have a reason to wake up in the morning and get out of bed, when I spoke to someone with an addiction in Portugal.

I've heard people say that they've rediscovered their purpose in life, that they've rediscovered their relationships and connections in the wider community, and it's been 15 years since this experiment began.

The results are in. Injecting drug use in Portugal has dropped by a whopping 50 percent, according to the British Criminological Society.

Substantial reduction in drug overdoses. Substantial reduction in HIV among patients.

Across all studies, there was a significant reduction in drug addiction.

One of the signs of success in Portugal is that almost no one wants to go back to the old system.

It sounds very political when you say it like that.

It's a significant addition to the amount of research I've been involved in, because in our modern society, we're all feeling more and more all kinds of addictions.

Weakness, everything from smartphones to shopping addiction to overeating.

I'm sure you've been told you can't bring your smartphone in, but quite a few of these people already looked like drug addicts who were told they couldn't get in touch with a familiar dealer for the next hour or two.

But recently, I've begun to think more and more that what modern people call connections or what they think of as connections are, so to speak, analogues.

Anyone who's been through a tough time in their life knows this.

It's not my Twitter followers that stay by my side

It's not your Facebook friends that get you back on your feet

They're supposed to be real friends who know each other face-to-face and have deep personal relationships.

This study looked at the average American and looked at how many friends they thought they could count on during critical moments in their lives.

This number has been steadily decreasing since the 1950s.

On the other hand, the per capita square footage of American homes is steadily increasing, which seems to symbolize the priorities of human society and culture.

More floor space, fewer friends, sacrificing relationships for material greed, and the result is the loneliest society in human history.

But as Dr. Bruce Alexander of Rat Paradise puts it, "When it comes to addiction, people tend to focus on individual rehabilitation, which is fine, but more attention should be paid to society as a whole.

Humans have hit the wrong button, not only on an individual level, but collectively as well. The society we have created has made life far from a 'rat paradise' for many, and a lonely cage with nothing else."

To be honest, I originally started researching addiction because I wanted to know this.

It wasn't politically or socially motivated.

It all started with a desire to help important people.

But after a long journey of research and learning all of this, I was reminded of the people around me who have addictions -- and honestly, it hurts when someone you care about has an addiction.

I'm sure you've been angry many times, and I think one of the reasons why I feel so strongly about this issue is that it's a problem we all have.

"I wish someone would just stop me"

And reality TV also dictates how you treat the addicts around you. Did you know that show called "Intervention," when reality TV defined your life?

That's the subject of another TED Talk -- this "Intervention"

The concept is very simple: find someone with addiction, bring all their family and friends together.

It's about addiction, threatening to cut ties if you don't wash your feet.

I'll put it on the balance.It's a setting that if you don't do what the program wants, your relationship will be broken.

I began to understand why this approach didn't work, and I began to believe that I was applying the logic of the War on Drugs to my personal life.

How can we do it like the Portuguese?

I wouldn't call the methods I've tried so far consistent or easy, but I would say to the people around me with addiction, "I want to be more involved with you, whether you're doing something or not, and I care about you.

Whether you're sober or not, you're still important to me, and when you need me, I'll come to you and be with you, because I don't want my loved ones to be alone, and I don't want them to feel lonely."

The core message of this message, "You're not alone, you're loved," is that we should treat addicts with this awareness on all dimensions: socially, politically, and personally.

Was it a mistake to fight drugs for 100 years?

Maybe we should have dealt with love instead of fighting, because the opposite of addiction is not sobriety.

The opposite of addiction is connection.

thank you

(applause)

The three older people, Genie, Will and Adina, have a special relationship.

We see our bond with each other as a shield that protects us from the loneliness of old age.

I first met them in a nursing home in Los Angeles, where I was shooting for three years.

One night, I saw them walking towards the gate, and I immediately felt that we had something in common.

I didn't know the details of the love triangle between the three of them, but I had an instinctive desire to know who they were.

I asked the nurse the next day, and she said, "Oh, you're talking about that love triangle."

(Laughter) I was intrigued.

(Laughter) Every day, coffee and donut shops, bus stops and street corners, the three of them hang out.

I soon learned that they were going out to find comfort and meaning.

The three were trying to fight isolation by locating themselves in the city.

But no one looked at me as I walked arm in arm

We tend to think that as we get older, we lose the desires of our youth.

I was a documentary photographer in my teens when I met them, and their behavior was a mirror reflection of my own fear of isolation and desire for intimacy.

Being inconspicuous was something I struggled with as a kid, but as a documentary photographer working closely with the scene, it has become my greatest strength, because I can empathize with it and turn it off.

Walking through the streets of Hollywood, home to screenwriters, actors and directors, the three of them, like the rest of the seniors, remained in the dark.

I asked myself, "How come no one else notices them?

Why am I the only one who notices? "and

A few years later, when I started doing this work, I realized that a lot of people felt uncomfortable with this story.

Maybe it's because these three people don't have traditional ideas about love, about relationships, about partnerships.

The three were inconspicuous in public and shunned by their peers.

While searching for a place to belong somewhere, we could only find a place within each other.

i was looking for a place

Now the camera is the catalyst that makes every place my home.

More than challenging the socio-cultural rules of older adults, their actions reveal a fear of isolation.

At the end of the day, each of the three will return to their own nursing home.

Behind their loneliness lies a longing for community and fellowship.

Each of the three wants a mate, but meeting that need involves compromise, because Will can't settle for just one woman.

Jeannie told me in her room, "Sharing Will is a pain.

Relationships are personal

It should be two instead of three."

My creative process, in a nutshell, is to become one with the object I'm documenting, spending years with it, observing it, creating a safe environment, becoming like the air.

I met them when I was 17 and followed them for four years.

In the midst of stagnant social development, old age is strikingly similar to adolescence, because both are periods of identity confusion.

While I sympathize with Genie and Adina,

As I watched Will, I became aware of conflicting thoughts within myself.

The common divide we all have is the divide between what we crave and the reality we find ourselves in.

Before I shot this series, I was in love with two people who knew each other, and I was the target of competition.

But I also know how it feels to be at the bottom of a love triangle like Genie and Adina.

Looking through the viewfinder at the three of them, it became clear that regardless of our age, we all seek to fill the so-called void in our hearts through others.

Perhaps what makes Genie, Will and Adina's story so uncomfortable is that it reminds us that even at the end of our lives, we still can't reach the dreams we envisioned.

thank you

(applause)

I love trees, and I'm lucky enough to live near a beautiful botanical garden, and I usually go there on Sundays with my wife and four-year-old, where we climb trees and play hide-and-seek.

The second school I went to also had a big tree, I think it was the largest in England, a magnificent tulip tree, with wonderful shrubs and vegetation all around it, and it was near the ground.

One day, my classmates grabbed me, took me into a bush, stripped me of my clothes, and assaulted me.

Afterwards, when I returned to the school building, I felt defiled and betrayed, and I felt particularly helpless.

Thirty years later, I was sitting on a plane next to a woman named Veronica from Chile who was on a human rights tour, and she told me about her experience of torture.

This experience taught me a lot. In the past, human rights issues used to be like a fire on the other side of the river, which I sometimes think back to.

In 1985, I got a call from Bono, and you know he's a great singer, but he's also a great hustler. I can't walk away like I used to

So that's why I went on the Amnesty Tour and took over Bono's job in '88, although I wanted to take over that push.

It's been hard. Well, Youssou N'Dour, Sting, Tracy Chapman, Springsteen are on board, and the tour has been a great experience.

And again, I learned a valuable lesson. This was my first experience, meeting so many people in so many different countries, and seeing this human rights issue really take shape.

But what surprised me, though I never imagined it, was that the experiences of those who suffered in this way, their stories, were denied and buried and forgotten.

But it seems that if the facts are left in the form of videos and photographs, it will be quite difficult for even those with power to seal the story.

Reebok set up the fund after the "Human Rights Now" tour, and at the time, there was a decision they had been making for years to create a department that could give cameras to human rights activists.

But it didn't turn out so well, and then when the Rodney King incident happened, people finally realized that if you had a camera in the right place at the right time, and it's going to hurt some people, you could do something.

The WITNESS movement started in 1992, and since then cameras have been donated to more than 60 countries.

I've done campaigns with activist groups to help tell their stories, and I'm going to show you the latest campaigns in a moment. This is the story of Uganda. Yesterday we heard great stories about Uganda.

About 1.5 million people are internally displaced in northern Uganda. They are not refugees who have fled to another country, but they have been displaced by the civil war that has been going on for almost 20 years.

And 20,000 children have been kidnapped as child soldiers, and the International Criminal Court is chasing five of the leaders of the rebel army, whose name is

The name doesn't pop up, I think it was "God's Resistance Army," but the government isn't without its blemishes.

(music) Woman: Living in a facility isn't easy, every day is hard

But things are still terrible in my hometown.

I have no choice but to stay here

"Between Two Bombardments: Torture and Expulsion in Northern Uganda" Man: Abused by Kony's resistance forces when he was home

The facility was safe at first.

Gradually, the government soldiers began to treat everyone roughly.

(singing) Jennifer: 'Cause the soldiers were looking for us as they walked

Me and Evelyn hid behind my mother's back

Evelynn: The soldier told us to sit down.

Then another soldier came

Jennifer: A man came and started taking my clothes off.

The other took Evelyn aside

The man who assaulted me is now going to rape Evelyn.

The man who raped Evelyn came to assault me ​​this time.

Man: A soldier with such a long club punched me to make a confession.

Every time I hit him, he yelled, "Confess it!"

Woman: Claim I'm lying

At that moment, fire a shot and shoot my finger off

I ran away...with the intention of leaving me dead

(music) Uganda ratified the Convention against Torture in 1986

Torture is defined as the deliberate infliction of severe physical or mental pain by a person acting in an official capacity for the purpose of obtaining information or confessions and to punish, intimidate or coerce.

Torture is not necessarily a distant world

In my country, there have been photographs of British soldiers beating Iraqi youths, Abu Ghraib and Guantanamo.

One day on the way to Newark Airport, my driver told me that at 4 a.m., he was taken from his home in Queens to the Midwest, where he was interrogated and tortured, and that he was released four weeks later, because he was from the Middle East and had the same name as one of the 9/11 pilots.

And when you look around the world, like the polar ice caps melting, human rights issues have been fought for hundreds of years in some cases, but they wear out very quickly, and I think that's what we need to look at and act on.

Our partners, in conjunction with the Van Jones project, have produced a video that has successfully reimagined the juvenile corrections system in California, and I believe that we now have a much more humane way of incarcerating young people than in the past.

Like Morales, if you ask me, Excuse me, Mr. Gabriel, would you mind if I delay your execution for a moment?

No problem at all Please take it easy

But whoever that person is, no matter what they do, these things are cruel and extraordinary punishments.

Now, WITNESS has been trying to arm the brave people who risk their lives around the world with cameras.

(Thunder)

(music) Say the jury is dishonest

you can say people are lying

Newspapers can be said to be unreliable

But you can't say what you just saw didn't happen.

Support the movement to distribute cameras around the world

Let's take a video Let's expose the injustice Let's reveal the truth Let's expose the absurdity of the world So maybe we can help fix the injustice WITNESS

The video you just watched agrees with WITNESS

Recorded by a human rights group (Applause)

WITNESS was born out of a technological breakthrough -- a small, portable DV camera -- in a way, enabled the birth of this movement -- and we've been trying to bring computers to the world.

To effectively communicate and campaign. But today, the cameras in our cell phones offer us incredible possibilities. They're cheap, accessible, and they're all over the world.

It's a world where when these kinds of disasters happen, you can transmit it and have someone look at it and listen to it, and we all know it's possible. Like if you have a huge website, like Google Earth, you can fly over it and see what's going on in different places. If we aim for this kind of world, I think we can change many things. New movements are like trees.

Seek the light and grow strong and big Thank you very much

It's going to be a marathon-long talk, so I'm going to break it down into three parts.

I'd also like to show you some of the simplest designs and the more advanced interfaces that are interactive, if possible.

In part two, I'm going to introduce you to new technologies, and that's definitely where new media is headed.

I will also briefly talk about

Part 3 is what we've done so far, and it's an example that best illustrates what it means to have fun.

There's one thing that you and I both believe quite a bit: that in the future, things like TV screens will become e-books.

not necessarily dirty

This slide is of a television screen, and it's preprocessed to fit the television, so it's pretty clean.

Why is this happening?

Because of the sudden change in usage environment, when I sit in front of my computer or in front of a teletext system and look at the screen, I'm kind of disappointed.

Televisions are designed to be viewed from a distance eight times the diagonal length.

It doesn't matter if it's 13 inches or 19 inches, but multiply it by eight.

But things have changed, and now we're seeing screens at a distance that developers don't even think about: shadow masks and scan lines are very close.

But it's easy to change. There is a solution.

I want to talk a little bit about display technology.

how to enter information

We often talk about fingers, but I'm a touch sensor type

i love the display

Some people call it hi-tech high-touch.

Of course, it's a very important means of input, but for some people, the resolution of their fingers is too low for typing on a display.

But it's actually pretty high resolution. It only requires two movements. You can touch the screen, turn your finger a little bit, and the cursor will move fairly accurately.

If you see this very low-resolution device with a diode on the end in a store, you might think it's better than nothing.

It's a misconception. Fingers have a very high resolution.

Are there other features?

You don't have to hold anything. You don't realize how important this is, but when you use your fingers, you don't have to hold them. Remember the Macintosh mouse.

And then it stops working. It's not a long time, but I have to find the mouse, and when I find it, I do a little bit of twirling to find the cursor.

Once you know where it is, move the cursor and click, because you press a button to do anything.

It takes four steps, but if you type, touch, and type again, you only need one step, maybe one and a half, but it depends on how you count.

Again, I want to describe the problems faced by developers of new computer systems, entertainment systems, educational systems in terms of interface characteristics.

I have 10 fingers, so that's an advantage.

I don't know how to handle it technically, this slide is just for looks.

We're not quite at 10 fingers yet, but there are certainly things you can do with more than two fingers for typing, and they're pretty interesting.

in the computer field

Even if there is a problem that cannot be solved, it is often made into a specification.

(Laughter) Mouse may be another problem.

In this example, the problem is with the touch panel. I wanted to be able to draw a series of dots by rubbing my finger across the screen, but if the screen is glass, there's too much friction between my finger and the glass.

But if you're going to build a pressure-sensing display, you can use this to your advantage.

When you touch it with your finger, you can transmit various forces to the screen with a certain amount of strength.

Let's change the disk and give an example.

Imagine a screen that can detect pressure as well as touch

Detects pressure in at least one direction: in the XY plane along the screen and in the Z direction toward the back Cannot detect the front direction

Let's erase this slide

Typing on a pressure sensitive display

Press the screen if necessary

it's an interesting video

Let's pause for a minute. The picture is pretty bad.

I made this display six years ago, but when we moved rooms, a big person sat down and broke it.

All that's left is this video. Various items are displayed on the screen, so just like the person just now, touch one of them and press it.

What if the objects displayed here were heavy and light, one was an anvil on a carpet and the other was a ping-pong ball on a glass.

It takes a lot of force to move an anvil on the screen by touching it, but a ping-pong ball can be flipped around on the screen with a flick of a finger.

And what it can do is -- oh no, it's giving the human operator feedback to feel the physical features.

It doesn't have to be weight. A military commander can distinguish between small ships and aircraft carriers.

That's exactly the reason why they invested in us.

(Laughter) The overarching concept of this interface is that the transduction device uses physical features, in this example pressure and contact, which allows us to do things that have never been done before.

Instead of just focusing on performance, which is the usability of the interface, we want to create something that has never been done before.

Now let me give you another example: we're trying to create a new form of book using computer and videodisc technology.

The idea is to give life to an ordinary book

blow in

One-way communication is common

Film companies make films that convey information in one direction.

Some people say, "There's the possibility of making an interactive movie." What do you mean?

It's as if it undermines the core of what cinema is and what it wants to represent.

books are the same

So I'd like to touch on the new form of the book, where everything comes together, but there's just one thing I want you to keep in mind.

The first is that this book knows itself.

Each frame of the movie contains information about itself,

This book contains at least computer-readable information, unlike a fixed movie frame.

The second, as you may have noticed, is that it's a randomly accessible storage medium that can be branched, expanded, refined, shortened, and so on.

I love the cookbook Larrousse Gastronomic, and maybe I'm using it as an example too much.

This cookbook is like an encyclopedia, and it's just right because it has a line at the end, like the penguin recipe, where it says, "heat until cooked."

Let's say the green track at the top is that representation. It's a vague representation. For beginners, it needs more explanation.

If you're more of a novice, I'll go into more detail: open the oven preheat it wait for the lamp to go out open the door don't leave it too long put the penguin inside close the door

Easier to understand than rereading

Here is an example using random access

Here's an example to explain it differently

If someone asks me a question at school, I don't just repeat myself.

If you know the student and know how he thinks, you can try to explain it in a way that he understands.

There are many techniques you can use. This is an example of branching.

Now, let me introduce you to a more boring book. I'm sorry, but I'm going to show you a few boring books, because some sponsors don't like novels and entertainment books.

I don't know the derailleur's value, but I'll give you a quick look at some of it, so let's go.

(picture)

this is the table of contents

It's just a picture of the gearbox Trace with your finger to highlight each part

If there is a chapter you want to see, touch the letter and the device will prepare the page.

Explanations are provided for red words, so when you touch a word, various definitions are displayed. Definitions are displayed overlaid on the picture.

This is an explanation of the oil pan, filter, etc.

This is relatively important --

On this page, words with a glossary are displayed in red.

You can tell what a word means just by touching it.The definition is shown in this drawing area.

You can also go back to the previous picture.In this case, instead of a still image, you will see a video showing how the repair is performed according to the explanation.

You can adjust the speed with the 2-way slider Change the speed and playback direction of the video

display in full screen

You can go back to the beginning, and you can play at high speed.

This is another step -- you may be familiar with video synced with audio, but this syncs the text with the video, and once the video is played.

The sentences are highlighted according to the video

Don't let it go too far, the front pole is good

Don't loosen it too much.

Maybe you don't know what I'm talking about

(Laughter) Okay, number three, and this is the last one.

Good education should be enjoyable. The first example is a recent experiment. In Senegal, we used the computer as a teaching tool.

It is absolutely wrong to teach programming itself

I only have a few slides, but I would love to share with you a story that we are currently working on in three countries, Pakistan, Colombia, and Senegal.

There was a child, whose name I don't remember, who was about seven or eight years old, who had an intellectual disability, couldn't read, and was seen as being unable to keep up in the lower grades.

I was going in and out of the "computer room." There was a computer, so I was learning a language called Logo there.

He said, "I'll show you how to do it."

I explained everything with great momentum. If someone asked me what I couldn't explain, I would find an explanation in the manual, type in the command, and execute it.

Actually, they were supposed to go to the principal's office instead of the computer room, but before they even met the principal, they were completely satisfied.

He explained things fluently and even gave a demonstration, and when he couldn't do something, he looked at the manual and handled it on his own.

The principal said, "It can't be that, because he can't read.

I think you must have been deceived or it's someone else's child."

When we all went downstairs, the child was still there, so I gave it a try.

"I can't read," the child replied

When I said, "Wait a minute, you understood the manual, didn't you?"

When I asked, "Then what do you mean by reading?"

The child said, "I'm forced to do it with a boring book.

I don't want to do it because it doesn't hurt, but here

If you give it a try, you'll learn a lot."

It was worth it for the child.

It was meaningful because the kid read it so well and learned so much.

There are many other anecdotes about this event, and here's what's really important for the future of computer-based education. So when do children feel valued?

There's a misconception here, and it's what most of you, and I believe, believe that reading and writing is more difficult than speaking.

No, small children start using words on their own, and by the age of 2, they're speaking very poorly, and by the age of 3 or 4, they're speaking fairly well.

When you learn to read in school, you have to sit in the classroom and listen to the lessons.

That makes it difficult, but it's really not that hard.

Talking is very valuable for children.

reading and writing doesn't help

It doesn't make sense, so you have to do it mechanically. Well, it will come in handy later on.

You'll gradually come to like it, so keep reading."

But unlike this, even a three-year-old can use a computer, type a command, and all of a sudden something happens.

I wouldn't call this reading and writing, but just typing a little bit on the screen and reading a little bit has a huge impact and it's a lot of fun.

Really effective teaching material

I experienced it in Senegal. This is a normal classroom, 120 children, three at each desk, one teacher, a little chalk.

This is our first student. The girl on the left is using the blackboard to learn. Let me show you the program she made in two days.

It's important for her to get her hair done. She worked for an hour a day, and it was done in two days.

I don't think she knows yet how much she's learned from there on geometry, mathematics, logic, and so much more.

We can talk about this for three hours.

Let me give you a final example.

I think my former colleagues here can imagine.

One of my favorite projects we've worked on, and still do, is video conferencing.

The reason why I still love it is because I was asked to create a video conferencing system that looks like this: Five people you know are in separate locations, but you have to convince each of them to believe completely that four other people are in real life, and have them video conferencing.

You may think it's stupid to accept such an invitation, but I did.

I actually got to know these people, and I had to learn from the history of Walt Disney, and I even made a cathode ray tube with a human face.

When I call my friend Peter Sprogue, the secretary carries his head to the desk. (Laughter) That's what the TV is for.

It's not crazy, not to mention that you can look into the eyes of a realistic face on a 3D television.

And then I also suggested that we need spatial synchronization, which is simple, but it doesn't follow naturally from the concept of telecommunications or computer systems.

It's a concept that helps you understand that your actual position at the table is very important.

When someone leaves their seat to answer the phone or go to the bathroom, it's also a reality to associate that person with an empty seat.

That's why I said, "If you're going to use a round table, you have to be able to match the seating positions around the table."

It doesn't matter whether it's a head made of resin or a projected head.

There are many ways to do this, but I won't go into too much detail about them, but in the end, I used this one, a rear-projection display with a surface molded into the shape of a face.

I'd like to show you one more slide.

It detects head motion and sends the position of the head along with the video, and this head moves along two axes.

All of a sudden, I turned to my left and started talking to the person on my left, and to the person on my right, it was as if two plastic heads were having a conversation.

When the person interrupts the conversation, the two heads turn around.

Now you can reconstruct a video conference very accurately.

-- Alec Soth -- About 10 years ago, this woman called me. She's Stacey Baker from Texas.

At the time, I hadn't met Stacey yet, and I thought it must be a chance to make a lot of money with a wealthy oil tycoon or something.

I photographed her parents, but I was more excited to photograph Stacey.

The picture I took that day became one of my most famous works.

At the time I took this picture, Stacey was working as a prosecutor in Texas.

She soon quit her job and went to study photography in Maine, where she met the head of photography at the New York Times magazine and started getting offers.

(Stacey Baker) Over the next few years, Alec and I did a number of magazine projects and became friends.

A few months ago, I spoke to Alec about a subject that really appealed to him.

What I can't get out of my head is how people get married.

I asked Alec how he met his wife, Rachel, and he told me that he asked her out at a high school football game when she was 16 and he was 15.

I like her purple hair

she said ok and that was it

And then I asked Alec if he'd be interested in doing a filming project that explored this question.

CA: I was curious, but more than that, I wondered why Stacey would want to ask that question, because I'd never heard of her having a boyfriend.

So I thought it would be interesting if she found a partner as part of the project.

So I had the idea to take her to a matchmaking party on Valentine's Day in Las Vegas.

(Laughter) (Applause) (Music) (Stacey) We've got our eye on what they call the world's biggest event.

I spoke with a total of 19 men for three minutes each.

Participants were given a list of questions to start the conversation without feeling nervous, such as, "What kind of animal would you like to be?"

that kind of question

First opponent is Colin

I'm from England, and I once married someone I met after running an ad that said, "I want a Capricorn woman."

Alec and I met him later that evening, and he said he kissed a woman in line at a concession stand.

Zack and Chris both participated in this series of dates.

this is carl

When asked, "Where do you see women first?"

His answer was "Boobs"

(Laughter) Matthew says he's attracted to women with muscular calves.

We talked about marathons, he triathlons, I run half marathons.

Alec liked his eyes and asked what he thought of him, but I wasn't attracted to him, and he didn't seem to be attracted to me either.

Austin and Mike joined together

Mike has been talking about for example

"Suppose you get on the elevator when you're late for a meeting and you're in a hurry.

there is someone running in a hurry

will you leave the door open ”

i answered no

(Laughter) Cliff says he looks at a woman's teeth first, so we complimented each other on our teeth.

He said he sleeps with his mouth open, and that he needs to floss more often to prevent periodontal disease.

(Laughter) I floss twice a day, so I thought that wasn't a lot, but I didn't say it.

Bill is an auditor, and we spent three full minutes talking about audits.

In his opinion, many women wear too much make-up, and he said it should be enough to accentuate their features.

When I told her I didn't wear makeup, she thought it was a good thing.

Craig said I don't want to show weakness.

Also, when I said I couldn't remember the most embarrassing experience, he was frustrated.

I think he thought I was lying, but he wasn't lying.

I thought he didn't like me, but later that night he came to me and gave me a box of chocolates.

I didn't speak to William much.

maybe he was drunk

(Laughter) The event was hosted by actor Chris McKenna.

He was in the drama "The Young and the Restless."

i haven't dated him

Alec said that some women gave Chris their phone numbers.

Needless to say, I never fell in love

I didn't feel a special connection with any of the men I dated, and I don't think they felt a connection with me.

CA: By the way, as a photographer, for me -- (Laughter) the most beautiful thing is transience.

There are some sort of cracks on the outside that give a glimpse of the more delicate interior.

I saw a lot of those examples at this dating spree, but it was just looking at Stacey's partner and talking to her about them that made me realize just how different photographic love and real love are.

What is true love? How does it work?

To answer this question, and to understand how people go from dating to spending their lives together, Stacey and I traveled to Suncity Summerin, the largest retirement town in Las Vegas.

My contact person was George, who runs a local photography club.

He arranged for me to meet the couple in his makeshift studio.

CA: Anastasia's husband died two years ago, on their 45th wedding anniversary, so I asked her if she had any photos of her wedding.

She met her husband when she was 15, working as a waitress at a small barbecue restaurant in Michigan.

he was 30

she lied about her age

he was my first date

Dean had been named Las Vegas Photographer of the Year two years in a row, and he caught Alec's attention because he met his wife, Judy, at the same age that Alec and Rachel met.

Dean said he liked looking at beautiful women, but he never questioned his decision to marry Judy.

(Alec) George met Josephine at a church dance.

he was 18 she was 15

Like many of the couples we met, they didn't take their decision very seriously at such a young age.

I can't get George's words out of my head

"When you feel that way, you have no choice but to let yourself go."

When Bob and Trudy met on a blind date, she was still in high school.

They weren't particularly attracted to each other when they first met They weren't particularly attracted to each other when they first met

But the two soon got married

Stacey: The story that stuck with me the most was the story of George, the president of a photography club, and his wife, Mary.

George and Mary were remarried

They met at a country and western bar called Sahara in Louisville, Kentucky.

he was drinking alone and she was with a friend

By the time they started dating, he was $9,000 in arrears with the IRS, so she said she would help him.

When we got married, George was an alcoholic, and Mary knew about it.

According to George, one day after his marriage, he emptied 54 cans of beer in one day.

At one point, he got drunk and threatened to kill Mary and her two children, and they fled and called a SWAT team to his house.

But amazingly, Mary got him back on his feet and things got better.

George went into sobriety and hasn't had a drop in 36 years.

(music) At the end of the day, leaving Sun City, I told Alec that I wasn't really interested in meeting couples...

I was more interested in how they managed to live together.

CA: We all had this virtue of patience, but it's the same for single people.

It's a tough world out there, but there are singles out there trying to stay connected, and couples have supported each other for decades.

My favorite photo from this trip is of Joe and Roseanne.

By the time we met, we used to ask couples if they had any old wedding photos.

In the case of two people, they pulled the same photo out of their wallets at the same time.

I wondered, which is more beautiful, this photo of a young couple just falling in love, or the two people who've been holding this photo for decades?

thank you

(applause)

People fear insects more than they die.

(Laughter) The 1973 edition of "The Book of Lists" is a ranking book with the best, the worst, and the funny stuff.

According to it, only heights and speaking in front of large crowds rank above insects on the fear list.

If we add spiders here, the sum of insects and spiders would have jumped to number one.

Now I'm not like those people

i really like insects

Even when I think insects are interesting, beautiful, and even cute

(Laughter) I'm not alone.

Over the centuries, from Charles Darwin to E.O. Wilson, some of the greatest scientists have been inspired by the study of the smallest life on earth.

I wonder why?

What is it about insects that fascinates us?

One of the reasons, of course, is the overwhelming number of insects.

Their population is greater than any other animal

We still don't even know the total number of species, because new ones are being discovered all the time.

at least 1 million species, maybe 10 million species

For example, if you were to make a "bug of the month" calendar, you would have 80,000 years without having to reuse the same seeds.

(Laughs) Did you know Panda and Kitten!

(Laughter) Seriously, insects are essential.

we need insects

About a third of the food we eat comes from pollinating insects.

Scientists have used insects to make all sorts of important discoveries, from the structure of the human nervous system to the workings of genes and DNA.

But the main reason I love insects is that we can learn a lot about human behavior from insects.

Insects behave like humans

Encounters, mates, fights, parting

And there are even things like love and resentment there.

But the motives behind their actions are very different from those of humans, and it's that difference that is the inspiration.

The area where that manifests most is in one of our greatest concerns: sex.

Now, I'm going to discuss a claim, and you might think, uh,

"Insect sex is more interesting than human sex"

(Laughter) The sheer diversity that we see there challenges our assumptions about the definition of male and female.

Of course, let me start by saying that there are many insects that don't need sex to reproduce at all.

Female aphids can make tiny clones without mating.

A true virgin birth! there too

In the bush of roses you've grown

(Laughter) Speaking of insect sex, insects, even sperm, are more interesting than humans.

Some species of fruit flies have sperm that are longer than the length of the male.

This is important because males compete for sperm.

Like the horns of beetles, male insects compete with weapons.

Even after it's my turn, I compete with sperm

A male dragonfly or damselfly has a penis that looks like a fully extended Jutoku knife.

(Laughter) They use this formidable tool like a shovel to remove the sperm of a previous male from inside the female.

(Laughter) Now, what can we learn from this?

(Laughter) Look, this isn't about us imitating insects or that there's something we should emulate.

This story is probably not like that, is it?

And did we mention the epidemic of sexual cannibalism in the insect kingdom?

that's not the case

But the behavior of the insects consistently violates the roles humans have assigned to them by sex.

There's something about the way we believe that the natural world is a perfect representation of what men and women were like in '50s sitcoms.

Males are always dominant and aggressive while females are always passive and shy.

But that's a biased view

For example, grasshoppers are relatives of crickets and grasshoppers.

Males are extremely picky when it comes to choosing a mate, because when they mate, they don't just give the sperm to the female, they also give the female what's called a nuptial gift.

In this picture you can see two grasshoppers.

In both cases, the male is on the left, and the female's ovipositor protrudes like a sword.

The white bubble is the sperm and the green bubble is the bridal gift, which the male produces from his own body. This bridal gift is very expensive.

It can weigh as much as 1/3 of your body weight.

Now let's think for a moment, if a human man had to produce 20 to 30 kilograms of something every time he had sex.

(Laughter) It won't happen as often as it does now.

(Laughter) Exactly the same is true for grasshoppers.

What this means is that male grasshoppers are very selective about who they give their nuptial gifts to.

Now, this gift is so nutritious that females continue to eat it during and after mating.

So the bigger the nuptial gift, the better the male, because it gives the male more time to inject his sperm into the female.

But this means that the males are very passive in mating, while the females are extremely active in mating, trying to get as much of this nutritious matrimonial gift as possible.

So this isn't a typical gendered division of roles.

And if you look even more broadly, males are actually not that important in the lives of many insects.

Some of the social insects, such as bees, wasps, and ants, are individuals that we see every day: ants scurrying around sugar pots, honey bees flying from flower to flower.

It took thousands of years to come up with this idea.

The ancient Greeks were already aware of the existence of a class of drones, larger than worker bees, but they weren't convinced by the laziness of the drones, because they just hover around the hive and do nothing until it's time to mate.

Outside of mating season, they just wander around the nest and do not participate in collecting nectar or pollen.

The Greeks didn't know that the "drone" was male, and part of the confusion was that they knew the stinging ability of worker bees, so they had a hard time believing that a female was carrying a stinging weapon.

Aristotle also tried to get involved in this debate.

As soon as I said, "Okay, the one you're stabbing is a male."

He was puzzled, because the idea was that the males were raising the young in the colony, and he seemed to think that was completely implausible.

He concluded that maybe bees are hermaphrodites, and that's possible, because there are such animals, but in the end, he never found out the truth.

Even today, even my students, for example, call every animal they see male, including insects.

For example, when I explain to my students that the ferocious soldier ants that protect the colony with their giant jaws are all female, they won't believe me.

(Laughter) Yes, it's true that in the movies "Antz" and "B Movie," most social insects are portrayed as males.

But it's no big deal

the movie is a fiction

There are even talking animals

What's wrong with looking like Jerry Seinfeld?

I don't think so. This problem is part of a much deeper problem that affects medicine, health and other aspects of our lives.

As you know, scientists use something called a model system to use organisms like rats and fruit flies as proxies for all animals, including humans, in their experiments.

The idea is that what happens in humans happens in rats.

This idea is generally correct

Sometimes the idea of ​​this model system goes too far.

I think what scientists have done is to use males as a model case for all species in their experiments.

that's normal

as it should be

And females are treated as an exception, a special case, only after basic knowledge is established.

Back to insects

I think what that means is that humans can't see what's in front of them as they are.

Because there's an assumption that most of the world's stage is dominated by males, and that females are given only minor supporting roles.

But as soon as we assume that, we miss a lot of what nature does.

And in doing so, we lose sight of the diversity that nature and living things, including humans, can have.

That's why a lot of medical research has used men as models, and when we try to apply the results to both men and women, we find that it doesn't work.

The final reason why I love bugs comes as a surprise to many people.

Their brains are tiny, they're small, they're much less cognitive than we think.

Their behavior is complex, but they don't have complex brains.

So we shouldn't just think of insects as little people, because insects and humans do things differently.

That's why I love insects because they're so hard to anthropomorphize. If you look at them and try to treat them like little humans, they don't have an exoskeleton and six legs.

(Laughter) Instead, we need to embrace their own way of being, because insects ask us what is normal and what is natural.

Now, people write fictional stories and talk about parallel worlds.

I meditate on supernatural things, thinking that maybe there are spirits of the dead walking among us.

It is said that people yearn for other worlds because they want to be involved in the world of paranormal phenomena.

But I think, do we really need the ability to see the dead? With live insects nearby?

thank you

(applause)

In the early days, Twitter was a place where radical shame could be wiped away.

When someone admitted to their own shameful secret, another would say, "Oh! I'm exactly like you."

The voiceless and weak knew they could have a say, and their voices were powerful and eloquent.

I learned that even if the newspaper ran a racially and sexually discriminatory column, there was something we could do.

I can stop them

Using a weapon they didn't realize was embarrassing them on social media.

Advertiser withdraws ad

When the powerful abused their power, we fought back.

this was like the democratization of justice

The hierarchy became even

we made the world a better place

It wasn't long before a disgruntled popular science writer named Jonah Lehrer was riddled with shame and regret after being exposed for plagiarism and false citations.

And he got the chance to publicly apologize at a foundation lunch.

This was supposed to be the most important speech of his life.

maybe we can win salvation

Before he arrived, he knew that the Foundation was going to broadcast the conference live, but he didn't know until he was there that there was a Twitter feed on the giant screen that was right next to his head.

(Laughter) It was on a monitor that he could see.

I don't think the Foundation was diabolical.

I guess you weren't thinking about it, and I think this was a remarkable moment, because the wonderfully innocent Twitter is attacking an ever-worsening reality.

And here's a snippet of a tweet that caught his eye as he tried to apologize, "It's boring to forgive Jonah Lehrer."

(Laughter) "He hasn't proven his ability to feel shame yet."

This must have been written by the greatest psychiatrist of all time, because you know this man crouching behind the podium.

And then "Jonah Lehrer is just a sociopath."

The use of the last word is very human, because it dehumanizes what it hurts.

I want to destroy the target, but I don't want it to have a bad aftertaste.

Imagine if this was a real courtroom, and the defendant in the dark wants another chance, and the jury yells out, "Boring! Sociopath!"

(Laughter) Yes, when we watch courtroom dramas, we see ourselves as warm-hearted lawyers, but when we actually take power, we become like the hanging judge.

power shifts quickly

We caught Jonah because he was seen as abusing his power.

We began to feel strange and empty without an abusive influential person to take charge of.

A day with no one to insult was like wasting time.

let me tell you this story

It's about a woman named Justin Sacco.

She was a publicist in New York with 170 followers on Twitter.

Thank you to the pharmaceutical industry] Justin smiled to himself and sent it, but there was no reply.

(Laughter) When the internet is unresponsive, there's a heavy silence.

Then she got to Heathrow Airport, and before she got on her last flight, she had some time to spare, and then she came up with another slightly dry joke [I hope you don't get AIDS when you go to Africa, kidding, I'm white! ] She chuckled to herself and sent and got on the plane No reply She turned off her cell phone She fell asleep and woke up eleven hours later I turned on my cell phone while the plane was rolling down the runway And got a quick message from someone I hadn't spoken to since high school, "I'm so sorry."

I got another message from my best friend, "Call me now.

You're trending on Twitter in the world."

(Laughter) What happened was, one of my 170 followers sent that tweet to a reporter at Gawker Media, who then re-tweeted it to 15,000 followers [Funny holiday joke from the head of advertising at IAC] And from there, it was lightning fast.

A few weeks later, I spoke with the Gawker reporter.

I asked him what he thought by email, and he said, "That was fun."

And I said, "But she should be fine."

But it wasn't, because while she was asleep, Twitter controlled and shattered her life.

Philanthropists were among the first to respond [if @JustineSacco's disappointing words bother you - join @CARE for Africa relief] [Hmm, racist tweets, donate to @care today] Something more than terrifying came [Racist, horrible guy, Justin's stupid tweet has no words.

More than scary] Who was on Twitter this evening? It's a minority

Did Justin's jokes fill your Twitter feed?

Mine did, and that night, like everyone else, I thought, "Wow, this guy did it!

Life is a mess with this."

I got up out of bed and put a pillow behind my head and thought, I'm not sure if that joke was meant to be racist.

I wondered if he wasn't in a good mood for showing off his privileges, but instead made a fool of himself for showing off his privileges.

There are comedy versions of this, like South Park, Colbert, Randy Newman.

Justin's guilt may be that he wasn't as good as Randy Newman.

In fact, when I met Justin a few weeks later at a bar, she was downcast. When I asked her to explain the joke, she said, "If you live in America, you're like a frog in a well, unaware of what's going on in the Third World.

I made fun of that attitude."

A woman named Helen Lewis, a writer for The New Statesman, who reviewed my book on public shaming, tweeted that night, "I don't know if her joke was intended to be racist."

She was insulted, too. She then stopped tweeting and watched Justin's life get ruined.

Things were going from bad to worse [let's all check this bitch @JustineSacco] and demands were raised to get her fired.

[Do your best to find a job in the new year! #I'm fired] Thousands of people around the world decided it was their job to fire her.

[@JustineSacco This is the last tweet of your career #I'm so sorry] A company has come in trying to sell their product in the shadow of Justin's demise. (Laughter) A lot of companies made a lot of money that night.

Justin's name is usually searched only 40 times a month.

From that day, December 20th, to the end of the month, it was searched 1.22 million times.

It's estimated that they've made between $120,000 and $468,000.

(Laughter) We're kind of unpaid insults at Google.

(Laughter) And then there was a "fishing" tweet [Justin Sacco really got AIDS (Laughter)] someone else wrote, [Have an HIV-positive guy rape that ama.

This person got a free pass

No one followed

We were all so excited to destroy Justin. Our insulting brains were so stupid that we couldn't stop someone from inappropriately destroying Justin.

Justin brought together so many disparate groups that night, from philanthropists to "fuck you guys."

[@JustineSacco get fired! She's a dumb woman...

Tell the world that you're going to fuck me raw while you're in Africa] Women are always worse than men

When a man insults, it's like "I'm going to fire you!"

When a woman does it, she says, "I'm going to fire you, rape you, and cut out your womb."

Then Justin's employer stepped in [IAC for @JustineSacco's tweet: Outrageous and rude

[The employee in question is currently on an international flight and cannot be contacted.] At this point my anger turned to excitement [I would love to see @JustineSacco's face when she landed and checked her inbox or voicemail for Christmas #fire] [@JustineSacco will have the worst moment to turn on her cell phone when she lands] [Watching this stupid @JustineSacco get fired is real time.

He doesn't even know he's fired.] It was a happy turn of events.

We know what he doesn't know

There's no other way to judge like this, is there?

Justin was asleep on the plane and couldn't justify himself, and that was a big part of the madness.

On Twitter that night, we were like toddlers crawling for guns.

Someone tracked down her exact flight and put a link to a flight tracking site.

[British Airways flight 43 arrived 1 hour 34 minutes after schedule] A hashtag has been trending around the world #Has Justin arrived yet?

[It's funny to watch people unknowingly self-destruct #Is Justin Already Arrived? ] [No, I want to go home and sleep, but everyone at the bar is #Did Justin arrive yet? I'm obsessed with I can't miss it I can't go home] [#Has Justin arrived yet? might be the best thing to do with what happened on Friday night] [Isn't there someone in Cape Town tweeting her arrival?

Hey Twitter! I want to see a picture] What happened? I was

[@JustineSacco arrives at Cape Town International Airport]

If you want to see what it's like to get a liberal joke misunderstood and chopped up - and this isn't "fishing" but by us good guys - here it is [...she decided to disguise herself with sunglasses] Why did we do this?

Some people were genuinely pissed off, and some people weren't, because Twitter is basically a mutual recognition machine.

We surround ourselves with people who feel the same way, and we approve of each other, and that feels really good.

And if anyone gets in my way, I'll kick them out.

Do you know what the opposite of this is?

It's the opposite of democracy.

We wanted to show that we care about people in Africa dying of AIDS.

Our desire to be seen as caring has made us complicit in this extremely inconsiderate act.

As Megan Augiblin wrote in The Boston Review, "This is not social justice, it's a cathartic scapegoat."

Over the past three years, I've met people like Justin Sacco all over the world, and there are so many people like Justin Sacco.

increasing every day

They'd like to think they're fine, but they're not.

those people were ripped to pieces

They were depressed, had anxiety and insomnia, and had suicidal thoughts.

A woman I spoke with, also triggered by a joke, stayed home for a year and a half.

Before that, she worked with adults with learning disabilities, and she was clearly good at it.

Justin was, of course, fired because social media demanded it.

But worse than that happened

she lost herself

I woke up in the middle of the night and didn't know who I was

She was attacked because she was seen as abusing her power.

And that's certainly a lot better than it used to be, attacking people who had arranged marriages and things like that.

But the phrase "abuse of power" is a free pass to tear anyone we choose to horrific shreds.

This phrase is declining in value. It's undermining our capacity for empathy and our ability to draw lines between what is right and wrong.

Justin has 170 followers, and she was fictionalized to facilitate the story.

Rumors circulated that she was the daughter of Desmond Sacco, a mining tycoon.

[#Don't be fooled by Justin Sacco, his father is a South African billionaire

Neither she nor her father has regretted it.] I thought she really was about her billionaire father until I met her at the bar and asked her, "My father sells carpets."

I think back to the early days of Twitter, when people were showing their shame.

People's shameful secrets are prey these days.

Even if you're living a good, ethical life, a little bad language in your tweets can ruin it all, and give you clues to the "demons in your heart."

There may be two types of people in the world: those who value people over ideology, and those who value ideology over people.

I care more about people than ideology.

In reality, we're both smart and stupid.In reality, we're in a gray area.

The great thing about social media is that it gave voice to the voiceless and vulnerable, but we're building a surveillance society where the smartest way to survive is not to speak up.

let's not do that

thank you

(Applause) Bruno Giussani: Thank you, John.

Jon Ronson: Thanks Bruno

Bruno: Just a little more

Justin's story just got me thinking, if you search her name today, this story will show up in the first 100 pages of search results.

In your book, you also tell the story of another victim, who relied on a company to manage her online reputation, created a blog, and posted innocuous articles about love, cats, holidays, whatever.

A few weeks later, I was back on top.

Is this a perfect losing game?

Jon Ronson: I think the best thing you can do is speak up if someone is being insulted unfairly or for no apparent reason, because the worst thing about Justin was that no one was helping her.

But even if a fire breaks out, I think it will do much less damage as long as it's democratic and has even a few allies.

I think that's what you should aim for, but that's a difficult thing to do, because when you defend someone, it's taken very badly.

Bruno: In your experience, you've defended yourself by writing this book.

However, this book is a must-read!

By putting the spotlight on the attacker, this book put you on the defensive.

And Twitter doesn't seem to have only friendly feelings.

John: Some people didn't like it.

(Laughter) No, no, it didn't matter. A lot of people understood and praised the book.

But I've been writing about abuse of power for 30 years, and when I talk about power in the military and the pharmaceutical industry, people applaud me when I do.

As soon as I say, "We're abusing our power now," they'll say, "So you're a racist, too."

Bruno: We had dinner together the other day, or rather last night, and there were two discussions going on.

One, you were talking to the people at the table, and the discussion was constructive and good.

On the other side of the discussion, every time you checked your phone, there was a barrage of insults.

John: Yeah, it was last night at a meaningful dinner like TED.

We had a fascinating and wonderful conversation, and then I checked Twitter.

Someone said, "You're a white supremacist."

And then I went back to having a good conversation at the table, but when I looked back at Twitter, someone told me that my very existence was ruining the world.

My friend Adam Curtis says that the Internet is like a John Carpenter movie from the 1980s, where everyone ends up yelling at each other, shooting at each other, and eventually everyone runs off to safety. I'm starting to think that's actually a good option.

Bruno: Thank you John: Thank you

(applause)

this is my old brain tumor

Sounds good, right?

(Laughs) The good feeling is the ``once upon a time'' part.

(Applause) When I found out I had cancer in my brain, as you can imagine, I was devastated.

I didn't know anything about cancer

The trend in Western culture is that patients who are found to have cancer begin to be treated, in a sense, as if they don't exist.

The complex human self disappears and becomes all about medical data: scans, tests, analyzes, prescription drugs, and so on.

The attitude of everyone around you will also change.

All of a sudden you start treating it more like a disease than a person.

The doctor speaks in jargon you don't understand

They start pointing here and there, things like your body, scans, whatever.

Your family and friends will start to change too.

When we first met, "What did the teacher say?"

Without even saying goodbye, it looks like this

Meanwhile, he is tormented by questions that no one can answer.

The question is, "Can I do ~?"

"What about studying?" "What about sex?" "Can I think of something new?"

"What did I do to meet you like this?"

“Should I change my lifestyle?”

"Is there anything you can do?

What other options? ” This is the kind of question

And of course, in this scenario, the doctor is on the side of the patient, because he's a medical professional, and he's working hard to fix you.

But at the same time, doctors have had so many patients that they have become accustomed to forgetting that going to the hospital is painful for the patient as an individual, and the "patient" is, in the sense of patient, "a person who keeps waiting."

(Laughter) Things are changing, but the traditional practice is that patients are never involved in treatment, they are not informed of their current status, they are not allowed to involve family and friends, and they are not taught how to make lifestyle changes to minimize the risks that can occur during the treatment process.

So what you're going to do is wait and see, your fate is in the hands of a team of highly specialized but complete strangers.

When I was in the hospital, I had my cancer images printed out and I spoke to my cancer:

It was hard to get one, because patients don't usually ask for a picture of their cancer-

I told cancer, "Cancer, you're not my everything.

I'm more complicated than I am

Whatever the cure, you should look at me as a whole human being."

So the next day, I ignored the doctor's recommendation and left the hospital.

I was determined that I would change my relationship with cancer, and that I would not have to undergo any major treatments, such as surgery, until I learned more about this cancer.

I'm an artist, and I use a combination of open source technology and public information as part of my work.

I thought the best way to fight cancer was to put it all out there and expose it and make that information available and available to everyone.

I created a website called "La Cura," where I posted my medical data online.

It's actually hacked data, but I'll talk about that in another talk.

(Laughter) I chose the word "La Cura," which is the Italian word for "cure," because the meaning of the word "cure" varies from culture to culture.

In the West, it means warding off disease or healing, but in other cultures, for example, in certain parts of Asia, in the Mediterranean region, in Latino countries, in Africa, it means much more.

Of course, I was going to listen to doctors, medical institutions, etc. But I also wanted to hear from other artists, poets, designers, musicians, and so on.

We called for all forms of healing through interaction, psychotherapeutic, spiritual, affective approaches.

And what happened was that it went pretty well.

The “La Cura” website spreads quickly

I received a lot of media attention both in Italy and abroad, and in no time, more than 500,000 people contacted me via email, on social networks -- mostly about how to cure my cancer, but more often about how to heal myself as an individual and as a whole.

Thousands of videos were sent to us - images, photos, art performances - created and made their way to La Cura.

This photo performance is by Francesca Fini

An artist named Patrick Lichty made a 3D sculpture of my tumor and put it up for sale on a site called Thingiverse.

People who want my cancer can buy it.

(Laughter) In a way, don't you think this is a good thing? We can even share cancer.

This exchange went on for some time, and scientists, experts in Oriental medicine, dozens of scholars and doctors -- all contacted me to offer advice.

So with a lot of information and a lot of collaboration, we ended up with a team, a few brain surgeons, oriental medicine doctors, some oncologists, and hundreds of volunteers.

And the whole team worked together to create my own treatment strategy, written in different languages ​​and based on different cultures.

The resulting strategy spanned the globe and reflected thousands of years of human history, which was really amazing to me.

[Surgery] The results of the subsequent MRI scan, luckily the cancer has hardly grown

I had enough time to choose

I chose the doctor I wanted to see, I chose the hospital I wanted to be in, and thousands of people helped me along the way, and no one felt sorry for me.

Everyone felt like they could do something to help me get better, and that was the most important aspect of La Cura.

The result is

As you can see I'm pinging

(Applause) And here's the great good news. After surgery, my cancer was a very low grade glioma, a kind of benign cancer that doesn't grow very much.

Since then, my life and habits have completely changed.

The summary of what I did was just minutes before I had surgery.

I mean, I really thought about how I was going to be involved in that design. It was a very difficult surgery. I had a series of intricate electrodes implanted in my brain, starting from this side of my head.

Right before the surgery, I was able to talk to my doctor about my functional map of my brain, what the risks were, and what I wanted to avoid.

Of course there will be unpleasant things if they happen

[Information openness] This openness of information was at the core of La Cura.

Thousands of people have shared their stories

Physicians had the opportunity to interact with people they wouldn't normally hear about cancer.

This project continues to grow naturally, constantly moving between different languages. It's a place where science and emotion coexist, where modern and traditional medical research merge.

[Society] The most important thing in La Cura was to make people feel that they are part of a society in which the health of each element determines the health of the whole, a society in which everyone is deeply involved and connected.

The culmination of this project is an open source cancer cure.

I also feel that the cure for me personally has become the cure for everyone.

thank you

(applause)

In 2012, I painted the minaret of the Jala Mosque, my hometown of Gabes in southern Tunisia.

At first, I was just looking for a building in my hometown, but I found a minaret that was built in 1994.

For 18 years, this 57-meter building remained gray.

When I first met the Imam, I told him what I wanted to do, and the Imam said, "Thank God, you've finally come."

The best thing about this imam is that he let me draw freely, he didn't ask me to show him my sketch or what to write.

In the work that I create, I paint messages, and the way I do it is called calligraphy, which is a combination of calligraphy and graffiti.

use quotes and poems

I wanted the minaret to have the most appropriate passage from the Koran for a place like a mosque, so I chose this verse: "O people, I created you out of one man and one woman, and divided you into peoples and tribes, so that you might know each other."

It calls for peace, tolerance and forgiveness for all, which is the good side of Islam that the media usually doesn't tell.

The reaction from the locals was astounding, and seeing the media coverage of the minarets around the world made them proud.

For the Imam, it wasn't just a picture, it had a deeper meaning.

I wanted this minaret to become a symbolic monument to the city, to bring back the forgotten parts of Tunisia to life.

The universality of the message, the current political context in Tunisia, and the new technique of graffiti to draw the Qur'an made sense.

reconnecting local people

Bringing people and young people together with Arabic calligraphy, that's what I do.

Writing a message is the essence of this art.

It's funny, even people who speak Arabic have a hard time deciphering my calligraphy.

But it's okay if you feel the work but don't understand the meaning

I believe that Arabic speaks to the soul before it appeals to the eyes.

Even if you don't understand the meaning, there's beauty in it

I believe that Arabic appeals to everyone, to you, to you, to you, to all people.

When I write a message, I always try to make sure it's about the place where I'm painting, and that it's universally accessible so that everyone in the world can connect.

I was born and raised in Paris, France, and I started learning to read and write Arabic when I was 18.

Calligraphy uses only Arabic

One of the reasons this is important to me is the mixed response I've received from around the world.

In Rio de Janeiro, I translated a Portuguese poem, a poem by Gabriela Torres Barbosa, dedicated to the poor in the favelas, and I painted it on the roof.

Locals were interested in what I was doing, but as soon as I taught them what calligraphy meant, they thanked me and connected with my work.

In Cape Town, South Africa, all the Filipinos gave us were concrete walls in the slums.

It was at school, and I drew a picture of Nelson Mandela, which is [Arabic], "Until you do something, it always seems impossible."

And someone came up to me and said, "Why aren't you writing in English?"

And I said, "If you ask me, I'll tell you, 'Why don't you write in Zulu?'"

There was an event in Paris, and I had to paint on a wall that someone provided.

When I started to draw in Arabic, he was very emotional and scolded me to erase the painting on the wall.

I am angry and disappointed

A week later, the host asked me to come back, and he said there was another wall in front of that man's house.

So he -- (Laughter) ended up seeing graffiti every day.

At first, I tried to write this [Arabic] saying, "Let's go," (Laughter).

I'm proud of my culture, and I try to convey that through the work I create.

And I want to break the stereotypes we all have with the beauty of the Arabic language.

Now we don't paint Arabic messages on the walls.

I don't want my calligraphic poetry to be destroyed, because it's an art, and I want you to cherish it even if you don't understand it, and enjoy it like the music of another country.

Some of you may say I'm in denial, some people think I'm closed, but for me, I see it as an invitation to my language, my culture, and my art.

thank you

(applause)

This is a map of New York state published by the General Drafting Company in 1937.

This map is very famous among map geeks. Right here in the Catskill Mountains, there's a little town called Roscoe -- it's easier to see it on a screen.

Aglow is well known among cartographers because it's a "paper town."

This is also known as the "copyright trap"

Maps of New York are going to look the same no matter who makes them, and so map publishers put non-existent places on maps to protect copyright.

If that fictitious location appears on another company's map, you know it's been copied.

The name Agloe is a rearrangement of the initials of the authors of this map, Ernest Alpers and Otto Lindbergh, whose map was published in 1937.

Decades later, Rand McNally published a map showing the town of Aglow, an empty place with nothing but unpaved roads crisscrossing it.

General Drafting saw this and thought

I'm sure he called Rand McNally right away and said, "Hey, you're ripping it off, aren't you?

I'll sue you, so be prepared! ”

And Rand McNally says, "No, no, Aglow is real."

People go to that empty dirt road crossing, expecting the town of Aglow to be there, so someone made a place called Aglow.

(Laughter) In its heyday, there was a gas station, a grocery store, and two houses.

(Laughter) This is an irresistible story for writers. Writers like to believe that the stories they write down on paper can actually change the world we live in. So I called my third book "Paper Towns."

But what intrigues me more than the media in which such things happen is the phenomenon itself.

It's no surprise that the shape of the world shapes the map.

The shape of the world determines the shape of the map

But what's even more interesting is that how we map the world changes the world.

Because if north was down, the world would be a different place.

The world would be a different place if Alaska and Russia weren't on opposite sides.

The world would be a different place if Europe were actually sized accordingly.

A world map changes the world

What we choose to map will change the shape of the map of our lives, and it will change the shape of our lives.

What you map out will change the course of your life.

I'm not talking about the Oprah Angel Network saying, "You can beat cancer with your thoughts."

A map doesn't show you where you will be in the future, but it does show you where you might be.

It's not easy to go to places that aren't on your personal map.

As a child I was a bad student

The average grade was close to 2 on a 5-point scale.

The reason I did so poorly was because I felt like schooling was just a hurdle set for becoming an adult.

I didn't want to cross those arbitrary hurdles, and often I didn't, and people started threatening me that this record would follow me for the rest of my life, and that I wouldn't be able to get a good job in the future.

But I didn't want to get a good job

If you ask me when I was 11 or 12 years old, people who had good jobs had to wake up very early in the morning.

I literally put a noose around my neck and I don't know what it is, but I go to work.

I don't think that's a recipe for a happy life.

To the imagination of a 12-year-old child fascinated by symbolism, people can't be happy that the first thing they do every morning is to choke themselves.

Why do you think you should work hard to overcome the hurdles to reach such an end?

it's a terrible ending

Then, in my freshman year of high school, I moved to this Indian Springs School, a small boarding school near Birmingham, Alabama.

And suddenly I became a learner.

It happened because I entered a community of learning people.

There, I was surrounded by people who valued the pursuit and effort of knowledge. The slanting attitude and lack of seriousness that I had thought cool until then turned out to be neither wise nor amusing, but rather a silly and mediocre response to a difficult and challenging problem.

I learned that learning is a beautiful thing, so I started learning

I learned that even infinite sets can be large or small.

I learned that the Civil War was a struggle for nationalization, I learned the basics of physics, and I learned not to confuse causality with correlation. Knowledge like this literally enriches my day.

I'm sure you don't use a lot of it in "work," but that's not the point.

Knowledge is about making maps.

What is the map-making process like?

Sailing to some place and thinking, "I'm going to map this place," and then thinking, "Maybe there's more to map."

That's where learning really begins

I'm sure I had teachers who didn't abandon me, and that was lucky for me, because I often did things that made me feel like it was a waste of money to invest in me.

But a lot of what I learned in middle school and high school wasn't in the classroom, it was outside the classroom.

For example, I can still recite, "A winter afternoon with a slanting sun, as heavy as the sound of a majestic cathedral."

I also learned about "opportunity cost," because I was in my room playing Super Mario Kart, and my friend Emmett walked in and said, "How long have you been doing this?"

I said, "Well, maybe six hours," and he said, "If I worked at 31 Ice Cream for those six hours, I would have earned $30. That's like paying $30 to play Super Mario Kart."

I replied, "I'll pay you that much."

(Laughter) But that's what I learned about opportunity costs.

It makes the map of my life better and bigger

It started to include more places.

The number of things that can happen has increased and the possible future has expanded

It's certainly not a systematic, formal learning process.

It's full of holes, it's inconsistent, and there's a lot we don't know.

I knew that Cantor discovered that one infinite set is bigger than another, but I didn't really understand the analysis behind it.

I knew the idea of ​​opportunity cost, but I didn't know the law of diminishing returns.

But the nice thing about thinking of learning as mapping rather than some arbitrary hurdles to overcome is that when you can see a little bit of the coastline, you want to see more.

And now I have some idea of ​​the analytics behind it.

So when I was in middle school, there was a community around me to learn, and then in college, there was another community, and when I got a job, there was another community.

then i wrote a book

I did what every writer dreams of: I quit my job.

(Laughter) For the first time since high school, I lost my learning community.

it was miserable and disgusting

I read a lot of books in those two years.

I read a book about Stalin, I read a book about how the Uzbek people became Muslims, I read a book about how the atomic bomb was built, but it felt like jumping over self-made hurdles, and it didn't feel the excitement of being part of a learning community.

Then in 2006, I met this person, Zay Frank.

I didn't meet him in person, I found him on the internet.

At the time, Zay Frank was doing a video series called The Zay Frank Show, and I was able to get back into the learning community again.

This is where he talks about Las Vegas (narrated), which was built in the middle of a big, hot desert.

Most of the things here have been brought from somewhere else. There are rocks, there are trees, there are waterfalls.

This fish would be as out of place as my flying pig.

So are these people compared to the sizzling desert around them

Everything in the world is recreated here, disconnected from its original history and the people who experienced it, and sometimes even improved. Sphinxes do have noses.

I don't feel like I'm missing anything here.

This New York means the same for everyone.

Everything lacks context, which also means that context is everything Self-Parking Event Center Shark Reef

The fabrication of this place might be one of the greatest feats in the world, because nobody belongs here, everyone belongs here.

As I walked around in the morning, I noticed that many of the buildings were giant mirrors that reflected the sun back into the desert.

But this mirror isn't like a normal mirror, because it doesn't reflect you embedded around you, it's an emptiness.

It makes me feel nostalgic (laughs).

He's not only a great intellectual, but he's also a great community builder, and in many ways the community around his videos was also a learning community.

Everyone worked together to play chess against Zay Frank and beat him.

Together we helped a young man travel across America

You could make a sandwich with the earth -- one person holding the bread at one point on the planet, and the other person holding the bread at the other side of the globe.

It's a silly idea, but there's a learning element to it, and that's what got me hooked.

If you follow the analytics tag on Tumblr, you'll see a lot of people complaining, and there are people reblogging those complaints, saying that analytics is interesting and beautiful, and showing them how to look at problems they thought they couldn't solve.

The Reddit site has subcategories like "Ask Historians" and "Science Questionnaire," where you can ask experts a variety of questions, some serious, some silly.

But the most interesting community that learners can find right now is YouTube.

A YouTube page reminds me of a classroom.

For example, in "Minute Physics," a man teaches us about the world of physics (narration) Let's get to the point.

As of July 4, 2012, the Higgs boson was the last experimentally unconfirmed building block of the standard model of particle physics.

But if it hadn't been discovered in the 1970s when the Standard Model was created, you might wonder why the Higgs boson was included in the Standard Model alongside other well-known particles like electrons, photons and quarks.

That's a good question. There are two big reasons.

First, just as the electron is an excitation of the electric field, the Higgs boson is a particle of excitation of the permeating Higgs field.

Higgs field plays an important role in weak interaction models

In particular, the Higgs field explains the reason for its weakness.

I'll talk more about this in a later video. Although the theory of the weak nuclear force was confirmed in the 1980s, the Higgs field was intricately intertwined with the weak nuclear force in the equations, and we were never able to confirm that it existed independently.

(Green) The next video is one of my "crash course" series, where I talk about World War I. (Narration) The immediate cause of the war was the assassination of Archduke Franz Ferdinand of Austria in Sarajevo on June 28, 1914, by the Bosnian-Serb nationalist Gavrilo Princip.

It should be noted that the first great war of the 20th century began with terrorism.

Archduke Franz Ferdinand wasn't much liked by his uncle, Emperor Franz Joseph I, you bearded man.

But the assassination still forced Austria to issue an ultimatum to Serbia, and Serbia took only a fraction of Austria's demands, causing Austria to declare war on Serbia.

Russia was allied with Serbia, so they mobilized the military.

Germany, allied with Austria, asked Russia to stop mobilizing troops, but when Russia did not comply, Germany mobilized its troops and declared war on Russia, cemented its alliance with the Ottoman Empire, and then declared war on France, because it was France.

(Laughter) It's not just physics and history that people are learning on YouTube.

Here's a math video

(Narration) It's math class again. We have math every day.

So you learn something like the sum of an infinite series

You learn in high school, right? It's weird to tell such a funny story in high school, but they somehow screw it up.

I think that's why we have infinite series in our curriculum.

I know I scribble to distract myself Rather than thinking about the problem at hand I start wondering what is the plural of series series? seriese? seriesen? serii?

just as the singular form of sheep should be shoop

But it's useful that the sum of 1/2 + 1/4 + 1/8 + 1/16 + .

This is at least subtly cool, because you can draw millions of elephants on a single line and still fit on one page of your notebook.

(Green) And finally, Destin from "Smart Everyday," talking about conservation of angular momentum, and since it's YouTube, I'm using a cat. (Narrator) It's Destin. Welcome to "Smart Everyday."

I think you've noticed that cats always land on their feet.

The question of the day is why

Like many simple questions, the answer is very complicated

A proper rephrasing of this question is, "How does a cat transition from a leg-up position to a leg-down position in a falling reference frame without violating the law of conservation of angular momentum?"

(Laughter) (Green) What these four videos have in common is that they've been viewed more than 500,000 times on YouTube.

People watching aren't watching in class, they're watching as part of a learning community that's formed on their own YouTube channel.

I said that YouTube is like a classroom, and in many ways, it's true, and it's really like a traditional classroom: there's a teacher, and then there's a student, and we're all talking to each other.

YouTube comments generally have a bad reputation, but if you look at the comments on these channels, you'll see people working on the topic at hand, asking intricate and difficult questions, and others answering them.

On YouTube, the teacher explains the video and everyone comments on the same page, so you can participate in a live, active, and authentic discussion.

I'm also participating in the discussion in the comments section of my video.

This is true whether it's history, mathematics or science.

And it's creating a space for young people to use these tools and genres on the internet to engage with knowledge, rather than the ironic, indifferent attitude that's usually seen in internet memes and stuff like, "God got bored and made analysis."

Here, Honey Boo Boo critiques industrial capitalism [free capitalism is not the good side of humanity.

Quite the opposite, it's a brutal and destructive nihilistic tool.

I believe that communities like this are a learning ground for a new generation, the kind of map-making community that I had in middle and high school that I got back in college.

And as an adult, I rediscovered this kind of learning community and was encouraged to continue learning into adulthood. I no longer feel that learning is only for young people.

Vi Heart and "Minute Physics" taught me things I never knew before.

We all think of the salons of Enlightenment Paris and the Algonquin Round Table, and we think, "Oh, how nice it would be if I could be there and laugh at Dorothy Parker's jokes."

Such places still exist today.

It's in a corner of the internet that old people are afraid to go near.

(Laughter) When Aglow became a reality in the 1960s, we started.

thank you

(applause)

All living things, all living things, have been created from DNA information.

What do you mean?

It's the same way that the English language is made up of alphabets that, when combined into words, enable us to tell the stories that I'm going to tell you today. DNA is made up of genetic letters (nucleotides) that combine to form genes, which are strings of amino acids that fold into complex structures that allow cells to make proteins.

The English alphabet has 26 letters, but there are four genetic letters.

It's very famous, so I'm sure you know

Often simply called G, C, A, T

It's amazing that all the diversity of life can be attributed to four genetic letters.

If there were only four letters in the English alphabet,

What stories can you tell?

What if there were more genetic letters?

Could organisms with more genetic letters tell different and more interesting stories?

In 1999, in a lab at the Scripps Research Institute in La Jolla, California, I began working on this problem, with the goal of creating organisms with six genetic letters in their DNA, four letters found in nature, plus two new letters made artificially.

It will be the most radically altered form of life ever created.

They are semi-synthetic organisms that carry more genetic information than conventional organisms.

A new protein -- you could make a protein out of the 20 or more amino acids that normally make proteins.

What story does the creature tell?

After nearly 20 years of research, with the power of synthetic chemistry and molecular biology, we created a bacterium with six genetic letters.

i'll tell you how i did it

If you remember high school biology, the four genetic letters in nature form two base pairs.

Pairs G and C, A and T. To create new genetic letters, we synthesized hundreds of new letter candidates, culled them, and tested their ability to form selective pairs with each other.

After about 15 years of research, I've found a compatible pair, at least in a test tube.

They have difficult names, let's just call them X and Y.

The next step was to find a way to get X and Y into the cell, and found that a protein in the algae took X and Y into the cell, and it worked in this bacterium.

And in the final step, we had to show that cells with X and Y grow and divide and carry X and Y in their DNA.

For my impatient self, it took me longer than I expected to get there, but this most important step worked out sooner than I expected.

One weekend in 2014, graduate students in my lab cultivated a bacterium with six genetic letters.

Let's show off

this is the actual photo

the first semi-synthetic organism

Bacteria with six genetic letters are pretty cool, aren't they?

I'm sure some of you are skeptical.

I'll give you a little more motivation, conceptually and practically.

Conceptually, people have been asking, "What is a living thing?" and "What is the difference from nonliving things?"

Many people have interpreted living things as perfect, and taken them as evidence of a Creator.

Living things are different because God breathed life into them.

Some people have explored more scientific explanations, but it's fair to say that they still hold a special interest in the molecules of life.

Evolution has optimized life for billions of years.

Whatever you may think, it seems nearly impossible for a chemist to create new elements that work inside and with nature's biomolecules without making silly mistakes.

"How perfect were we made and how did we evolve?"

"How special are biological molecules?"

I couldn't even ask a question like this, because there's nothing to compare it to living things.

Based on our first studies, biological molecules may not be all that special.

The organisms as we know them may not be a unique possibility.

Maybe it's not the only answer, maybe it's not the best answer, it's just one of the answers.

Those questions touch on fundamental issues in biology and seem a bit esoteric.

So what are the practical motivations?

I want to explore new stories told by new organisms with increased genetic letters, and the stories here are about the proteins that cells make and how they function.

So what new functions do semi-synthetic organisms create and use with new proteins?

I envision some possibilities

First, we get the cells to make proteins for us to use.

Proteins are now being used in an ever-wider range of applications, from protecting soldiers from injury to being used in devices to detect dangerous compounds, but at least the application that excites me the most is protein drugs.

Despite being relatively new, protein drugs have already revolutionized medicine.Insulin, for example, is a protein.

As you may have heard, it was manufactured as a drug that completely changed the way we treat diabetes.

But the problem is that proteins are really hard to make, and the only practical way is to get cells to make them.

Naturally, we can use cells from the natural world to make proteins with naturally occurring amino acids, but the properties of proteins and their application to drug development are limited by the properties of the amino acids that make up the proteins.

These are the 20 naturally occurring amino acids that are strung together to make proteins, and as you can see, they don't look all that different.

Not so versatile

And it doesn't offer a whole lot of different functions, so let's compare it to the small molecules that synthetic chemists have created as drugs.

They're much simpler than proteins, but they're usually made from a much wider range of substances.

Without worrying about the details of the molecule, I think you can see how different it is.

And in fact, it's this difference that makes it an excellent drug for treating a wide variety of ailments.

It's really exciting to think about what kind of new protein drugs we can develop if we can make proteins from different substances.

Could we have a semi-synthetic organism make a protein with new and diverse amino acids? Perhaps the amino acids would be selected to give the protein its intended properties and functions.

For example, many proteins are unstable in the body.

It is rapidly degraded or eliminated from the body and cannot be used as a medicine.

What if we could make proteins with new amino acids so that they could be used as better drugs? What if we attach substances to proteins that protect them from the internal environment and protect them from degradation and removal? How about that?

What if we could build a protein with tiny hands that are specialized for grabbing onto other molecules?

During drug development, many small molecules failed because they failed to identify targets in the complex environment of the human body.

What if we could make that molecule as part of a new amino acid, put it into a protein, and use that protein to target it?

I started a biotech company Synthorx

It means Synth + or (organism) + x (unknown), and the "x" at the end is because that's what biotech companies do.

(Laughter) Synthorx is working with my lab to study proteins that recognize specific receptors on the surface of human cells.

But the difficulty and harm is that it also recognizes other receptors on the surface of the same cell.

What if you could create a protein that interacts only with the first good receptor by blocking the part that interacts with the second bad receptor with something like a big umbrella?

That's really hard, not possible with natural amino acids, but it's possible with amino acids designed for that purpose.

Making semi-synthetic cells work like little factories to make better protein drugs isn't the only interesting application, because proteins make cells work in the first place.

If you have a cell that makes new proteins with new functions, can you make it do things that cells in nature cannot do?

For example, what if we could develop a semi-synthetic organism that, when injected into a human, seeks out cancer cells, and only when it finds a cancer cell, secretes a toxic protein that kills the cell?

If we could create bacteria that eat different types of oil, we might clean up an oil spill.

These are just a few of the stories that organisms with increased genetic letters might tell.

Great, right?

So what about injecting semi-synthetic organisms into the human body, or spewing vast amounts of man-made bacteria into the ocean or your favorite beach?

Wait a minute, aren't you scared?

this dinosaur is scary

But the truth is this: semisynthetic organisms need to be fed chemical precursors of X and Y to survive.

X and Y are completely different from those that exist in nature.

Cells don't have these, nor have the ability to make them.

When prepared and grown in a controlled laboratory environment, they are fed a large amount of food that does not exist in nature.

And when they're injected into humans or released onto the beach, they can't find any special food, they don't grow much, they survive for a little while -- just long enough to perform their intended function -- they eat up the food.

hunger

starve to death

Not only can we let the creatures tell new stories, but we can also tell them when and where.

Earlier in this talk, I told you in 2014 that I created a semi-synthetic organism that had more information in its DNA, X and Y.

But all of the motivations I've talked about require cells to use X and Y to make proteins, and that's what we started to explore.

Within a few years, cells will be able to replicate DNA with X and Y into RNA, the working copy of DNA.

Late last year, we proved that we can use X and Y to make proteins.

The highlight of this talk is the first fully functional semisynthetic organism.

(Applause) We're making proteins that glow green, so the cells look green.

It's a very famous protein that comes from jellyfish, and many people use it in its natural form because it's easy to see what you've made.

But each one of these proteins contains a new amino acid that no natural organism can make into a protein.

All living cells have used four genetic letters to make all proteins.

But these cells live, grow, and use their six genetic letters to make proteins.

a new form of life

It's a semi-synthetic form of living things.

What will the future hold?

In my lab, we're trying to multiply the genetic letters of other cells, including human cells, and we're going to start looking at more complex organisms.

Think semi-synthetic nematodes

The last thing I want to say, and the most important thing I can say, is that the age of semi-synthetic life has already begun.

thank you

(Applause) Chris Anderson: This is especially noteworthy.

My question is, based on your research, what do you think about the possibility of life on other planets in the universe?

It seems to be an assumption that all living things are based on DNA, but is there a higher probability space for self-replicating molecules than for DNA? Higher than DNA with 6 nucleotides?

Floyd Romsberg: Exactly. My research shows that, as I said, there's always been a prejudice, that we're perfect, we're optimized, that God made us this way, that evolution made us perfect.

We've made molecules that work outside of nature's molecules, and that suggests that any molecule that follows the principles of chemistry and physics can be optimized to do what nature's molecules do.

there is no magic

I think that suggests that organisms can evolve in different ways, using other types of DNA to create something similar to ours, or using no DNA at all.

Chris: How large do you think the probability space is?

can you know? It could be like a DNA molecule, or it could be something entirely different that could replicate itself and potentially create a living organism.

Floyd: In my humble opinion, if you discover a new creature, you probably won't notice it.

Chris: Maybe it's a very narrow-minded hypothesis that we're going to look for Goldilocks planets, where there's water and things like that and it's a good place to live.

Floyd: If you want to find someone to talk to, maybe not, but if you're just looking for other forms of life, I think you can look for life under street lights.

Chris: Thank you for surprising us all.

(applause)

Activist and punk rocker Jello Biafra said,

"Don't hate the media, just become the media yourself"

I am an artist

I like using media and technology because (A) I am familiar with the media and I like the power it has -

And (B) because they hate the media and fear its power.

(Laughter) In 2003, I watched Fox News host Tony Snow interview the then-Secretary of Defense, Donald Rumsfeld.

They were talking about the recent invasion of Iraq, and Rumsfeld was being asked, "I know the number of casualties on the American side, but I can't tell you the number of casualties on the Iraqi side. Why?"

Rumsfeld's answer was, "We don't count the victims of other countries."

don't you

An estimated 150,000 to 1 million Iraqi civilians are believed to have died in the 2003 US-led invasion.

This number is significantly higher than the 4,486 American soldiers who died during the same period.

It wasn't enough for me to tell people about this terrifying number.

I wanted to create a memorial to each and every civilian who died in the invasion.

War memorials, like Maya Lin's "Vietnam Veterans Memorial," are often gigantic.

It's very powerful and from one point of view.

But I wanted the cenotaph to live and permeate the world.

When I was a student, I remember my teacher giving us a common civics task: write the names of members of your government on a piece of paper.

And my teacher said, if you write really good letters really well, you'll get letters that aren't formulaic.

This is my "notebook"

It looks like a run-of-the-mill yellow legal pad, but it's actually a memorial to each and every Iraqi civilian who died during the American invasion.

This "notepaper" is a protest, a memorial service disguised as an ordinary notepad.

If you zoom in on the ruled lines of this piece of paper, you'll see the microprinted text that contains the details of the dead Iraqi civilians, including their names, dates and places of death.

Over the past five years, I've been shoveling tons of this paper into the office supply inventories of the US and coalition governments.

(Laughter) (Applause) Of course, I can't talk about how to do that here.

(Laughter) Meanwhile, at the same time, I've met with the so-called Coalition deputies and former deputies who supported the invasion.

And as often as I could, I told them about this project.

Last summer, I had the privilege of meeting former Attorney General Albert Gonzales, the author of the torture memo.

(Matt Kenyon) Can you take it?

Special legal pad

It's actually part of an art project I'm working on.

(Albert Gonzalez) Is this special?

MB: Yes, believe it or not, it's in the MoMA collection. I'm an artist.

All the lines on this paper - (Albert) disappear?

Matt: No, these borders are microprinted with the names of Iraqi civilians who died during the invasion of Iraq.

(Albert) I see.

(Albert) Thank you (Matt) Nice to meet you

(Laughter) His "thank you" really horrified me.

(Laughter) Now, folks, now look under your seat.

there is an envelope

please open

Now I have a piece of paper detailing the Iraqi civilians who died in the invasion.

I want you to use this piece of paper to write a letter to a member of the government.

And I want you to help me smuggle civilian casualty figures into the government archives.

Because every letter we send to governments from around the world is filed and recorded.

If you put this in the mailbox with me, it will be sent right in front of those in power.

Anything sent will be permanently archived by the government and become part of our shared historical record.

thank you

(Applause) (Tom Riley) Matt, tell me, how did you come up with the idea for this letter paper?

MM: I just finished a project dealing with war from the American and Coalition perspectives. A black armband called the Improvised Empathy Device records in real time the name, rank, cause and location of American soldiers who have died overseas.

So I became aware of the plight of Americans dying abroad, and yet the casualties were clearly disproportionately civilian.

(Tom) Thank you very much

(Matt) Thank you

(applause)

70,000 years ago, our ancestors were insignificant animals.

The most important thing to know about prehistoric humans is that they didn't matter.

Humans' impact on the planet was no different than jellyfish, fireflies, and woodpeckers.

But today, humans control this planet.

This begs the question: How did we get from that prehistoric age to this point?

Did they become rulers of the earth from insignificant apes struggling to survive in the corner of the African continent?

We often answer this question by comparing humans to all other animals and looking at individual differences.

What we want to believe - what I want to believe is that there's something special about humans. We want to believe that there's something special about our bodies and brains that's so much better than dogs and pigs and chimpanzees.

But the truth is, on the level of individual ability, I'm embarrassed to say, I'm no different than a chimpanzee.

What's more, if you leave me alone and a chimpanzee on an isolated island, and I'm desperate for survival, I'd bet on the chimpanzee to see which one might survive better.

this is not my problem

If most people were left alone on an island with a chimpanzee, the chimpanzee would have a much better chance of surviving.

The real difference between humans and all other animals is not the level of individual ability, but the difference as a group.

We control the planet because we're the only animals that can be flexible and work together in large numbers.

Now, there are other animals, like bees and ants, that are social insects.

Their collaboration is very inflexible.

A beehive basically only works in one way.

If a bee encounters a new environment or a new danger, it cannot transform itself into a new social system overnight.

You can't, for example, execute the queen bee and establish a honeybee republic, or you can't establish a communist dictatorship of worker bees.

There are other social mammals -- wolves, elephants, dolphins, chimpanzees. They can be more flexible in working together, but only in small groups, because chimpanzee cooperation only works if chimpanzees know each other well.

I'm a chimpanzee and you're a chimpanzee. I want to work with you.

i need to know you

What kind of chimpanzee are you?

good chimpanzee?

Or bad guy?

Can I trust you?

How can we work together without knowing you well?

We, Homo sapiens, are the only ones who are dualistic and flexible enough to work together in large numbers.

If it's one-to-one or 10-to-10, chimpanzees can do better.

But if you have 1,000 chimpanzees against 1,000 people, you easily beat the humans, and the reason is simple: at 1,000 chimpanzees can't work together.

If you take 100,000 chimpanzees into Oxford Street or Wembley Stadium or Tiananmen Square or the Vatican and shove them there, it's complete chaos.

Imagine 100,000 chimpanzees in Wembley Stadium.

It's a big mess

By contrast, tens of thousands of people would normally congregate in a stadium, but it wouldn't be chaotic, would it?

Instead, we build highly sophisticated and efficient circles of cooperation.

All of humankind's greatest achievements, whether it's building the pyramids or flying to the moon, have all been due not to the genius of an individual, but to the ability of humans to work together flexibly in large numbers.

Take this presentation alone, and I'm standing in front of an audience of 300 to 400 people right now, and most of them are new to me.

Likewise, I don't know much about the people running this event.

I flew to London yesterday, and I don't know much about the pilots and crew who were flying with me.

I don't know who invented or manufactured this microphone or that camera that records presentations.

I read books and papers in preparation for this presentation, but I don't know the authors.

And of course, I don't know anyone watching this presentation on the internet, somewhere in Buenos Aires or somewhere in New Delhi.

And yet, even if we don't know each other, we can work together here to exchange ideas globally.

Chimpanzees cannot do this

Of course, chimpanzees communicate with each other, but no chimpanzee travels all the way to present to a far-flung herd of chimpanzees about bananas, elephants, or anything else that chimpanzees might be interested in.

It's true that collaboration isn't always good. All the terrible things that humans have done, and indeed the terrible things that we've done, are the result of large-scale collaboration.

Prisons are built on cooperation, so are massacres, and so are concentration camps.

In the world of chimpanzees, there are no massacres, no prisons, no concentration camps.

I think you'll be convinced that humans, in large numbers, are so flexible and able to work together that they've come to control the planet.

So, if you're an inquisitive mind, it's easy to ask the next question, isn't it, exactly how do we work together?

What makes collaboration possible in ways other animals cannot?

Imagination is the answer

Humans are flexible enough to work with millions of strangers, because we're the only humans on this planet who can imagine and create fictional stories and believe them.

If everyone believes the same fiction, everyone will act according to the same rules, standards, and values.

The communication that other animals do is used only to convey facts.

In the case of chimpanzees, things like, "Look! There's a lion! Run away!"

"Look! There's a banana tree over there! Let's go get some bananas!"

Humans, on the other hand, use language not just to convey facts, but to create new realities and fictional realities.

Humans say, "Hey, there's a god above the clouds.

If you don't do what I tell you, when you die you'll be sent to hell as punishment."

If everyone believes this story that I just made up, they will follow the same norms, the same laws, the same values, and they will be able to work together.

that only humans can do

You can't convince a chimpanzee to give you a banana by promising that you'll go to heaven when you die.

(Laughter) "For your good deeds, you'll get a lot of bananas in heaven...

So give me a banana

Chimpanzees would never believe this story, would they?

Only humans believe these stories, and this is why humans control the planet, while chimpanzees are locked up in cages in zoos and laboratories.

I think you'll agree that in religion, believers are united by believing the same fiction.

Because millions of people come together to build cathedrals and mosques, to fight crusades and jihads, because they all believe in God, Heaven, and Hell.

But what I want to emphasize here is that all of the large-scale human collaboration that we can do is based on the exact same mechanism, and it's not just about religion.

Let's take the legal field as an example.

Today, most of the world's legal systems are based on a belief in human rights.

By the way, what are human rights?

Human rights, like God and Heaven, are the story of Homo sapiens.

It's not an objective reality, it doesn't have any biological impact on humanity.

If you cut open the human body and look inside, you won't find human rights in hearts, kidneys, neurons, hormones, DNA.

Human rights can only be found in the stories we create and spread over the last few centuries.

They may be very positive and very good stories, but they're also fictional stories that we made up.

This is also true in the field of politics.

The most important element in modern politics is the state

By the way, what is a nation?

They don't exist objectively either.

Mountains are physically present

You can see it, you can touch it, you can smell it

But nations -- Israel, Iran, France, Germany, and so on -- nations are just stories made up by humans, but the idea sticks very well.

The same is true in the field of economics.

Businesses and corporations play an important role in the global economy.

I'm guessing that many of you here work for some kind of corporation, like Google or Toyota or McDonald's.

What do these mean?

Lawyers call this a legal fiction

Corporations, too, are hoaxes invented by humans, but they're protected by powerful wizards, well, the lawyers...

(Laughter) What does the corporation do all day?

Most of them are trying to make money.

By the way, what is money?

Once again, money is objectively non-existent and has no objective value.

this green dollar bill

look it's worth nothing

I can't eat, I can't drink, I can't wear

But when it's in the hands of a good storyteller, when it's told by a big banker, or by a finance minister, or by a prime minister, it's a very compelling story, saying, "Hey, can you see this green piece of paper?

It's actually worth 10 bananas."

If I believe this, and if you believe this, if everyone believes, then it works.

Take this worthless piece of paper, go to the supermarket, give it to a stranger you've never met, and get a banana instead, because you can actually eat a banana.

it's amazing

You can't do this with a chimpanzee.

Of course, chimpanzees also trade. "Give me a coconut, I'll give you a banana."

There is this

But what do you mean when you give me a worthless piece of paper and give me a banana?

no way!

do you think i'm human

(Laughter) In fact, money is one of the most successful human inventions and transmissions, because it's the only story that everyone believes.

Not everyone believes in God. Not everyone believes in human rights. Not everyone is nationalist. But money and dollars are what everyone believes in.

Even Osama bin Laden

He hated American politics, religion, and culture, but he never attacked the US dollar.

I think I really liked it

(Laughter) I mean, humans control the world because they live in a dual reality.

All other animals live only in the world of objective reality.

Their reality is made up of real things, things like rivers, trees, lions, elephants.

We humans live in the real world.

There are rivers and trees, there are lions and elephants.

But over the centuries, we added to this real world another layer of fiction, a fictional world, like nations, gods, money, corporations.

And surprisingly, over the course of history, this fictional reality has become more powerful, and in today's world, this fictional entity is the most powerful entity.

The survival of rivers and trees and lions and elephants now depends on the very decisions and wishes of fictional worlds, on entities like the United States of America and Google and the World Bank that are only in human imagination.

thank you

(Applause) Bruno Giussani: Mr. Yuval, you just published a new book.

After the publication of "Sapiens," you wrote the next book, which was originally in Hebrew and has not yet been translated...

Harari: We are working hard on the translation.

GUSSANI: If I'm not mistaken in my understanding, this book discusses the incredible breakthroughs we're experiencing right now that not only have the potential to make our lives better in the future, but you write, "Just like the Industrial Revolution, it brings new classes and new class struggles."

Could you please explain a little?

Harari: Yes, the industrial revolution created a new class in the cities, the working class.

The political and social history of the last 200 years has had a lot to do with the treatment of this class, the new challenges and opportunities.

And today, there's a huge new class of "useless people."

(Laughter) As computers become more and more sophisticated in more and more fields, it's becoming clear that in many tasks, computers can outperform humans, making humans unnecessary.

And the big political and economic question of the 21st century will be, "What do we need humans for?" Or, to put it mildly, "Why do we need so many humans?"

Giussani: Are the answers written in this book?

Harari: Right now, the most plausible answer is to keep them happy with drugs and computer games...

(Laughter) Well, this doesn't sound like a very favorable future.

GUSSANI: You're arguing in your book and here that we're still in the early stages of that process in arguing that there's been a marked trend toward significant economic inequality.

Harari: It's not a prophecy, but it's been shown to us before us.

One possibility is the birth of a new gigantic class of "useless people."

And the other is that we're going to be divided into different biological classes, where the rich become virtual gods and the poor become useless.

Giussani: I'd love to hear from you again at TED in a year or two.

Yuval-san, thank you for traveling all the way.

Harari: Thank you!

(applause)

Imagine a place where your neighbors call your kids by name and you have a yacht of your own just a 20 minute drive away with a great view.

Attractive, right?

i don't live

(Laughter) In the last two years, I've traveled 40,000 miles to visit America's fastest growing white towns.

What is White Pier?

I define it in terms of three factors: First, the Whitopia population has increased by at least 6 percent since 2000.

Second, much of the population growth is due to white immigrants.

And the third one, Whitepia has an indescribable charm that looks and feels comfortable.

(Laughter) To see what Whitopia was and to see why it was so popular, I lived in three places for a few months each: first in St. George, Utah; then in Coeur d'Alene, Idaho;

Our first stop, St. George, was a town with great views of the red rocks.

In the 1850s, Brigham Young moved his family to St. George, a warm, dry place to grow cotton.

They called it the Dixie of Utah, to this day.

Every whitpier I approached like an anthropologist

I made a list of all the strong people in the community, decided where and with whom to meet, and jumped into the community.

I showed up at meetings of the district's leading figures, and I went to the offices of the Democrats and Republicans.

I played poker at night

In St. George, we rented a house in Entrada, the best walled community in town.

There ain't no Motel 6's or Howard Johnson's for me

I lived like a resident, not as a tourist.

I rented this house with one phone call

(Laughter) (Applause) Golf is the perfect epitome of luxury at Whitopia.

When I started this journey, I didn't own a golf club.

By the time you left here, you were playing three times a week.

(Laughter) Golf brings people together.

Some of the great encounters I've had on my travels have been at the golf course.

For example, a venture capitalist invited me to his privately owned golf club, which does not accept minorities as members.

I even went fishing

(Laughter) I had never fished before, so he taught me how to swing the rod down and what kind of bait to use.

I always played poker on weekends

It was Texas Hold'em Poker, and the entry fee was $10.

Our poker buddies bluffed about their hands, but they didn't lie about their social beliefs.

Some of the most raw and risque conversations I've heard on my travels were at poker tables.

i am a true entertainer

I love to cook, so I've hosted many dinner parties, and in return, people have invited me to dinner parties, barbecue parties, pool parties, and birthday parties.

But it's not all fun

Inhabiting a stranger was a big deal for Whitopia.

Illegal immigration is a problem, and the St. George Citizens' Council has held repeated protests against immigrants, and this white peer has informed me of just how hotly the issue is escalating into debate.

I've seen it myself, and it's become a real problem.

Next up is "Almost Heaven." We rented a cabin in Coeur d'Alene in beautiful North Idaho.

I rented this place with one phone call

(Laughter) It's listed as one of the 1,000 places you must visit before you die.

A little bit better at golf worked well for Coeur d'Alene.

I played golf with a former Los Angeles police officer.

In 1993, about 11,000 police officers and their families fled to North Idaho and formed a community after the LA racism.

These cops are conservative, so it's no surprise that North Idaho has a strong gun culture.

In fact, they say there are more gun stores than gas stations.

So how do you fit in here?

I came up with the gun club

When I borrowed a gun, the clerk behind the counter was very friendly and helpful, until I showed him my New York driver's license.

He was nervous.

I didn't think I looked as bad as my shooting skills, but...

What I learned in North Idaho is that in a society full of cops and guns, there's a strange culture of morbid suspicion.

Using the notepad I kept in my red camper while I was in North Idaho, I counted

There were more Confederate flags than black people.

In North Idaho, Confederate flags were common on key fobs, cell phones, sporting goods and cars.

Seven minutes from my lakeside hut, there was a white supremacist "Aryan Nation" enclave.

During my stay there happened to be a three-day meditation session of America's Promise Ministries, a religious organization of the Aryan nation.

I pushed

(Laughter) I knew it was the first outrage by a non-Aryan journalist.

(Laughter) I have many memorable stories from meditation sessions...

(Laughter) Abraham the Aryan came to my side.

He smacked me on the knee and said, "Rich, I have one thing to tell you.

We're not white supremacists, we're white separatists

I don't think I'm better than you, I just don't want to be with you."

(Laughter) In fact, many white people who live in Whitopia aren't white supremacists, they're not white separatists, they're never there for racial reasons.

Rather, they moved there for the sake of friendship, comfort, security and security -- the very connection between whites.

Georgia is next

It's an upmarket neighborhood in the northern suburbs of Atlanta.

I played poker in Utah, picked up a gun in Idaho, and found God in Georgia.

(Laughter) The way I've managed to integrate myself into this Whitopia is by being active in the Church of the First Redeemer.

I worked in the youth division

Personally, I felt more comfortable in White Pier than, say, Colorado or Idaho utopias or Boston suburbs.

Because here in Georgia, historically, whites and blacks have known each other better.

I've never seen such a weirdo in this white pier.

(Laughter) What does my experience mean?

The dream of Whitopia, or migration, is a push-pull phenomenon. Dangerous conditions push white people out, and they are pulled in by the fascination of Whitopia.

Even if the existence of a whitopia has racist consequences, it doesn't mean that white people live there because of discrimination.

Illegal activities, abuse of social services, minorities, overcrowded populations and overcrowded schools drive whitopia

On the other hand, the benefits, the freedoms, the allure of private communities, private land, a very small group of people, will be drawn to a life in which everything is private.

I learned at Whitopia that racism can exist in a country without racists.

My snobbish liberal friends in the city couldn't believe my adventures.

In fact, many white Americans are affable and kind.

Interracial relationships -- the way humans should be treated -- is much better than my parents' generation.

You wouldn't have imagined me going to Whitopia 40 years ago, would you?

What kind of trip did you have

(Laughter) But some things don't change.

America is still as segregated by race as it was in the 1970s, both in places to live and in education.

As fellow Americans, we sometimes cook together, dance together, and invite each other, but why can't we extend these practices into our communities?

It's incredibly ironic, because on an individual level, we're progressing, but on a community level, we're declining.

This quote from Whitopia shocked me: "Inviting one black person to dinner can be fun, but with 50 black people, it's like being in a ghetto."

From my trip to Whitopia, I strongly envisioned

By 2042, whites will no longer be the majority in America.

If that happens, will more White Piers be built?

When you think about this problem, the danger with Whitopia is that as racial segregation increases, the issue of conscious and unconscious prejudice will go unnoticed.

During my two-year, 40,000-kilometer adventure, I learned where, why, and how the white man was trying to escape, though I never thought it would be such a fun trip.

(Laughter) I also learned a lot more about myself than I expected.

But that doesn't mean I'm thinking of living in Whitopia or Blacktopia in the future.

I will definitely continue to play golf as long as I have the chance.

(Laughter) It's time to put down the guns you picked up at Whitpier and leave the Great Church.

thank you

(applause)

i like infographics

As an information designer, I have worked with various types of data for over 25 years.

Before I get into the details, let me give you a little history.

Information transmission is encoding, transmission, and decoding of information.

Human culture has reached a major turning point due to the dramatic progress in information transmission.

Acquisition of expressive abilities through voice, letters, and numbers has made great progress in information transmission.

It allows us to express our thoughts in words, and we can express quantities in numbers.

Without communication, humans would still be in the Stone Age.

Humans have been around for about 250,000 years, but proto-writing appeared only 8,000 years ago.

About 3,000 years later, we had the writing system.

Maps are a thousand years old, diagrams are hundreds of years old, and graphical representations of quantities are even more recent.

It wasn't until 1786 that William Playfair invented the bar chart, and the visual representation of quantitative information began.

Fifteen years later, he also invented pie charts and area charts.

His invention is still the most widely used today.

In 1857, Florence Nightingale invented the cockscomb diagram to explain to Queen Victoria the cause of death for soldiers.

It explains how most of the soldier's deaths were avoided by highlighting them in blue.

Soon after, Charles Minard charted the strength of Napoleon's invasion of Moscow, showing the decline of the army from 422,000 to 10,000, along with the relationship between the battles, the terrain, and the cold temperatures that caused the casualties.

It's a combination of Sankey diagrams and cartography, and the line graph is temperature.

I get excited when I get data, especially when it makes for interesting graphs.

This one, inspired by the Nightingale's cockscomb chart, pulls together data from thousands of federal energy subsidies to show the lack of investment in renewable energy compared to fossil fuels.

Here's a Sankey diagram showing the flow of energy consumption in the U.S. economy, highlighting that almost half of it is lost as waste heat.

I love data presented in beautiful shapes

This is the personal and professional connection of women in Silicon Valley, which can be represented by an arc.

I made my own graph

I deal only with numbers, so I'm not good at the word game "Scrabble"

To memorize all the two-letter and three-letter words in the game's official dictionary, I put together a graph.

(Laughter) If you learn 1,168 words from the official dictionary, you're definitely turning the tables.

(Laughter) Sometimes I write programs to quickly draw graphs from thousands of data points.

You can create interactive graphs programmatically.

You can manipulate the information however you see fit.

Flashy graphs are certainly cool, but sometimes something as simple as one little dot can make sense.

In 2006, the New York Times redesigned its stock market column, cutting eight pages of stock listings down to one and a half pages of key market data.

I made a list of performance metrics for the most common stocks, but I wanted investors to be able to see how the stocks were doing.

So I added a simple little dot to the table to show where the current stock price stands relative to the volatility over the past year.

Now you can quickly see which stocks are priced near the bottom, the ones with the dot on the left.

You can also immediately see the stocks that are going up in price, the ones with the dots on the right.

The Wall Street Journal quickly followed suit.

Simple is often best, but sometimes you have to accept that it's complex, and you have to look at all that big data.

Alec Gallup, the former chairman of Gallup, once handed me a thick document.

His family legacy, hundreds of pages of data on 60 years of presidential approval ratings.

I told him I could put all the data in a one-page chart.

"Impossible" he does not believe

Look, there are 25,000 data points on one page.

At a glance, you can see that most presidents start out with high approval ratings, but rarely sustain them.

Events such as wars will only boost your approval ratings at first, while scandals will drive your approval ratings down.

The key event annotations in this graph are not in the original document.

So graphs make the data much easier to understand.

Graphicacy, the art of reading and drawing graphs, is still in its infancy.

New graph types will emerge, and technical representations will develop.

Graphs speed up our understanding and allow us to see a whole book's worth of information on just one page, and graphs will be key to making new discoveries.

Our visual cortex is designed to decode complex information and is very good at pattern recognition.

Graphicsacy allows us to harness the GPU in our brains, process mountains of data, and discover hidden gold.

thank you

(applause)

A few years ago, I got a call from Georgia's highest-ranking attorney general -- the state attorney general.

I thought I would wake up in an instant

It was 2013, and the city of Atlanta was going to host the final four of the men's college basketball.

The requirement for the call was -- in order to fund an advertisement for our company -- a billboard that was put up around town as part of the anti-trafficking movement.

"This is important because the spikes in sex trafficking occur during big sporting events and competitions.

I want to warn you."

Well, to be honest, at first I thought I'd politely decline.

(Laughter) Let's be frank, there are thousands of things corporate America can get involved in.

Sex trafficking seemed a little nasty

It's a little too difficult I thought it would be better to leave it to someone else

But then gradually I realized that this was really a big deal-

I understand that it's rampant in the city where our company is based.

I have lived and worked in Atlanta for many years.

I am a lawyer here

But what I had no idea was that the city where my children were born was one of the most prevalent sex-trafficking cities in America.

According to the latest report, illicit sex trade in Atlanta reached $290 million a year.

Even the illegal handgun and drug trade in the city doesn't add up to that amount.

So we took the plunge and helped out with advertising.

But I felt that advertising alone wasn't enough.

As a parent, as a mother, I wanted to do something more.

I started talking about this issue to people around me -- and I couldn't help but be surprised. At first, they listened with interest -- "Really? Is that happening in this city?"

And then they show sympathy - "That's terrible, we have to do something about it."

The ending turns into a denunciation: "Are you saying that all whores are victims?

They know what they're doing too, don't they? ”

It's no wonder you're confused

Now, let me be very clear: the people I'm talking about didn't choose their own path.

coerced, deceived, coerced

That's the legal definition of adult trafficking in federal law.

Now, what about minors? Anybody under the age of 18 who is taken away or recruited or exploited for commercial sex automatically becomes a victim.

Whether through violence, fraud or coercion

No age, no gender, no socioeconomic barriers to this crime.

Let me tell you about a 16-year-old girl I met in Washington DC.

She was trafficked between the ages of 14 and 16.

she fell victim to the foster care system

He said he'd been sold five times in one day.

I didn't even know the word "trafficking," because I was in foster care, so I figured it couldn't be helped.

Sex trafficking exists even in wealthy neighborhoods and residential areas with guarded gates.

These guys dangle promises of modeling contracts and bait them on their cell phones to lure young girls into sex trafficking situations.

You can be kidnapped while walking down the street.

An estimated 200,000 to 300,000 boys and girls are used for sex trafficking each year in the United States.

I'll say it again just in case, there are girls and boys among them.

According to the International Labor Organization, an estimated 1 million children worldwide are victims of sex trafficking each year.

that's a huge number

So billboards, while effective in raising public awareness, are not the only solution to this problem.

Even if we take the problem seriously, laws and arrests alone will not solve this modern day slavery.

If we really want to end sex trafficking in the United States, we need to systematically educate and target demand generators.

I think the corporate community is the best place to do this.

So sex trafficking is really a big industry.

What I propose is a business plan that starts with the customer.

In the sex trade, the client is called "John."

It's John who creates demand for sex trafficking.

John doesn't have a clear stereotype.

But there is one universal truth, John, that if there were no prostitutes, there would be no victims.

So to reduce sex trafficking, first approach John.

Companies can work with John while he's on the job.

There's an organization called BEST, which stands for Businesses Ending Slavery and Trafficking, and it's made up of companies that want to end forced labor and human trafficking.

When the organization started in 2012, they surveyed Johns in the Seattle area.

What do you think of the results?

The Johns are just normal men who work for local businesses.

Ages range from 18 to 84

Some johns have children

They admitted to buying sex while on business trips, attending sporting events, even while serving in the military.

But this is what surprises me

The BEST study found that the online sex trade spiked at 2:00 p.m.

So the customer is buying sex while on the job.

I think there are ways to stop prostitution at work.

There are three easy ways companies can

The first thing is to create a work contract

The policy states: "Prohibition of prostitution while on the job using company property or working hours."

that's right

I'll give you a specific example in the work rules: "You must not buy sex while on a business trip to an international exhibition."

And the rules are meaningless unless they are known and followed.

After researching several Johns, we've found that the best way to discourage prostitution is to publicly humiliate them.

So if a company finds employees who are prostitutes and knows they're using company equipment and funds, but doesn't fire them by ignoring them or covering them up, they're complicit in the demand production of human trafficking.

Now, employment policies are one of the best things to do first.

The second is employee education.

If companies educate their employees, they can effectively learn the signs and red flags of human trafficking.

This is it! I immediately thought that our company should do the same.

Our highways, airports and truck service areas are literally being used as modern slave lanes.

We have over 100,000 drivers across the US and around the world.

So it makes a lot of sense to train them to recognize the red flags.

Instead of the drivers rushing in and dealing with the situation, they call the hotline and get the police to intervene.

To do this, we partnered with Truckers Against Trafficking, an organization of truck drivers against human trafficking.

We've provided our truck drivers with the help and resources that this Colorado-based organization provides through the Internet, and it's exactly the information they need to spot the red flags.

For example, isn't there a truck radio talking about a girl near a nearby freeway exit?

Or an underage woman getting out of a parked vehicle in a service area?

When I started training, a few honest drivers told me that they saw a woman knocking on the window of a taxi in the service area, looking for customers.

They weren't customers.

I didn't even know it was a problem to report.

I would like to be notified in the future

An organization called TAT (Truckers Against Trafficking) emphasizes that men need to talk to each other about online prostitution and not buying it.

Advertisements for TAT show men in uniforms proudly telling why they don't buy sex.

To change this squalid situation through advocacy, we need men to talk to each other about the underlying issues that create demand.

Some men don't even know that the girls they buy are forced into labor.

And there's a third way companies can contribute.

Every company has its own sources of information, its own accumulation of corporate assets, and the know-how that only that company can provide to combat human trafficking.

For example, Visa, Mastercard, and American Express are rejecting transactions from backpage.com, an online sex site that generated $9 million in sales per month for commercial sex.

April 2018 backpage.com and related sites shut down and all assets seized by FBI

Hiring people who have escaped human trafficking is another way companies can help.

An organization called Randstad has a great job placement program called Hire Hope that works with companies to find these people who need good jobs.

We use it too, it's a very good program.

In addition to educating flight attendants and flight attendants, Delta also offers miles through a program called SkyWish to help former victims escape traffickers and reunite with their families.

There are many things companies can do

All you have to do is decide what to do to join the fight.

No one can justify slavery now.

Yet sex trafficking remains one of the greatest human rights abuses.

Fortunately, the corporate community is uniquely positioned to help educate employees, enforce compliance with work rules, and use their unique know-how to help fight human trafficking.

Well what do you guys do?

Why not make the decision to learn the red flags?

If you see signs everywhere around you, will you let me know?

You won't be penalized for reporting something just because you think something is wrong.

Together, we can protect our children, educate the people around us, and improve the society in which we live and work with John.

thank you

(applause)

For the past decade, I've been researching non-state armed groups -- armed groups like terrorists, rebels, and militias.

I'm documenting the non-combat behavior of these groups.

The aim is to improve our understanding of these violent groups and find ways to encourage them to move from combat to non-violent conflict.

I work in the field, in the political world and in the library.

Understanding non-state armed groups is the key to solving many ongoing conflicts, because the way wars are fought has changed.

It used to be a battle between nations

no longer

Today's wars are conflicts between states and non-state actors.

For example, 216 peace agreements were signed between 1975 and 2011, of which 196 were agreements between states and non-state actors.

So you have to understand them, and you have to either engage them or subdue them in the process in order for the conflict resolution to be successful.

Then how?

We need to know the motives of organizations like this.

We know how they fight and why they fight, but nobody pays attention to what they do outside of combat.

Military action and non-combat policy are related.

Everything is two sides of the same coin

Unless you have a complete picture of them, you can't understand them, let alone conquer them.

Armed groups today are complex organizations

Take Lebanon's Hezbollah, which confronts Israel with violence.

Since its formation in the early 1980s, Hezbollah has set up political parties, networks of social services, and military structures.

Similarly, Hamas, the Palestinian group known for its suicide bombings against Israel, has also ruled the Gaza Strip since 2007.

So I've been involved in a lot of things other than fighting.

Carry out multiple tasks in parallel

They've secured multiple channels of communication, including radio stations, television broadcast websites, and social media offerings.

What I'm showing you here is a magazine published by ISIS, printed in English for recruiting purposes.

Armed groups have multiple ways of raising money. They don't loot, they run construction companies and other profitable businesses.

Activities like this are key to understanding

Through these activities, they grow in power, gain funding, gain more members, and build their reputation.

Armed groups also do things like this: they invest in social welfare projects to build bonds with people.

We build schools, we run hospitals, we also provide vocational training programs and small loans.

Hezbollah also provides other services

Armed groups provide what the state doesn't give them -- security and security -- in order to earn a higher reputation with the people than the state.

The rise of the Taliban in war-torn Afghanistan, and even the rise of ISIS, is understandable given their efforts to provide security.

In these instances, unfortunately, the security provided came at a very high cost to the residents.

But in general, social welfare programs fill the gaps in governance left by governments, giving groups a stronger foundation and greater power.

For example, the victory of Palestinian Hamas in the 2006 elections cannot be understood without considering their social activism.

It's especially difficult for the West to understand armed groups, because they only see the violent side.

But that doesn't fully understand their strengths, their strategies, their long-term direction.

These groups are complex organizations

We build power by filling policy voids, we build power both militarily and politically, we wrestle and we govern.

As these institutions become more complex and sophisticated, the idea that they are the opposite of the state fades away.

What do you think of organizations like Hezbollah?

Manage a portion of the land, run all functions, collect garbage, manage sewers

Is this a nation? Or rebels?

No, something more different and new?

What about ISIS?

the line is vague

We live in a world where there are states, non-states, and everything in between, and as states weaken, as in the Middle East today, non-state actors intervene to fill the void.

This is a big problem for governments, because they have to invest more in non-military things to compete with them.

Filling the governance vacuum should be central to any sustainable approach.

This is also important for reconciliation and peace building.

If we can understand armed groups better, we can find better ways to motivate them and move them from violence to non-violence.

In this new type of warfare between states and non-states, military power will bring some victories, but not peace or stability.

Achieving these objectives will require long-term investments to fill the security vacuum and the governance vacuum from which they derive their power.

thank you very much

(applause)

Let's take a look at the slides together

What I've learned from today's presentation is that all my work is very candid.

My ideas are very logical and related to what's going on in the world and solving client problems.

Either I convince the client that the problem is solved, or I actually solve the problem, and in the end, most of the time, they like it.

Now let's take a look at the slides

can you turn off the lights

I prefer dark

I'm glad I can't see what you're doing on the stage

(Laughter) This is a house I designed in Santa Monica that got a lot of notoriety.

It's in a porn comic book, right side of the slide.

(Laughter) A house in Venice, California.

The reason I show you this project is because I design with the environment in mind.

If you look to the left, it's an environment of small dwellings.

If you just take a picture of the building without framing the atmosphere around it, it will look like a very strange building.

Then, after mediating the relationship with the surrounding environment, I will try to create a comfortable, private, and quiet space.

This is Loyola University Law School in Los Angeles.

I was conscious of creating a space to study the law

It's a project I'm working on with a client.

The top floor of the building on the right is currently under construction.

The garage gray structure on the right is scheduled to be demolished, and eventually small classrooms will line up along the road we've built inside the campus.

And when I asked the university and the students for their opinion, from the first meeting, they said, "I feel like I've been rejected."

I was looking for a place where I could be conscious of space.

So the challenge was, how do we weave those spaces into the cramped inner city?

My reasoning or point of view is that if the building doesn't look down on its surroundings, it creates harmony with the whole.

So I tried to embrace my surroundings, and my likes and dislikes were secondary.

In the '60s, I started making furniture out of paper, some of which were hits at Bloomingdale's.

I made everything from flooring to walls out of cardboard.

And I was rather embarrassed by this success.

I didn't take my success with furniture very well. I still didn't have enough confidence as an architect.

(Laughter) Who wouldn't like this?

The predecessor to these pieces was Slice furniture, which I worked with Ricky.

After failing, it was a series of failures

(Laughter) The work on the left eventually gave rise to the work on the right, when the younger staff members were working, folding up long cardboard boxes and putting them in the trash.

And I just taped it all around, and as you can see, I found that I could sit on it, and it was also resilient and strong.

It was an unexpected discovery

Then I woke up to the fish

(Laughter) And there's a valid argument for this, and I was furious with postmodernism, and when I heard that fish already existed 500 million years before humans, I thought, if you want to go back in time, let's go back to the origins.

That's how I started making weird things.

The pieces grew larger and larger as they came to life, and that's the glass piece at the Walker Art Center.

So I stripped the head down and the tail down, trying to express my thoughts on fish form and movement.

This approach later inspired an idea for architecture. Again, this was a serendipitous discovery: I just followed my intuition.

This is a building in Japan

It was the day I signed a contract with a small restaurant, and I was invited to dinner.

I love sake, Kobe and all of that culture.

I was very drunk that day, and I was asked to sketch on a paper napkin.

(Laughter) I just kind of sketched, like the little boxes and Morandi stuff that I used to draw at the time.

Seeing that, the client said, "Isn't there any fish?"

So I drew a sketch of a fish and left Japan.

Three weeks after that, the complete set of drawings arrived.

(Laughter) It's incredibly difficult to capture the shape of a fish because it's so beautiful and perfect, especially when it comes to buildings and objects.

Oldenburg, who I work with from time to time, told me, "You're definitely not going to be able to do it."

But he was right, he just couldn't get over his tail

The head managed to take shape, but the tail did nothing.

it was pretty tough

The right hand is shaped like a snake and is called a ziggurat.

I put the two together so you can walk in between.

Coming back to what I was talking about earlier, the relationship with the surrounding environment.

If you look at this photo, it was featured in Architectural Record magazine, but it doesn't show what's going on around you, and you're like, "What an assertive guy."

Actually my friend found this restaurant

I wandered around for four hours and still couldn't find it.

that's why...

(Laughter) I'm completely baffled by all the things you've been talking about, crafts and techniques.

It was built in 6 months

The way I sent the drawings to Japan was through a "magic computer" in Michigan that would create the sculptural models, and I would often make the foam models that it scanned.

And I made a drawing of the fish and the scales.

By the time I got to Japan, everything was perfect except the tail.

So I decided to cut off the head and tail.

The one on the left was made for a solo exhibition at the Walker Art Center.

One of my best works

I was commissioned by my friend and client, Jay Chiato, to design the Los Angeles headquarters building.

I won't go into the reasons here, but progress was delayed.

Hazardous waste was certainly the main culprit.

So I built a temporary building, and I'm good at "makeshift" work, so I put a conference room in a fish.

Finally, Jay took me to my hometown of Toronto, Canada.

So here's an anecdote, a true story about my grandmother.

At night I played with the carp

But when I go to bed and wake up the next morning, the carp is not in the bathtub

I enjoyed carp dishes for dinner the next day.

(Laughter) I remembered that, and built a pedestal so that the sculpture could be displayed in the interior of Jay's office.

But Jay wouldn't buy the sculpture, so I made one for him.

I searched all over Toronto, found a bathtub that looked just like my grandmother's, and put a carp in it.

(Laughter) I play with humorous ideas with someone like Oldenburg, who knows how to joke.

I have known him for a long time.

I have collaborated with him on several projects.

A few years ago in Venice, we did some performance art together, called "Il Corso del Coltello," which translates to "Swiss Army Knife."

Most of the images -- (Laughter) were his ideas, with my sons on either side, but in the actual performance, my sons were the assistants.

And he's a Swiss Army knife

He's an aspiring painter. He's a souvenir shop clerk. I'm Frankie P. Toronto.

Borrowing the first letter "P" for Palladio

I'm dressed like Bill from AT&amp;T. (Laughter) Of course it's a fish hat

The highlight of the stage was the finale

A very beautiful object, the "Swiss Army Knife," is here.

It was like an Oldenburg solo performance.

i'm not doing anything

The only thing I did was make the blades steerable so that I could navigate the canals better, because my hobby is sailing.

(Laughter) I built it into a sailing boat.

I'm known for my work with chain link fences.

Wire mesh is very interesting when you think about it in terms of culture, because when something is mass-produced and used everywhere, it creates a strong rejection.

become hated

But I'm also drawn to paper furniture, and I'm drawn to those materials, and so are chain link fences.

For some reason I'm always attracted to you

So I tried to do all sorts of bad things with wire mesh, and I tried to use it in a way that no one would ever forgive me.

Thanks to Oldenburg, I was recognized at Loyola University Law School.

The wire mesh used here is very expensive.

Spatial and everything is wonderful

We also worked together on a camp facility for children fighting cancer.

Together we started designing a building.

Of course the milk can is his work

Arranged next to each other while colliding with each other's ideas

It's like Morandi's vases coexist in a still life.

This seems to have been a way of merging his work with mine.

And then Jay Chiato asked me to design this building, and I started out with an odd-shaped site in Venice with three separate buildings, with the entrance in the middle building.

Jay asked me what I planned to do with the central building.

I was asked persistently

One day, I had an epiphany, "I have a good idea."

I put my Oldenburg binoculars there, and it's been there ever since.

Oldenburg made the first model from the original, and he sent me a pair of great binoculars.

my building looks "sick"

Interacting with him has the fun of stimulating each other.

That inspired me to the building on the left.

I think the photo in Time magazine is probably these binoculars.

I use a lot of metal in my work.

I was frustrated because there was a limit to the "techniques" that I could bring out in all kinds of work, including home design and carpentry.

Then he said, "If the 'skills' that I imagined didn't come out, I'd have no choice but to compete with the 'skills' that I had."

There were a lot of role models: Rauschenberg, Jasper Johns, and many other artists, making beautiful works of art and sculptures out of junk materials.

The reason I put it in metal is because it's sculpture that makes a building a building.

And metal is used for everything, it's used for roofs, it's used for walls.

Most people who work with metal also do things like plumbing in ceilings.

I was blessed with the opportunity to design an exhibition.The exhibition of the United States and Canada Sheet Metal Workers' Union was held in Washington.At that time, I made one condition.I wanted him to cooperate with me as a partner in the production of my metal buildings and works.

It's been going great since then, and these craftsmen are very interested in this kind of work.

We just need to talk about new projects

It's important people who enable architectural ideas in a way that connects with these people.

And then the metal building, the Herman Miller company in Sacramento.

A collection of factory facilities

At Herman Miller, we have a philosophy of providing a place for people.

It's not a particularly new idea, but I really wanted to put a gathering place in the center of the facility.

I designed this in a secluded land

Made of copper and galvanized

The galvanized and copper that I used was very thin and curved.

I spent a lot of time "breaking down" against Richard Meier's aesthetic.

While everyone was looking for how to perfect a panel, I was always looking for something messy and unclear.

Finally finished like a rock

This is what the center looks like

This is the sloping access road

This little dome was designed by Stanley Tigerman.

It's because of him that we were able to win this project.

Once the order was finalized, the first thing I did was ask the client to let Stanley and I build a little one.

Because it was an idea that came out of a conversation with him, because building the buildings next to each other allows us to create a metaphor for the city.

And the construction of Stanley's little dome.

I made it by telephone and fax exchange

Stanley will fax me the visuals.

And it was a dome-shaped building with a turret.

When I saw it, I said, "No, this is too flashy.

I don't need a tower

So they modified it to a simpler design, but with some weird tweaks, and it crept up on my building.

So I dented the ground on his side a little bit.

It's like putting a dome in a hole

In response, we built two bridges, all by fax, and it's been this way for weeks.

Then there were two bridges with pink guardrails.

So I added a big billboard behind it.

It's called "David and Goliath"

This is the cafeteria I designed

On the left is an old building in Boston.

It's a conspicuous building right next to the highway. We added the first floor and renovated it beautifully. We read the local atmosphere and incorporated it into the design.

It made me feel gorgeous. The material is lead copper. It's a beautiful material that turns green after a hundred years.

Copper turns green in 10-15 years

The sides have been redone, and the windows have been sized to harmonize with the space around them.

When I got the permit, both the people in Boston and I were stunned, because Boston's urban planning guidelines are so strict that they say my design doesn't fit right in Boston.

We meticulously machined the details in lead-copper to ensure that the panels we produced would fit snugly into the existing building material.

For the film festival on Las Ramblas in Barcelona, ​​we made a Hollywood sign that goes back and forth, and we used it to build a building.

This is a picture I took while flying on a night flight.

Without even telling me, it was made 30% smaller than the model.

There's another work in Santa Monica, in metal and wire mesh, in a small shopping center.

This is the Advanced Technology Laboratory at the University of Iowa, and I've added another "fish" to the background in an abstract image.

It was an ancillary facility, and incidentally, it didn't need windows.

The shape was a perfect fit.

The curved part houses the machinery.

The back wall is a housing for the pipes, which was perfect because we didn't have to put ducts or vents on the surface.

It was the perfect environment to sculpt it.

I forget where it is, but I designed a small residence.

The construction took too long and I forgot where

West Valley City

We started around the stream, built houses along the stream, and built a pond by damming the flow.

this is the model

Actually, like the pond, it's pretty badly built.

When you design something like your home, you're reminded why self-defense works.

If you have to cut costs, you can't build a building with tight corners.

The big metal piece is a connecting hallway that leads down to the living room, and below that is the bedroom, and to the right is the bedroom.

It's like building a whole town

I was commissioned by Yale University to design a hospital for adolescents with schizophrenia.

i thought it was a good job for me

It's next door to Philip Johnson's house in Minnesota.

I wasn't sure who to ask, but in the end I asked Philip.

But Philip was too busy to do it.

By the way, Philip didn't introduce me to you.

(Laughter) I ended up designing the residence to be a sculpture, and the dilemma was how to make a building that didn't look like a "statement."

Doesn't it look like this beautiful mansion is divided up, etc.

Because it was various

You know what I'm trying to say

I finally got the idea and built it.

The owner is an art collector

When viewed from the main house, the view is like a work of art.The windows are all placed on the opposite side.

When you walk around the building and look at it, it really does look like a piece of sculpture.

It's metal, and the brown part is Fin-Ply engineered wood from Finland.

I used it for Loyola's chapel, but it didn't work.

It's a material I've been trying ever since.

I got the knack for finishing details in this private residence.

On the left is a public square in Cleveland

still unfinished

Head towards the lake and you'll see a building that we've worked on.

Here comes the story of building design

A line cuts through

The town hall is here, the court is here

Here is the center line of the square

CA: The Barnum-designed station never materialized, and our building was cancelled.

Sohio is the axis on this side, with our buildings along it, and the pillars on either end.

This is the building we designed, the headquarters building for the insurance company.

In collaboration with Oldenburg, I put a folded newspaper on my head.

There's a gym in the parking lot It's a C for Cleveland and it's held on with a C-clamp.

(Laughter) When you get out of the parking lot

It's about getting off a 10-story C-clamp.

The buildings on the ground floor are museums, with plans to create a very sophisticated garage entrance.

The owner is very particular about the entrance.

this is going to be a hotel

I was thinking of a design that would take advantage of this centerline.

Designing skyscrapers is still difficult, and I feel closer to short buildings.

This is a property in Brentwood

Around 1982, quite some time ago, after my house was designed, it's a small village-like structure with several buildings around a courtyard.

Then she came to me again, and all of a sudden she was rich, and she asked me to design her house on this land.

So we started with the idea of ​​a village, and as we worked on it, it gradually changed.

And here's a picture of it. And then I created a lower level area where the master bedroom is. It's designed like a flat-bottomed cargo ship. It looks like a boat.

this is after

The dome was attached by the client's order

"I want a dome somewhere in the house

I'll leave the place to you."

When I sleep in this bedroom, I haven't slept yet

I said, "I want to sleep in this bedroom, so marry me," but he said, "You don't have to." (Laughter)

Anyway, when you walk into this bedroom, it feels like you're on a boat on a lake.

And it's a very private space.

The landscape of this land just creates a private garden.

And there's a garden on this side of the living room upstairs, and there's a garden behind it.

This photo is out of focus

I wonder if I can adjust from here Can you focus on the right side?

Here it is

left or right from my point of view

Anyway, through a beautiful grove of gardens

this is the living room

Here's the servant's antechamber, the guest bedroom with a marble dome.

There is also a living room

This is the previous bedroom

There's a flight of stairs down to this floor, and there's an entrance to the bedroom that leads to the pond.

Here is the bed.The window overlooks the pond.

Incorporating this Stonehenge-like block into the foreground has the effect of creating a sense of depth in a small piece of land.

We used the same lead-copper material as the Boston building.

The idea was to divide a small piece of land, about 2,300 square meters, into several areas to make it look like a mansion, and then turn this building into a living and dining space to create a sense of height.

It's just a coincidence that the dining table is right on the axis.

It looks like a free Baldessari painting.

But what's unique about this design is that parts of the house are visible through the windows.

We're going to need a screen here eventually.

I feel like I'm living in my own village

This is the Disney office commissioned by Michael Eisner.

I'm working on a Disney project right now.

A freeway passes under our base in Anaheim, California.

Cars are driving under this bridge here at about 105 kilometers per hour, and there's another bridge here.

In the blink of an eye, you're going through the bottom of the room, and it's reflected in the building.

The back is much more human, with the entrance, dining room, etc.

In this part, we made it like a picket fence so that you can enjoy the sound while running, and the sound of running away echoes.

added playfulness

We're in the process of designing an office building in Basel, Switzerland, for a furniture company.

I struggled to express the image of the company.

It's still in the early stages of research, but since we sell furniture to the general public, if the head office becomes too extravagant, people might say, "It looked good when it was on display, but when I put it in my house, it looked different."

So this section is a practical slab for Phase 2 of construction, and we've put all the meeting rooms and stuff into this "outhouse," and the result is a very sculptural common area that's also separate from the rest.

Viewed from the office, you can enjoy the sight of the individual buildings leaning against each other.

This is the banks of the Seine in Paris

With the Palais des Sports and Gare de Lyon

The Minister of Finance, who moved from the Louvre, is here.

This is the new library on the other side of the Seine.

We are building a complex called the American Center in the park surrounded by trees in the back of this building. It is a building full of theaters, condominiums, dance classes, museums, restaurants, etc. There is also a bookstore.

It's a very small site. This is the first floor.

In France, there's an improbable technique that ruins everything - it cuts off the corners of a well-formed piece of land.

It's called "plan coupe"

I struggled with this chamfer, trying to make good use of the cornerless part.

this is the model

I showed you another model earlier, but I sketched it to clear my head before drawing it.

I can see the problem by drawing it. I was thinking about how to handle the chamfered part.

Let's make it an apartment, etc.

This is the research model at that time

The model on the left hand is terrible. When I saw this, I felt like throwing myself away at any moment.

In the end, we came up with a good solution: put the elevator in front of you, parallel to each side of the road.

This balcony and skirt have a twist, so it looks like a ballerina in front of you holding the ends of her tutu to welcome you.

Restaurants are here, apartments and theaters are packed.

We used local limestone for all materials, only here is metal.

this is for the park

The theme is a design that conveys its own energy from this aggregate.

The side facing the road is modest. Only the roof is a mansard with a two-step slope.

We're going to have a high-tech billboard here.

If you have any good ideas, please let me know

I don't have an idea yet

Jay Chiato didn't hesitate to ask me to design another one for his residence in the Hamptons.

Of course, it comes with "fish."

Like an addict, saying "No more fish motifs, I'm tired of it, I'm done with it"

Before I knew it, I was wearing a fish.

This is the fish. (Laughter) This time it's in the living room.

This elongated object- Now what is it?

For the time being, I put it on to secure a sufficient budget so that I can cut it later.

(Laughter) This is a EuroDisney property, and I've worked with all of the Disney folks.

I really enjoy working with Disney.

Even though we're all aliens, somehow, as a team, we're very cohesive and work very efficiently.

at least so far it's smooth

this is the shopping area

Enter the Magic Kingdom, where the hotel will be directed by Tony Baxter.

It's like a shopping mall, with rodeos and restaurants.

more restaurants

The gimmick in this facility is that Paris is famous for its cloudy skies, so it's a structure where the light falls in a grid pattern at right angles to the train station, and at right angles to the tracks.

It blends in as if it were there, blending in with the simple buildings around it.

At night, it is lit up and the ceiling is gorgeously colored.

This is on the German side of Basel, near the Rhine, and it's a furniture museum with a furniture factory.

Here's a building designed by Nick Grimshaw, and here's an Oldenburg sculpture, in harmony with the whole community, including their work.

This slide is kind of confusing. I just finished it.

If you look at it as you pass by, all the buildings are one big mass, one with the surroundings.

The material is only plaster and zinc

Some of you may be wondering, "Is this a museum or something?" or "What's going on inside?"

Keep the exterior noisy, don't show the inside, I'm just waiting for you to come and see

As someone who is smart, on the contrary, the interior is quiet and finely finished.

The appearance remains a little appealing

It's actually just three square rooms and some skylights and things like that.

From the building behind it, it looks like an iceberg drifting down the hill.

I'm running out of time

The slope of the skylight is connected here

it's very quiet inside

This is Disney's concert hall.

it's a complicated project

There is a chamber music hall

It's associated with the existing Chandler Pavilion, a theater made possible by a deep passion and passion for the arts.

I wouldn't call it great design, but it was a positive approach, with each building recognizing itself as a building block and building a complementary relationship.

It's a concert hall after all.

The entrance hall has a garden structure

Commercial facilities on the ground floor

This is where office tenants come in. It's not a competition, so I didn't design this.

and here is the hotel

It is an angle that clearly shows the relationship with Chandler Hall.It is composed of a gentle slope together to harmonize with the surrounding buildings such as MOCA.

In the competition, we were given an acoustic requirement, and in order to meet the requirement, we decided to use partitions, but after the competition, it turned out that this was not a working structure.

But the difficulty is that you've already fallen in love with the form and the space, and you're entering a project through a competition.

I have to start over and somehow realize the original plan

I made several models and studied them.

Here's a model of the original plan, three halls of ideal construction: the concert halls of the Concertgebouw, Boston, and the Berlin Symphony Orchestra.

We all love this surround

This is the smallest hall, but it has more seating than the others because of the double balcony seating.

But the client didn't want a balcony, so we brought in a new acoustic expert to give us a lecture on acoustically correct geometries.

We experimented with a number of shapes to achieve a shape that met the acoustical tolerance without losing the energy of the original idea.

In the end, we settled on the structure of the Concertgebouw Orchestra, which the acoustic experts said was extremely important, so we gave it a sloping exterior wall, but later told us that it didn't really need a sloping wall, so we ended up staying with it.

(Laughter) The idea here is that the seating area has been sculpted into a plastered space with a large wooden boat moored in it.

proceed with that image

We added skylights in the corners and columns as part of the structure.

By adding these pillars, it creates a sense of gazing at the front stage from any seat, creating a sense of intimacy with the stage.

This is a work-in-progress design, not a finished product, so just look at it to get an idea.

We used a laser device to confirm the acoustic conditions.The position of the reverberant sound is projected with a laser, and the sound is confirmed.

You can get a feel for it by looking at the cross-section of the hall.

Concert halls usually have a structure that descends toward the front of the stage.

In this case, it opens to the back, allowing natural light to come in from all four corners.

so it has a very peculiar shape

(Laughter) This is a prototype model. It's dressed like a frog, so the folds fit neatly into the lot.

Once an image solidifies in my head, it's hard to get rid of it.

This is an Alessi teapot that I designed.

I have attached this here

And that's exactly my approach.

Of course, in the end, it's going to look pretty, but that's exactly how I work.

And this is the sculpture I was commissioned to design in Los Angeles, at the foot of the Bank Tower, the tallest in Los Angeles.

The stairs are designed by Lawrence Halprin.

I was asked to design a fish, so I intentionally made a snake.

(Laughter) It's a public space, so I made it a garden structure, and it's designed to go inside.

This is an underground water tank, and Larry stores water here, and it's far better than a fish.

I was asked to fish in Barcelona, ​​and I'm working on it. It will be placed at the foot of the Ritz-Carlton Tower, designed by Skidmore, Owings and Merrill.

The tower itself is exposed steel, designed like an old-fashioned gas tank with no fire protection.

We've incorporated this image of exposed steel into our work, and we've twisted it a bit to make it into a fish shape.

This bridge split

It was originally a big mass with holes in it.

I cut it into several pieces and finished them like decorations that form the front of the hotel.

I showed this image to the hotel staff the other day, and they were all pale and shocked, and they said, "This fish is the reason we're losing customers."

(Laughter) Finally, some slides from Louis Danziger's studio.

I didn't expect him to be here today, and I think it was designed in 1964.

It's a small studio, and I'm sad to hear it's for sale now.

You can't stop the flow of time

This is a fast food restaurant that I worked on with my son.

The cash register robot was designed by my son and has a moving head, and I did the rest.

However, the taste was not so important and ended in failure.

After all, taste should come first and design second.

Thank you for your attention.

Today I would like to talk about dreams.

I'm a lucid dreamer, and I see my life cooler than the movies.

(Laughter) Run through the sky, breathe fire, and naturally handsome men appear

(Laughter) I can read and write sheet music.

The funniest part was writing a personal statement for college in a dream.

Of course I pass

I think visually

Think in pictures, not words

Words to me are like intuition and language.

There are a lot of people like me, like Nikola Tesla. He could visualize anything, design it, test it, fix it, and all the inventions were done precisely in his head.

Anyway, types like us are shut out of the language.

Like a beta version of Google Translate

(Laughter) I have the ability to pursue my interests.

For example, if I get into calculus, that interest will last longer than a celebrity marriage.

(Laughter) There are other things that make me different.

As you might have noticed, I have a voice that doesn't have much inflection.

Often mistaken for a car navigation system

(Laughter) I can answer where I'm going, but I'm not good at normal conversation.

(laughs) Thank you.

(Applause) A few years ago, when I started presenting, I went to take my first ID photo.

The photographer says, "Suggestively."

(Laughter) If you don't know what I'm talking about

(Laughter) "Take a glance," he says, "you do it when you're flirting with a boy, right?"

When asked "What are you doing?"

"Squint your eyes."

So I really tried

I felt like this

(Laughter) I looked like I was looking for Wally.

(Laughter) Here's why: Wally is hiding.

(Laughter) I have Asperger's Syndrome, or high-functioning autism, and I have problems with the basic social skills that are taken for granted.

So in many ways, it was difficult to navigate, and as I grew up, I struggled with social fitting.

I didn't understand my friend's jokes.

My personal heroes were George Carlin and Stephen Colbert, who taught me about humor.

And he went from being shy and timid to being a daring sharp-tonguer.

Of course I don't have many friends

hypersensitive to touch

I didn't take a shower for years because the water on my skin gave me a tingling sensation.

But don't worry, it's clean now

(Laughter) There's been a lot of things leading up to this point, and my parents, when they were raped by a classmate, they were out of control, and the difficult situation just got worse.

I traveled 2,000 miles across the country for treatment, new drugs were issued every few days, and my life was The Walking Dead.

Persecution delusions led me to hallucinate a rotting corpse coming toward me.

When my family finally rescued me, I lost 20 pounds in three weeks, was severely anemic, and thought about killing myself.

I moved to a new treatment center that understood my disgust, my trauma, my social anxiety, where the treatment was established and I finally got the support I needed.

After 18 months of grueling rehab, I started doing incredible things.

One of the hallmarks of Asperger's syndrome is often a very complex mental life.

But there's a gap between that part of me and how I communicate with other people.

It makes it difficult to have a basic conversation.

I had no social skills, and there weren't many jobs that would hire me, so I applied to Waffle House.

(Laughter) Waffle House is a great 24-hour restaurant. (Laughter) (Applause) Thank you.

(Laughter) Sliced, diced, chopped and sprinkled with pepper to cover.

(Laughter) It's better to break the social norms and go to Waffle House in the middle of the night.

(Laughter) At two o'clock in the morning, I was chatting with a waitress, and I said, "What's the dumbest thing you've ever had at work?"

I replied, "A naked man came in."

(Laughter) I said, "Okay, use it on the night shift."

(Laughter) Of course, I wasn't hired at Waffle House.

Having Asperger's Syndrome is seen as a disadvantage, and sometimes it's really frustrating, but it's also the other way around.

You have a special talent for innovative thinking.

When I was 19, I studied corals, won a research competition, and ended up presenting this research at the United Nations resolution on biodiversity.

(Applause) Thank you.

(Applause) I'm 22 years old, about to graduate from college, and co-founder of a biotech company called AutismSees.

(Applause) Thank you.

(Applause) But think about how we got here: 25 therapists, 11 misdiagnoses, years of pain and trauma.

I spent a lot of time wondering if there was a better way, and that led me to "technology that supports autism."

This technology might be able to holistically help people with autism spectrum disorder, or ASD for short.

My company, AutismSees, released an app called Podium that helps people self-diagnose and improve their communication skills.

In addition, cameras can track eye gaze, which can help with public speaking and job interviews.

Maybe one day, with more practice, I'll be hired at Waffle House.

(Laughter) The great thing about using Podium is that it helped me prepare for today's presentation.

there is more than that

you can do more

Consider that there are many groundbreaking scientists and researchers, artists and engineers among people with Asperger's syndrome, like Emily Dickinson, Jane Austen, Isaac Newton, Bill Gates.

The problem here is that great ideas are often not shared due to communication barriers.

People around you don't see the good things about people with Asperger's Syndrome, and they don't take advantage of their strengths.

My dream is to help people with autism overcome obstacles to success.

The reason I love lucid dreaming is because it has no social reputation or physical consequences.

I feel at peace when I fly around the scenes I imagine.

I can be what I want to be without anyone telling me what to do

Angelina doesn't mind flirting with Brad Bitt.

(Laughter) But the goal of assistive technology for autism is bigger and more important than that.

My goal is to change people's perceptions of autism and Asperger's syndrome, people who can do many things.

Temple Grandin is an example

That's how we can share our talents and move the world forward.

It gives them the courage to follow their dreams in the real world, in real time.

thank you

(Applause) Thank you.

(applause)

I will never forget the first time I met a girl in a blue uniform.

I was eight years old at the time, and I was living in a village with my grandmother, who was raising me and other children.

A famine hit my country, Zimbabwe, and we didn't have enough to eat.

we were hungry

Then a little girl in a blue uniform came from the United Nations to our village and gave us food.

When she handed me the oatmeal, I asked her why she was here. Without hesitation, she said, "As Africans, we have to give hope to all people in Africa."

I had no idea what you were talking about

(Laughter) But those words stuck in my mind.

Two years later, famine hit the country again.

My grandmother had no choice but to send me to town to live with an aunt I had never met before.

At age 10, I went to school for the first time.

At school in that town, I had an experience of inequality.

In the village, as you know, everyone was equal.

But in the minds of the kids at school, I wasn't the same

I couldn't speak English, I was behind in reading and writing

And this feeling of inequality became more complicated.

Every time school was closed, I would go back to my village and spend time with my grandmother, which made me very aware of the inequality. My family gave me the opportunity to go to school alone.

Thanks to that, I'm in a much better position than the other villagers.

I'm not the same anymore for the villagers

I felt guilty

But I remember thinking about that little girl in the blue uniform and thinking, "I want to be like her, someone like her who gives other people hope."

This childhood experience made me want a job at the United Nations, and now I work for UN Women, where we work on the big inequalities that affect women -- more than half of the world's population.

Today I'm going to talk to you about a simple idea that we can all hope for together.

Eight months ago, under the visionary leadership of UN Women's head, Phumzile Mlambo-Ngcuka, we embarked on an innovative initiative called HeForShe to bring men and boys from around the world together to stand in solidarity with each other and with women to create a shared vision of gender equality.

This is an invitation for those who believe in gender equality and those who still don't believe in it This is an invitation for those who believe in gender equality and those who still don't believe

This initiative is based on the simple idea that what men and women share is far more powerful than what separates them.

we feel the same

we want the same thing, even if we don't say it

"HeForShe" seeks to give hope to every man and woman.

We're heading towards a tipping point in gender equality.

There's a blank page, split in half by a straight line.

Let's say the woman is here and the man is here

Within our current population, "HeForShe" is moving 3.2 billion men across the line, one at a time, so that ultimately men can stand side by side with women, be on the right side of history, and achieve gender equality in the 21st century.

But when we try to involve men in this movement, controversy ensues.

Why are you inviting men? they are the problem

(Laughter) In fact, we were told that men didn't matter.

But unbelievably, when I started "HeForShe"

In just three days, more than 100,000 men signed up and pledged to be part of the transformation to equality.

In the first week, at least one man from every country in the world stood up, and in the same week there were more than 1.2 billion social media posts about "HeForShe."

And then the emails started coming in, sometimes a thousand in a day.

I heard a story from a man from Zimbabwe who heard about "HeForShe" and created "My Husband's School."

(Laughter) He went around his village to find out all the men who had abused his wife and made him promise to be a good husband and father.

In Pune, India, youth advocates organized a bike rally that brought in 700 cyclists and spread the message of "HeForShe" to the community.

And here's another impressive story: a man sent me a private letter with an incident in his community.

It read, "Dear Sir, Since I've lived here, the man who lives next door is constantly beating his wife.

Two weeks ago, I was listening to the radio and I heard you talking about something called "HeForShe," about male roles.

A few hours later, I heard another woman screaming from my neighbor's house, but this time I wasn't staying still either.

I felt I had to do something, so I went to my neighbor's house and confronted my husband.

Two weeks later, I haven't heard the woman scream.

Thank you for giving me your voice."

(Applause) These personal, compelling stories are a testament to the fact that we're tapping something in men, but reaching a gender-equal society isn't about giving men a reason to act.

We are calling for concrete, systemic structural changes that will equalize the political and economic realization of men and women.

We call on men to take concrete actions, and we call on men to change their behavior on a personal level.

We are calling on governments, businesses and universities to change their policies.

We want male leaders to lead by example and change the subject of their organizations.

Already, many well-known men and leaders have urged action and tangible participation in HeForShe.

One of the early success stories is this: Accord, a leading French hospitality company, has pledged to eliminate the pay gap for all of its 180,000 employees by 2020.

(Applause) The Swedish government has promised, with its feminist policy, that it will settle both the job and wage imbalances during the current election period for all its citizens.

In Japan, Nagoya University is building their own "HeForShe" co-participation office, which will be the leading gender research center in Japan.

Now, eight months later, the movement is taking hold.

Men from all walks of life are part of this movement, all over the world, from UN Secretary General Ban Ki-moon to NATO Secretary General to the Council of the European Union, from the Prime Minister of Bhutan to the President of Sierra Leone.

In Europe alone, all male EU Council members and parliamentary members of the Swedish and Icelandic governments participate in HeForShe.

One in 20 men in Iceland participates in the movement.

Goodwill Ambassador Emma Watson's passionate slogan has been displayed more than five billion times, uniting hundreds of thousands of students around the world, and over 100 HeForShe student coalitions have been formed.

This is a sign of HeForShe's foresight towards the world we want to see.

Einstein said, "Man is part of the whole, but...

Experiencing yourself, your thoughts, your feelings as something separate from the other. . .

This delusion is a prison for us. . .

Our task is to break free from this prison by widening the circle of compassion."

It is my hope that HeForShe will help us liberate ourselves, understanding that if men and women are part of a greater whole, as Einstein suggests, then our shared humanity determines our personalities, not our sex.

HeForShe brings out the dreams of men and women Dreams of themselves Dreams of family, children, friends Dreams of community

This is what it means

"HeForShe" seeks to give hope to all of us together.

thank you

(applause)

When I have an important exam, I spend weeks studying.

On the day of the exam, I spend a tense time until the question papers are distributed.

As you progress through the problems, you'll be asked to define "Ataraxia." It's a familiar word, but your mind is blank.

What the hell is going on?

The answer lies in the complex relationship between stress and memory The answer lies in the complex relationship between stress and memory

There are different types and degrees of stress, and different types of memory, but let's focus here on how short-term stress affects memory.

First, it's good to know how this kind of memory works.

What you read, hear, or study is remembered through a three-step process.

First, get information. This is the moment when you encounter new information.

Each sensory experience activates a different area of ​​the brain.

For long-term memory, these sensory experiences must be organized by the hippocampus, with the help of the amygdala, which reinforces experiences associated with strong emotions.

The hippocampus then classifies the memory, presumably by strengthening the synaptic connections that were stimulated during the initial sensory experience.

Once a memory is categorized, it can be stored or retrieved later.

Memories seem to be stored in different parts of the brain, sending out signals that the prefrontal cortex picks up.

So how does stress affect those stages?

In the first two stages, a moderate amount of stress actually helps you remember the experience.

Our brains respond to stress stimuli by secreting hormones called corticosteroids, which activate the threat-detection and threat-response processes in the amygdala.

The amygdala signals the hippocampus to organize the experiences that caused stress into memories.

And the stress-induced flood of corticosteroids stimulates the hippocampus, which also promotes memory consolidation.

Some stress can help, but extreme, chronic stress can backfire.

Scientists tested this by injecting rats with stress hormones.

As the corticosteroid dose was gradually increased, the mice's memory increased initially, but decreased as the dose increased.

Similarly, in humans, a moderate amount of stress produces favorable results.

But it's only a phenomenon when memory work and stress go hand in hand. Time pressure may help you memorize a list, but having friends intimidate you won't help.

Over weeks, months, or even years, the constant release of corticosteroids from chronic stress can damage the hippocampus, impairing its ability to form new memories.

It's great that stress can help you remember things, but unfortunately the opposite is also true.

Memories are made by the prefrontal cortex, which controls thinking, attention, and reasoning.

Corticosteroids stimulate the amygdala, which blocks or reduces activity in the prefrontal cortex.

The reason is that in situations of danger, the fight-or-flight-or-shrink reaction replaces the more calm, logical thinking process.

But unfortunately, it can also make you go blank during exams.

The very act of remembering causes stress, creating a vicious cycle that releases more corticosteroids, making it more difficult to remember.

So how can you turn stress on your side and stay calm when it matters most?

First, if you know a stressful situation, like an exam, prepare in situations that mimic those stressful situations.

Novelty can be stressful

Solving all the practice questions within the time limit or sitting at your desk instead of the couch can help reduce your stress response in a similar situation.

Exercise can also help

Elevated heart and breathing rates are linked to chemical changes in the brain that help reduce anxiety and promote a sense of security.

Regular exercise is widely believed to improve sleep patterns and may help you sleep the night before your exam.

And on exam day, take a deep breath to soften your fight-or-flight-or-sank reaction.

Deep breathing has been shown to significantly reduce test anxiety in studies involving nursing students from the third grade of elementary school.

So the next time you find yourself in a blank slate at an important moment, take a few deep breaths until you remember what ataraxia means.

When I was a kid, I always spent time at my great-grandmother's house.

On hot and humid summer days, I would run through the room and stick my head out in front of the house's only air conditioner.

But I didn't realize that that simple experience, for a short time, was a privilege within the community.

Growing up, stories of neighbors having to open fake electricity and gas accounts and stealing electricity and gas seemed commonplace.

In winter, some people were forced to bypass the meter just to keep warm, so that their families could stay comfortable for one more day after their gas supply was cut off.

Risky behavior like this can become addictive when faced with impossible choices.

The average American household spends 3% of its income on utilities.

By contrast, poor families and people living in rural areas spend 20 percent, or even 30 percent, on utilities.

In 2015, 25 million people skipped meals to cover their utility bills.

This is a case where utility costs are a burden

But the utility costs are more than money.

It forces you to make an impossible and dangerous choice: when your child has the flu, do you give him medicine or food?

Or will you keep me warm

These are impossible choices, and nearly every month, seven million people make the choice between medicine and energy.

A much larger, structural problem becomes apparent here.

High-utility households are skewed towards people of color, paying more per square foot than white households.

But nurses and veterans' school teachers are among those 37 million people a year who can't afford the basic energy needs of life.

As a result, people with higher utility bills are at higher risk of heart disease, asthma, and more.

Look, now that we have rockets to Mars and AI in our pockets, we also have the means to tackle these systemic inequalities.

the technology is at hand

Renewable energy, insulation, microgrids and smart homes are all coming down in price.

But even as prices approach equilibrium, the majority of solar panel owners are earning well above average.

That's why, when I was 22, I started the nonprofit RETI.

Our mission is to partner with communities, utilities and government agencies to ease the burden of utility bills by providing equitable supplies of green energy, efficient energy and energy technologies.

But you can't solve it unilaterally.

I believe in the transformative power of community power and human connection.

We started by working directly with the communities with the highest energy bills.

We held workshops and events to educate community members about energy poverty and how even small renovations, such as insulating windows or hot water heaters, can maximize efficiency in the long run.

We connect residents to community-owned solar panels and spearhead community-led smart home research and installation programs to help families save money on energy bills.

We work directly with elected officials to advocate for fairer pricing, because realizing this vision of energy equity and resilience requires working together in a sustainable way.

Today, the United States spends more than $3 billion a year on energy subsidies.

These programs certainly help millions of people, but they can only help a fraction of those who need help.

In fact, there's a $47 billion gap between what people can afford and what they actually pay for electricity, and these subsidies alone aren't sustainable.

But by building energy equity and resilience in our communities, we can ensure equitable access to green, reliable and affordable energy.

On a large scale, microgrid technology, clean technology and efficient energy use can greatly improve public health.

For households with high utility bills, 20% of their income can be recouped, 20% of income for those struggling to make ends meet.

It's a life-changing event

You'll be able to support your family's future with the money saved on your utility bills.

My great-grandmother and my neighbors think about the impossible choices they faced and the impact it had on the entire community.

But they're not alone

Even now, millions of people across the country face the same impossible choices.

The heavy burden of utility bills is a difficult wall to overcome, but we have a way to overcome it by connecting communities and technology.

When we overcome that wall, our resilience will grow.

thank you

(applause)

What do you do when you have a headache?

you take aspirin

But for these pills to have an effect on headaches, they first pass through the stomach, then the intestines, and various other internal organs.

Taking a pill is the most effective and painless way to get a drug into your body.

However, oral medicine has the disadvantage of being diluted in the body.

This is a big problem for AIDS patients.

When you take AIDS drugs, they lower the concentration of the virus in your blood and increase the number of CD4 cells.

It's notorious for its harmful side effects, but not only that, but by the time the drug reaches your bloodstream, what's worse, it's diluted before it reaches the most critical part of your body, where the AIDS virus lives.

The AIDS virus lies dormant in the lymph nodes, nervous system and lungs of the body, but even with continuous anti-AIDS drug intake, it is not well transported through the blood.

But when that treatment is interrupted, the virus wakes up and infects the cells in the blood.

This is a very big problem with modern anti-AIDS drug therapy, because patients have to take the drug for the rest of their lives.

One day, I thought to myself, "Isn't there some way to directly reach and fight off the AIDS virus nest site without the risk of it becoming less effective?"

I'm a laser scientist, so the answer was right in front of me: yes, use a laser!

If lasers can be used in dentistry, to treat delayed wound healing in people with diabetes, or in surgery, they could be used for many things, such as delivering components of drugs to cells.

As a matter of fact, experiments are currently underway to open microscopic holes in virus-infected cells using something called an ultrashort-pulse laser.The mechanism is to deliver active ingredients into cells by creating holes that open and close instantaneously using a laser.

How is that possible?

So this is what it's all about: you shoot a very powerful, yet tiny laser at the membranes of cells infected with the AIDS virus, because those cells are immersed in a liquid that contains the drug.

By drilling holes with a laser, the ingredients penetrate deep inside, and it happens in the blink of an eye.

In no time, the holes in the cells are repaired.

This technology is still being tested in test tubes and Petri dishes, but our goal is to bring this technology to the human body, and to actually bring this technology to the human body.

How is that possible?

The three-pronged device is the answer

The first tool is a laser that cuts open the infected area.

Using the second tool, the camera, it somehow manages to meander to the site of infection.

And then the final tool, a sprinkler that sprays the drug, is used to deliver the drug directly to the site of infection, while a laser fires at it and creates tiny holes in the cells.

At the moment it's still in the early stages

If successful, this technology could one day allow us to completely defeat the AIDS virus.

Yes, it's a cure for AIDS.

This is every AIDS researcher's dream, and for us it's a laser-driven cure.

thank you

(applause)

For over a hundred years, telephone companies have helped government wiretapping.

During this time, most of the work was done by hand.

Surveillance is manual, with people connecting wiretapping devices

I recorded the contents of the call on tape

But like many other industries, things changed with the advent of computers.

The phone companies built monitoring capabilities into the core of their networks.

I'd like to think about this a little bit more deeply. First, we put wiretaps on the phones and networks that connect the calls to monitor them.

first of all

So if you talk to your spouse, children, co-workers, or family doctor over the phone, they can be tapped.

Eavesdropping is done by the government of one's own country, governments of other countries, foreign intelligence agencies, hackers, criminals, and stalkers.

But while telcos built surveillance systems as a priority, Silicon Valley companies didn't.

Over the last 20 years, incrementally, Silicon Valley companies have built strong cryptography into their communications products, making it very difficult to monitor.

For example, a lot of people have iPhones, and if you send a text message from your iPhone to someone else's iPhone, you can't easily intercept that text message.

In fact, according to Apple, even Apple can't see your text messages.

Similarly, you can't easily eavesdrop on a FaceTime voice or video call with an acquaintance or a lover.

Apple is not alone

WhatsApp, now acquired by Facebook and with hundreds of millions of users around the world, has also built strong encryption technology into its product so that people in the global South can easily communicate without their text messages being read by governments and dictatorships.

After a hundred years of being able to wiretap every phone call - after the days when it was possible anywhere, anytime - government officials may have a bittersweet bite.

that's actually happening

government officials are pretty pissed off

I'm not angry because cryptographic tools are being used,

What angered government officials most was that tech companies built encryption into their products and made it the default setting.

the default setting is miso

In short, tech companies made encryption accessible to everyone.

Government officials like British Prime Minister David Cameron believe that emails, text messages, voice calls, and all communications should be readable by the government, but encryption makes that difficult.

I understand that way of thinking very well.

Because we live in dangerous times, in a dangerous world, and there are some really bad people out there.

We all want the FBI and the National Security Agency to monitor terrorists and national security threats.

But surveillance is a double-edged sword.

Because there's no such thing as a laptop for terrorists or a cell phone for drug dealers.

because we all use the same communication equipment

If you can tap the phones of drug dealers and terrorists, you can tap the phones of ordinary citizens.

The real question is, "Should a billion people in the world use untapped phones?"

The surveillance system break-in scenario you describe is not a figment of your imagination.

In 2009, networked surveillance systems from Google and Microsoft, used in response to legitimate surveillance requests from the police, were compromised by the Chinese government because they wanted to know who their agents were being monitored by the U.S. government.

Similarly, in 2004, someone compromised a surveillance system built into the network of Vodafone Greece, Greece's largest telephone company, and used surveillance to wiretap the phone calls of the Greek prime minister and ministers.

The perpetrators, foreign governments and hackers, were never caught.

Exactly the problem is the monitoring function called the backdoor The problem is the monitoring function called the backdoor

Creating backdoors in any part of a communications network or technology makes it impossible to control unauthorized access.

Whether they are friends or foes, good people or bad people, there is no way to control them.

That's why I think we should build as secure a network as possible.

In the future, it will become more difficult to read the ciphers.

So it's going to be harder for the police to catch the bad guys.

Otherwise, you'll be living in a world where criminals, stalkers, and foreign intelligence agencies can monitor your calls and text messages.

I don't want to live in that kind of world

Right now, you may be attaching tools to your landline or cell phone to thwart government surveillance, but you may not realize how powerful and secure those tools are, and how vulnerable other ways of communicating are.

So what I want to tell you is the need to use these tools.

To prevent your calls from being tapped

to keep my text messages from being read

use a tool like this

Tell your loved ones and colleagues Use encrypted communication tools

Use it for safety, not just because it's cheap or easy.

thank you

(applause)

This is a 16th century painting of Lucas Cranach the Father.

The famous "fountain of eternal youth" is drawn

It is said that if you bathe in this water or drink this water, you will become healthy and young.

In every civilization, every culture, people have dreamed of eternal youth.

Alexander the Great and the explorer Ponce de León spent their entire lives searching for the Fountain of Immortality.

not found

But is this the end of the story?

Is there something hidden in the story of "Fountain of Eternal Age"?

Today I'm going to talk to you about an amazing development in aging medicine research that will revolutionize the way we think about aging and how we treat age-related diseases in the future.

Starting with a number of recent experimental studies of growth, we found that old mice rejuvenated when they were injected with blood from young mice.

It's similar to what we see in humans with double pregnancies, but it's a little chilling.

In 2007, a few years later, stem cell researcher Tom Land published a study showing that when old mice shared a blood circulation system with young mice, the muscles of old mice rejuvenated.

At Harvard, Amy Wagers successfully replicated this experiment, although other researchers have reported similar rejuvenating effects in the pancreas, liver and heart.

What's most interesting to us researchers, including other labs, is the possibility of applying this to the brain.

So we found that when old mice were influenced by young mice in a technique called parabiosis, their brains rejuvenated and functioned better.

Again, by sharing the circulatory system with young mice, old mice get young blood, rejuvenated brains, and enhanced function.

As we age, we see changes in all aspects of cognition, and on this slide you can see the evolution of logical thinking, verbal skills, and so on.

We don't see these functional impairments around the age of 50 or 60, but looking around now, we're still fine.

(Laughter) It's scary to watch these lines go down.

Diseases like Alzheimer's can occur as we age.

In these diseases, gaps between the synapses that connect neurons to each other form, and communication between neurons deteriorates, leading to neuronal death and brain atrophy.We know that as we age, we become more susceptible to neurodegenerative diseases.

Now, one of the big problems is that we can't really go into the brain and see how that's happening at the molecular and functional level, in the human body.

We can do cognitive tests, brain scans, all sorts of cutting-edge tests.

We have to wait until the person dies to really see how the brain has changed with age or with disease.

This is what neuropathologists do

So the brain is part of a larger organism.

If we think of it as part of the whole body, wouldn't we be better able to understand what's going on in the brain at the molecular level?

Can aging and disease affect the brain?

And vice versa, does aging of the brain affect the rest of the body?

Circulatory tissue connects all the tissues of the body.

Blood not only carries oxygen-carrying red blood cells and immune cells that fight infection, but also signaling molecules, factors that communicate between cells and tissues, such as hormones, as well as in the brain.

Looking at blood changes with age and disease might tell us something about the brain.

We know that as we age, our blood changes and our hormone-like factors change.

The factors necessary for the growth and maintenance of body tissues generally begin to decline as we age, while factors involved in repairing injury and inflammation increase.

It can be said that the balance between good and bad factors is lost.

We hope to understand this phenomenon in our next experiment.

They took nearly 300 blood samples from healthy people between the ages of 20 and 89 and measured over 100 factors, hormone-like proteins, that communicate between tissues.

So, first of all, we found that about half the factors were very different between the young and the old.

Changes in these factors suggest that the human biomechanical environment changes significantly as we age.

So maybe we can take the statistics, use a bioinformatics program to back-calculate, and discover those factors that allow us to approximate age.

You can see what it looks like in this graph

The horizontal axis represents the chronological age of the subject The horizontal axis represents the chronological age of the subject

So how many years ago were you born?

And then, from the protein factors we mentioned earlier, we can work out the approximate age of the subject.

As you can see, the estimated age is very close to the chronological age, and that's how you get a rough estimate of your age.

But what's really amazing is the outliers.

Here, highlighted in green, is someone in his 70s, but if our measurements are correct, this person's biological age is only 45.

Does this person look much younger than their actual age?

More importantly, will this person have a lower risk of developing age-related diseases and live to be 100 years old or even longer?

On the other hand, this person, highlighted in red, isn't even 40 yet has a biological age of 65.

Is this person at increased risk for age-related diseases?

In our lab, we're doing more research into these factors. Many research groups are trying to identify the true aging factors. Can these factors tell us anything, predictive of age-related diseases?

This graph just shows the correlation

We can only say that these factors change with age, but whether or not they affect aging remains to be seen.

What I'm going to show you next is groundbreaking research that suggests that these factors can regulate tissue aging.

Let's go back to the model called parabiosis

Parabiosis in mice involves surgically joining two mice together so that they share a blood circulatory system.

To find out, we used two young and old mice that correspond to human ages of 20 and 65.

We have made a very important discovery

Neural stem cells responsible for neurogenesis increased in the brains of old mice

The synapses that connect neurons become more active.

More genes involved in new memory formation More genes involved in new memory formation

Less severe inflammation

But we haven't observed cellular contamination in the mouse brain.

Because in this model, the brains of old mice are not contaminated with cells while sharing the circulatory system.

We reasoned that a component in the blood was the factor, and we were able to extract the plasma from the blood and inject the plasma from young or old mice into the mice, and we were able to reproduce the rejuvenating effect, which we could prove by testing the mice's memory.

Just like humans, mice experience memory loss as they age.

But it's hard to detect, but I'll show you how to do that later.

And then I wanted to take this one step further and apply it to humans.

I'm going to show you the results of an unpublished study, where we used young human plasma and saline as a control, and then injected that plasma into an old mouse, and this rejuvenated the old mouse and improved the mouse's ability to learn.

Can it be improved?

To find out, we did a test called the "Barnes maze."

It's a large table with holes in it, with markings around it to identify the holes, and it's lit up with bright lights like this stage.

To escape the glare it hates, the mouse seeks out the only hole, marked by a red arrow, with a tube running underneath that allows the mouse to feel safe in that dark hole.

First, we let the mouse learn to follow the marks and look for the hole for a few days, like we've been shopping all day and then looking for our car in the parking lot.

(Laughter) There are probably a lot of people who have a hard time finding them.

Let's look at old mice.

This is an old mouse with memory problems, as you can see here.

You're peeking hole by hole, and you don't have a geographic grasp of the location that helps you find the last learned location.

In stark contrast, this same-year-old brother was a mouse that was injected with small doses of young human plasma every three days for three weeks.

As you can see, if you look around as if to ask, "Where is this place?"

I remembered where the hole was

This old mouse certainly looks like it's rejuvenated, and the brain function seems to be that of a young mouse.

What this suggests is that not only young mouse plasma, but also young human plasma has the potential to help the aging brain.

So in summary, the old mouse brain isn't helpless.

It turns out that we can give it plasticity.

can rejuvenate

A factor in young blood reverses aging.

A blood factor from old mice accelerates aging in young mice.

Most importantly, it's possible that humans have similar factors, because young human blood has similar effects.

Old human blood doesn't have this effect, so old mice don't rejuvenate.

So can this magic be used on humans?

Now, at Stanford, we're doing a small clinical study, where we're trying to treat patients with mild Alzheimer's disease with plasma from a young 20-year-old volunteer, with weekly plasma infusions for four weeks, followed by an MRI.

We test the patient's awareness and ask the patient's caregiver about the patient's daily life.

We hope that this treatment will have some effect.

If this treatment works, we should be hopeful that the rejuvenating effect we had in mice could also be seen in humans.

we don't want eternal life

What this research has discovered may be that the "fountain of immortality" is within us, as it only dries up.

If we want to bring it back a little bit, we can find agents that can help us rejuvenate, and we can artificially produce those agents to cure age-related diseases like Alzheimer's.

thank you

(applause)

I'd like to introduce you to one area of ​​science that's been getting a lot of attention lately. It's a very interesting area.

Quantum biology asks a very simple question: does quantum mechanics -- the bizarre but wonderful and powerful theory that describes the subatomic world that makes up atoms and molecules and underpins modern physics and chemistry -- does it have any important role in living cells?

In other words, are there any processes, mechanisms or phenomena in living things that can only be explained by quantum mechanics?

Now, quantum biology is not a new subject; it came out in the early 1930s.

But in the last decade or so, spectroscopic experiments have been carried out in biochemical laboratories, providing very clear and convincing evidence that there are certain mechanisms in living organisms that can only be explained by quantum mechanics.

In the field of quantum biology, quantum physicists, biochemists, and molecular biologists work closely together.

I'm a quantum mechanic, specializing in nuclear physics.

I've been pondering quantum mechanics for over 30 years.

Niels Bohr, one of the founders of quantum mechanics, said, "If it doesn't surprise you, you don't understand the theory."

I'm still amazed, so in a way I'm satisfied.

this is good

Now, I'm studying the basic building blocks of matter, the smallest structures in the universe.

And that scale looks something like this, starting with an ordinary tennis ball, looking at things that are orders of magnitude smaller, down to pinholes, cells, bacteria, enzymes, and finally to the nano world.

You've probably heard the term nanotechnology before.

A nanometer is one billionth of a meter

My area of ​​expertise is the nucleus, which is just one point in the atom.

on a smaller scale

This is the realm of quantum mechanics, the area that physicists and chemists have been trying to better understand.

On the other hand, I think biologists have stayed a little farther away from this field.

I'm quite happy with the ball-and-stick model of the molecule.

(Laughter) The spheres represent the atoms, and the sticks represent the bonds between atoms.

Even if you can't physically build something like this in the lab, today powerful computers can simulate large molecules.

This is a protein made up of 100,000 atoms.

It takes very little quantum mechanics to understand this.

Quantum mechanics was born in the 1920s

A set of beautiful and powerful mathematical rules and concepts to explain the very tiny world.

It's a far cry from our everyday world, which is made up of trillions of atoms.

Chance and chance rule

it's a fuzzy world

It's almost like seeing an illusion, where the particles also act as waves with a spread.

If we think of quantum mechanics, or quantum physics, as the fundamental principle of the real world, then it's no surprise that organic chemistry has its influence.

Ultimately, this theory explains the rules by which atoms come together to form organic molecules.

The increasing complexity of organic chemistry leads to molecular biology and, of course, to life itself.

This is why I say it's expected

That explanation is not enough

"Of course, if we go all the way back, even the mechanism of life should depend on quantum mechanics."

That kind of reasoning applies to everything

Inanimate objects are made up of trillions of atoms

Ultimately, we get to the quantum level, where we have to think about strange phenomena.

But in the everyday world, you can forget about it.

Because when you put trillions of atoms together, the quantum weirdness vanishes.

But what about quantum biology?

Quantum biology is not clear on this point.

Of course, if you look at life at a molecular level, there's quantum mechanics.

Quantum biology is the study of quantum mechanics' unique, counterintuitive effects that seek to reveal or actually play important roles in explaining biological processes.

I'm going to give you a great example to explain a counterintuitive concept in the quantum world.

there is a quantum skier

He seems perfectly normal and perfectly healthy, though he seems to be sliding through both sides of the tree at the same time.

If you see a trace like this, you'll surely think it's a stunt

But this is what happens all the time in the quantum world.

Particles can exist in two places at the same time and behave in multiple ways.

can do more than one thing at the same time

Particles can also behave like expansive waves.

this is like magic

Physicists and chemists have been trying for almost a century to understand this strangeness.

I don't mean to criticize biologists for not looking at quantum mechanics and not trying to learn it.

This strange phenomenon is so delicate that physicists have gone to great lengths to preserve it in the laboratory.

We try to cool the device to near absolute zero, run the experiments in a vacuum, and try to isolate it from external influences.

It's very different from the warm, chaotic, noisy environment inside a living cell.

Biology -- when it comes to molecular biology, I would say that the language of chemistry -- chemical action -- has done a pretty good job of explaining how all life works.

It was a reductionist, deterministic theory of chemistry. Life is essentially an assembly like anything else, and if quantum effects can be ignored in the macroscopic world, they must be ignored in biology.

But here is someone who disagreed.

That person is Erwin Schrödinger, an Austrian physicist who is famous for Schrödinger's Cat.

He was one of the founders of quantum mechanics in the 1920s.

In 1944 he published What Is Life? I wrote a book called

A very influential book

Francis Crick and James Watson, who discovered the double helix structure of DNA, were also influenced.

In the book, he states, "At the molecular level, living things have a degree of order and structure that is very different from the thermodynamically chaotic, violent movement of atoms and molecules in inanimate objects of similar complexity."

In fact, living things appear to behave in an orderly and structured manner, much like when inanimate objects are cooled to near absolute zero and quantum mechanical effects become pronounced.

Living cells are characterized by structure, order.

So Schrödinger speculated that quantum mechanics played a role in living things.

It was an uncertain, far-reaching vision that saw little development.

But as I said at the beginning, in the last decade, experiments have revealed a number of biological phenomena that require quantum mechanical explanations.

I would like to introduce some of the things that I find particularly exciting.

One of the well-known phenomena in the world of quantum mechanics is the quantum tunneling effect.

The box on the left contains an electron-like particle that, by virtue of its quantum mechanical properties, behaves as a spreading wave, unlike a globul that bounces off a wall.

This wave has a certain probability of being able to pass through a solid wall, like a ghost slipping through to the other side.

You can see a little speck of light in the box on the right.

Quantum tunneling is when a particle hits an impassable obstacle and somehow magically disappears from one side and appears on the other side.

To give you an obvious example, when you throw a ball to the other side of a wall, you have to give it enough energy to go over the wall.

But in the world of quantum mechanics, you don't have to try to climb over the wall, you just throw it at the wall, and with some non-zero probability it will disappear from one side and reappear on the other side.

this is not speculation

We quantum physicists are happy.

(Laughter) Quantum tunneling happens all the time, and in fact, it's why the sun shines.

In particle fusion reactions, the sun transforms hydrogen atoms into helium atoms through quantum tunneling.

In the 70's and 80's, quantum tunneling was discovered in living cells.

Enzymes, the workhorses of life -- catalysts in chemical reactions -- are biomolecules that accelerate the rate of chemical reactions in living cells by orders of magnitude.

The mechanism has always been a mystery

It has been discovered that one trick that enzymes get to work is to transfer electrons and even subatoms, such as protons, from one molecule to another through quantum tunneling.

It's efficient, it's quick, the proton disappears from one side and reappears on the other side.

Enzymes facilitate this phenomenon

Such research was advanced in the '80s, notably by a group led by Judith Klinman at Berkeley.

Another group in the UK is reexamining this phenomenon for enzymes.

My team is also doing research -- and as I said, I'm a nuclear physicist -- and I've realized that the methods of quantum mechanics for exploring the nucleus can be applied to other areas as well.

One question is whether DNA mutations involve quantum tunneling.

Again, this isn't a new idea, it dates back to the early '60s.

Two strands of DNA in a double helix, held together by a rung, like a twisted ladder.

The rungs on this ladder are hydrogen bonds, where protons hold two strands of DNA together.

If you zoom in a little more, you can see that these are connecting large molecules of nucleotides.

Expanding further—

It's a computer simulation image.

The two white balls in the center represent the protons (hydrogen nuclei), and you can see the two pairs of hydrogen bonds.

Each of the two protons tries to separate itself to either the left or right side of two vertical strings, not shown here.

These two protons can jump

Look at the two white balls

Each can jump to the other side

At this point, when the two strands of DNA are separated and replication occurs, the two protons are misaligned and a mutation occurs.

This has been known for half a century

The question arises - how often does this happen and how does it work?

Does it jump like the ball goes over the wall?

Or does it happen without enough energy like quantum tunneling ?

Early research suggests that quantum tunneling is taking place.

Its importance is still not well understood, and it's an open question.

It's just speculation. This is one of the big open questions, and if quantum mechanics is involved in mutations, it certainly has very important implications for understanding certain types of mutations, perhaps even causing cells to become cancerous.

Another example in quantum biology is quantum coherence, one of the most important processes in biology. Through photosynthesis, plants and bacteria absorb sunlight and use that energy to build living organisms.

Quantum coherence is the ability of quantum things to behave in multiple ways at the same time.

Quantum skier

Objects behave like waves, so instead of moving in one direction only, they can travel in multiple paths at the same time.

A few years ago, the academic world was shaken when a paper was published showing the results of an experiment that showed that photosynthesis inside bacteria has quantum coherence.

That's what it's all about: photons, or particles of light, or quanta of light, as sunlight, are absorbed by chlorophyll molecules and delivered to places called reaction centers, where they're converted into chemical energy.

Instead of taking a single path to get there, it takes multiple paths at the same time to get to the reaction center in the most efficient way without heat dissipation.

Quantum coherence is also happening inside living cells.

It's a great idea. New papers are being submitted to show that this phenomenon is indeed happening, and the evidence is piling up almost every week.

Third, and this is the last example, the most beautiful and brilliant idea.

This is still in the realm of speculation, but I would like to introduce it by all means.

European robins migrate from Scandinavia to the Mediterranean coast every autumn, and like other marine animals and even insects, they sense the earth's magnetic field to find their way.

That said, the Earth's magnetic field is very, very weak, about 1/100th the size of a magnet on a refrigerator door, and yet it exerts chemical effects in living organisms.

There's no doubt about this. In fact, German ornithologists Wolfgang and Roswissa Wirtszko confirmed in the 1970s that robins somehow find their way by sensing the Earth's magnetic field, much like an internal compass.

This was a mystery How does it work?

As far as I know, there's only one possible theory, and I don't know if it's true or not, but the only plausible one is a phenomenon called quantum entanglement.

In the robin's retina -- I'm not kidding -- there's a light-sensitive protein called cryptochrome.

Inside the cryptochrome, a pair of electrons are quantum entangled.

Quantum entanglement is when two particles that are far apart still affect each other in some way.

Even Einstein hated the idea, calling it "creepy remote control."

(Laughter) It leaves me uneasy that Einstein doesn't like it.

Two electrons in a state of quantum entanglement within a single molecule perform a delicate dance that is very sensitive to the direction in which a bird flies under the influence of the earth's magnetic field.

I'm not sure if this is the correct explanation, but isn't it amazing that quantum mechanics plays a role in bird flight?

Quantum biology is still in its infancy

still in the realm of speculation

But I believe it's built on solid scientific methods.

I believe that in the next decade or so, we'll find out that quantum mechanical effects are at large in organisms, and that organisms evolved because of them.

Focus on this field

thank you very much

(applause)

The child's symptoms began with a low-grade fever, headache, and muscle aches, followed by vomiting and diarrhea, then bleeding from the mouth, nose, and gums.

Ultimately, he died of organ failure from hypotension.

this is surely

You might think it's Ebola, but this case is actually not.

It's a particularly serious case of the mosquito-borne disease, dengue fever, a disease that has no effective treatment, no vaccine, and kills about 22,000 people a year.

We know that this is double the number of people who have died from Ebola in the last 40 years or so.

When it comes to measles, which is in the news a lot these days, the death toll is tenfold.

But last year, Ebola made headlines widely, and the fear is widespread.

Because it has deep rooted and obvious causes that fascinate and frighten us like no other disease.

What exactly?

Because even though the chances of exposure to the Ebola virus are low, those who do get it have horrific symptoms and a high rate of death.

I wonder why?

that there is currently no effective treatment or vaccine for it

that's why

I will be able to someday...

So our fear of Ebola is justified, because Ebola doesn't kill as many as other epidemics.

Unlike influenza and measles, the route of transmission is much narrower.

It's not that these are the causes of the Ebola scare, but that they die without a cure.

This inevitable fact with Ebola

We fear Ebola as it challenges modern medical science.

but wait a minute

We, who have been watching Ebola since 1976,

i know the horror

So far, there have been 24 outbreaks worldwide, and we've had plenty of time to study them.

In fact, vaccine candidates have existed for more than a decade.

So why is that vaccine finally being tested in clinical trials?

This is a fundamental problem in developing vaccines against infectious diseases.

What this means is that the people most at risk of contracting these diseases are also the poorest people who can't afford the vaccine.

This leaves pharmaceutical companies with no money to develop a vaccine and bring it to market, unless you're in a wealthy country and you're at risk of getting the disease in large numbers.

So it's too risky from a commercial point of view.

As for Ebola, there's no market for it at all, and yet two vaccines are now in late-stage clinical trials only because of public fears fueled by the press.

Ebola was once relatively neglected, but suddenly after 9/11 and anthrax, people realized that Ebola could be used as a weapon of bioterrorism.

So why wasn't an Ebola vaccine developed at this point?

Partly because it's very difficult to develop, but partly because we thought this virus would be hard to use as a weapon.

this is what i want to say

The unfortunate reality is that vaccine development is based on the economic risk, not the risk that pathogens pose to people.

Vaccine development is complicated and expensive.

Even a common antigen would cost hundreds of millions to make an effective vaccine.

Fortunately, epidemics like Ebola have ways to remove some of those obstacles.

First of all, don't expect the market to function normally.

And yet, if you need a vaccine, you're going to need some kind of financial support, some kind of subsidy.

We also need to get better at figuring out which epidemics pose the greatest threat.

We can create a system for dealing with epidemics in related countries and create a network that collects and classifies pathogens by epidemiological research groups.

The data from that will help us understand regional and genetic pathogenic diversity, and that data will help us understand how pathogens are changing immunologically and how we can develop strategies to deal with them.

These things are possible, but in order to make them happen, we have to change the way we think about infectious diseases and how we fight them in response to dysfunctional markets.

We need to stop the spread of the epidemic before it becomes a pandemic.

Ebola is the paranoid fear of people over a few epidemics in wealthy countries that has led nations around the world to come together. Vaccine companies have contributed to this. And here's the result.

We spend billions of dollars each year patrolling the oceans constantly with nuclear submarines to protect us from seemingly improbable threats.

We don't have a budget for epidemics that clearly depend on the future of humanity.

Let me tell you, this isn't hypothetical, it's bound to happen.

These viruses continue to evolve and threaten the world.

Vaccines are the best defense

If we want to prevent epidemics like Ebola, we have to take risks, invest in vaccine development, and stockpile vaccines.

Seeing this as the ultimate epidemic deterrent we can do, we need to make sure we have it on hand, and I hope we never have to.

thank you

(applause)

Over 1 million people die each year in disasters

2.5 million people will be permanently disabled or displaced, and recovery will take 20 to 30 years, costing billions of dollars.

By moving up the initial response by just one day, the overall recovery period can be shortened by 1,000 days, or three years.

Let's see how it works

If the first group can go in and save lives and mitigate the dangers of flooding and so on, then those who come in will have to work to restore water, roads and electricity.

According to major insurance companies, if the insurance company can get the head of the household's claim processed a day sooner, they can get the house repaired six months sooner.

That's why I study disaster robotics, because with robots we can deal with disasters quickly.

Now these two robots

It is an unmanned aerial vehicle (UAV)

The two UAVs on display are the rotary-wing Hummingbird and the fixed-wing Hawk.

It's been in widespread use since Hurricane Katrina in 2005.

Let's take a look at the rotorcraft Hummingbird in action.

It's the perfect robot for a structural engineer.

We can grasp the damage situation from angles that cannot be seen in high-angle images of flying objects such as binoculars and satellites on the ground.

You don't have to be a structural engineer or an insurer to have situational awareness.

There are also fixed-wing aircraft like this Hawk.

Now, this hawk can be used for geospatial surveys.

Geospatial research collects images and reconstructs them in three dimensions.

Both machines were used in the Oso, Washington landslide because it was important to understand the geospatial and hydrological context of the disaster, not search and rescue.

The search and rescue team had the situation on the ground under control and knew what they were doing.

A bigger problem was that secondary disasters swept our men away in landslides and floods.

The problem was not just the injuries and property damage to the crew, but also the future of salmon fishing in the affected areas of Washington State.

So I had to understand the situation.

In seven hours, we drove from the field command post in Arlington to the disaster area, flew the UAVs, processed the data, and returned to the Arlington command post, seven hours.

We delivered in seven hours what otherwise would have taken two or three days, and in much sharper, higher resolution.

that turns the tide

Don't just focus on UAVs

I know you're drawn to UAVs, but 80 percent of the world's population lives by water, which means that critical infrastructure like bridges are submerged and inaccessible to humans.

So that's why we use unmanned underwater vehicles (UMVs), and what you see here is the SARbot, which is a square dolphin.

Dive underwater and use sonar

Why are unmanned underwater vehicles important? why is it so important

Is it overlooked?

Consider the Japanese tsunami, which devastated about 650 kilometers of coastline, twice as much damage as Hurricane Katrina in the United States.

What happens when bridges, pipelines, ports, etc. are destroyed?

Without ports, there would be no way to receive enough relief supplies to help the victims.

In the Haiti earthquake, that became a big problem.

That's why we need UMV

Let's see what SARbot captures

It was when I was active at the fishing port.

Using SARbot's sonar, we were able to reopen the fishing port in four hours.

At that fishing port, it was said that it would take six months for the diving team to start manual work, and another two weeks of diving work.

It misses out on the fall fishing season, which is a major source of income for the region, a place like Cape Cod in the United States.

That's why UMV is so important.

All the robots I showed you are small because robots don't do what humans do.

Because it goes where humans can't go

Bujold is a good example

Unmanned ground vehicles are particularly small, and Bujold -- (Laughter) Say hi to Bujold

(Laughter) Bujold was used extensively at the World Trade Center to search buildings 1, 2 and 4.

Climb rubble, rappel down, and go deep into gaps

This is the World Trade Center from Bujold's perspective.

It works in disaster areas that are inaccessible to humans and dogs, and there's a fire going on.

If there's only one hope to reach the survivors underground, it's to search through the fire.

The heat melted the wheels off one of the robots.

Robots aren't going to replace humans or dogs or hummingbirds or falcons or dolphins.

robots do new things

We support our personnel and professionals in new and innovative ways.

The biggest problem is also making robots smaller.

Neither improving heat resistance nor adding more sensors

Neither improving heat resistance nor adding more sensors

The biggest problem is data, informatics, because we need to have the right data at the right time.

Wouldn't it be great if an expert could access the robot directly instead of waiting for the expert to arrive on site? Wouldn't it be great if someone in the field could use it?

let's think together

Let's say there's a derailment of a train loaded with chemicals in the countryside.

What percentage of experts, chemical engineers and transport engineers in countries with UAVs have UAV training?

probably close to zero

So with an interface like this, you can use a robot whether you don't know what kind of robot it is, whether you're using a robot or not.

What robots give you and experts is data.

The question is "Who gets what data and when?"

For example, you can collect all the information, share it with everyone, and have them sort it out.

But then the problem is that the network can't handle the load, and what's worse, when you make a game-changing decision, the chunks of information you need to make those decisions exceed the cognitive capacity of any individual person trying to process it.

So we need to think about those challenges.

so it's data

Now, back to the World Trade Center, they solved that problem by recording only the data when Bujold went deep into the rubble, because that's what the US Army Reserves team wanted.

Later on, I realized that if you were a civil engineer, you might have been interested in and needed data such as box beams, serial numbers, and sampling locations to get to the depths of the rubble.

lost valuable data

The challenge now is to record all the data and give it to the right people.

there is another reason

At that time, I found out that at some facilities, such as schools, hospitals, and city halls, the corresponding organizations differ depending on the stage of the investigation, so investigations will be conducted four times.

By sharing the data collected by the robots, we can not only shorten the response time by aggregating the phases, but also allow the phases to run concurrently.

everyone can see the data

That way you can save time

So "disaster robotics" is a misnomer.

not a robot

Data is the subject

(Applause) So what I'm asking you to do next is look for robots the next time you watch the disaster news.

I don't know where you are underground, underwater, or in the air I don't know where you are underground, underwater, or in the air, but I'm sure you're there

Please look for the robot that rushes to the rescue.

(applause)

I grew up in a lesbian family in the mountains I came to New York not too long ago I'm kind of a forest dwarf

(Laughter) It's all messed up in my head, but we'll talk about it later.

Let's start with a story from when I was eight years old.

I got a wooden box and put a dollar bill, a pen and a fork in this box and buried it in the ground in Colorado.

And 500 years later, some strange humanoid, some alien, found this box, and thought he might be able to learn how humans exchanged ideas, like how to eat spaghetti.

i didn't know

Anyway, it's funny, 30 years later, I'm still here making boxes.

Well, when I was in Hawaii, I loved hiking, surfing, and all that weird stuff.

I ripped the dictionary into pieces and made it look like Agnes Martin, and then poured some resin over it and got a bee stuck in it.

By the way, my mom doesn't like bees and she's also allergic to them, so I poured more resin in, thinking it would cover up the bees or something.

Instead, the opposite happened. It became like a magnifying glass, like a magnifying glass over a sentence in a dictionary.

What did you do? I made more boxes

This time I put electronics in frogs and weird bottles and whatever I found on the street.

So I started drawing lines around things And then I realized, oh my god! You can draw in the sky!

You can draw lines freely, like drawing lines around a corpse at a murder scene.

So I took the object out of the box and devised various specimens and devised a taxonomy of my own accord.

First the plants - you know this

Then I made weird insects and creatures

this was so funny i just drew it on layered resin

It was great, doing exhibitions and stuff, making money, taking her out to dinner, Sizzler and stuff.

good ze

(Laughter) At some point, we ended up with humans, and we trapped a life-size resin sculpture and a line drawing between layers.

This was amazing except for one thing - I almost died.

I didn't know what to do I was dying from the resin

I thought about it every night in bed

So I tried using glass

I put layers of glass on top of each other and started drawing on top of it, and when I drew on the first window, I put another window on top, and then another window, and then all the windows overlapped to create a three-dimensional structure.

This worked great because it saved me from having to use resin.

So after a few years of doing this, I ended up with a very large painting, which I called "The Triptych."

The Triptych was largely inspired by Hieronymus Bosch's The Garden of Earthly Delights, Spain's Prado Museum.

do you know this picture

ok that's a great picture

It is said to be ahead of its time

Let's take you to the world of "The Triptych"

Weighs more than 10 tons

about 5 meters long

This has two sides, so it's about 10 meters in total.

it's kinda weird

there's a fountain of blood

(Laughter) On the left is Christ and locusts.

There's a cave, and these animal-headed creatures are going back and forth between the two worlds.

From the visible front stage, to this similar world of hell, where it's hiding

This is where the animal-headed creatures are by the lighthouse, and they throw themselves into the sea en masse.

The ocean is made up of thousands of elements

This is a bird god strapped to a battleship.

(Laughter) There's Billy Graham at sea, the Horizon oil spill, Wally, Osama bin Laden's lair, and if you look hard enough in the ocean, you can find all sorts of strange things.

Anyway, this is a female creature

She rises from the sea, vomits oil in one hand, and clouds in the other.

Her hands are like scales and she balances the earth and the universe by mythological standards.

This is one side of The Triptych

it's a little narrative

this is her spitting in her hand

And if you look at the other side, there's a body and something like a bird's beak, and the body is spewing clouds.

And a five-meter snake-like tail connects the three sides of The Triptych.

Anyway, its tail hits the flames that erupt beneath the volcano.

(Laughter) I don't know why this happened.

(Laughter) It's a common occurrence.

Her tail ends in a single eyeball that's made out of a 1986 terrorist card.

Have you seen

It's made in the 1980s and it's like a terrorist version of a baseball game.

You're ahead of the times

(Laughter) Let me introduce you to my latest project.

I'm currently working on two projects. One is "Psychogeographies".

In this project, we will make 100 figures in 6 years.

Each one is a cultural archive made up of fragments of different things, whether it's an encyclopedia, a dictionary, or a magazine.

Each one of us is a kind of archive in human form They travel in groups, 20, 4, 12, etc.

It coalesces and divides like cells

It takes years to look at these things

Each person is about 1.5 tons of sliding glass, and the person is fixed inside.

This person has a small cave in his chest

First of all, this is the head, the chest, you know what it's like

Let me show you what's inside There's a waterfall flowing down from my chest Covering my privates - It's not just a penis I'm kind of androgynous

Let's get started, I can't explain too long

It's layered

human body split in half

It has two heads and communicates between them.

A drug appears and is administered to one head by this strange statue.

I see a small forest scene in my chest cavity

appear?

Anyway, this talk is all about "boxes" and so is where we are.

We're in this box, and the solar system is like a box

Introducing my newest box

Named in a brick box "Pioneer Works"

(Cheers) Inside this box are physicists, neuroscientists, painters, musicians, writers, radio stations, museums, schools, and publishers, and they're spreading out to the world everything they've created.

Shake this box and all these people will hit each other like particles

i think this will change the world

Redefine yourself inside and the world you live in

It unites us, and we realize that we are all here together. The illusion of difference, the idea of ​​nations, borders, religions, makes no sense.

We're in the same box, made of the same stuff

If we don't learn to trade them well, we'll all be dead in no time.

thank you

(applause)

It was a real surprise to discover that there is an organization that supports my two very different life actions together.

because I'm a theoretical physicist

We specialize in building and validating models of the Big Bang from measured data.

On the other hand, as a side business, I have supported a project in Africa for five years.On the other hand, as a side business, I have supported a project in Africa for five years.

At Cambridge University, there was a lot of dissenting opinion.

Opinions like, "I don't have time to spend on side jobs."

In this context, it was simply amazing that there was an organization that understood both science and what was happening in Africa.

I'd like to start by giving you a quick introduction about myself and why I'm living such a divided life.

I was born in South Africa, where my parents were imprisoned for standing up to racism.

After my parents were released, I took refuge in Kenya and Tanzania.

At that time, both were newly independent nations full of hope for the future.

We had a wonderful childhood, we had no money, but we played outside most of the time.

I had great friends, and I shared the mysteries of Kilimanjaro, the Serengeti, the Olduvai Gorge, and the mysteries of Kilimanjaro, the Serengeti, the Olduvai Gorge.

Then I moved to London and attended high school.

I don't have much to say after that.

It wasn't anything particularly exciting, but when I was 17, I came back to Africa as a volunteer for my teacher's job in a small country called Lesotho, surrounded by South Africa, which at the time was going through apartheid.

80% of Lesotho men worked across the border in mines in neighboring countries in harsh conditions.

Despite all this, they welcomed me, a slightly unfitting white man, to their village with an incredible sense of hospitality and warmth.

the children were especially wonderful

The kids were wonderful, very motivated and often very bright.

Let me tell you just one story I experienced Let me tell you just one story I experienced

I took my kids outside as often as possible to connect textbooks with the real world.

they were not used to such things

But one day, I took the kids outside and said, "Estimate the height of that building."

I was hoping that you would put a ruler against the wall and measure the height with your finger to estimate the height of the building.

But a boy who is very small for his age

He was a child of one of the poorest families in the village.

He was doing something else He was writing something on the road

I got a little annoyed and asked, "What the hell are you doing?"

I said, "I want you to show the height of the building."

"I know, I measured the height of one block."

"I counted the number of blocks, so I'm doing the multiplication now."

Wow (Laughter) I didn't come up with this method.

I had many similar experiences

Another experience was with a kid who worked in a mine, and he was returning home after a three-month vacation.

I was sitting with him one day and I said, "There's one thing I really liked about school."

"What do you think? Shakespeare."

Experiences like this have convinced me that there are a lot of bright children in Africa -- inventive kids, intelligent kids -- they don't have a chance to use their talents -- inventive kids, intelligent kids -- they don't have a chance to use their talents.

If the situation in Africa improves, they will be the protagonists, not us.

Then -- (applause) -- that's the truth.

After Lesotho, before returning to England, I crossed Africa, and it felt gray and depressing compared to what I had experienced up until that point.

Back in Cambridge, I immersed myself in theoretical physics.

I'm not going to explain this equation, but theoretical physics is a truly amazing subject.

All the laws of physics we know can be expressed in just one line.

that would be a very succinct expression

It contains 18 parameters, of course the values ​​of the parameters need to match the observed data.

So the theory isn't finished, but it's a surprisingly powerful expression that encapsulates everything we know about the basic levels of the natural sciences.

Even if there are some very important unsolved problems like dark energy and dark matter that you know, this equation seems to describe the whole universe and explain its nature.

But one big question remains, best articulated by a wonderful Scottish teacher who was a primary school mathematics teacher in Tanzania, who is now in her 80s and whom I still keep in touch with.

The teacher is now in her 80s, but we still keep in touch.

When I was about to explain my work, my teacher put aside the difficulty and said just one thing: "Neil, there's only one thing I really want you to know."

"What exploded?"

Her question was spot on, it was a question we had avoided.

The widely-accepted explanation is that the universe exploded and came to life through a mysterious kind of energy, inflation energy.

But the question of why the universe emerged in such a strange state remains completely unsolved.

I worked on this problem for a while with Dr. Stephen Hawking and others.

Then I started looking for another theory that could explain this phenomenon.

This theory takes the position that the Big Bang is not the beginning of things.

Perhaps the universe existed before the big bang, and the big bang is just a violent event in the universe that existed before.

In fact, the possibility of this interpretation is suggested by the latest unified theory, which attempts to explain the 18 parameters I mentioned earlier in a single framework, with the expectation that all values ​​can be predicted.

I want you to see a diagram of this idea here.

That's all I can tell you, according to this theory, the universe isn't just three-dimensional, as we're used to, but there are many more dimensions everywhere.

And there's a dimension in that that's kind of mysterious, according to the most sophisticated unified theory we know.

This mysterious dimension looks like this because we are in the third dimension.

Each of us can only be described as a sheet, but we live in one of two three-dimensional worlds, and the sheet is actually a three-dimensional world.

And just a little further away, there's another three-dimensional world, and those two worlds are a very small distance apart.

The gap is really small, but it's clearly highlighted in the diagram.

Actually, the gap is about the size of the atomic nucleus.

I won't go into the details of why we think of the universe this way, but it's something that can be derived mathematically and that can explain the laws of physics as we know them.

I was interested in this idea because -

Because the question naturally arose of what would happen if these two three-dimensional worlds collided.

When these two three-dimensional worlds collide, they behave very much like the Big Bang.

But it's only slightly different from the situation described by the traditional Big Bang theory.

Big bread gets up at 1 point

Everything arises from a single point It has infinite density, so existing equations cannot be applied

It is impossible to describe what happened at that moment

As you can see in this diagram, the explosion is not just one point, it's spread over a wide area.

The density of matter that fills that space is finite, and it's possible that the whole process could be described by a few equations.

In a nutshell, we validated this idea.

And we found that it was consistent with actual galaxy formation and measurements of cosmic microwave background fluctuations.

It also has the advantage that there is a way to test the difference with the inflation theory I just described by experiment.

it contains gravitational waves

According to this theory, the big bang wasn't just the beginning, it could happen again and again, as you can see in the diagram.

We may live in a universe that is endless in both space and time.

And explosions have happened many times in the past, and they can happen many times in the future.

We may live in an endless universe

Building and testing models of the universe is the best way for me to enjoy and appreciate it.

We have to build the best and most consistent mathematical model possible.

And then we scrutinize the model's logic and consistency with experimental data.

And the model is wrong -- we make ourselves believe that it really must be wrong.

If you can find a mistake, that's progress.

I hope that in this way, little by little, we will be able to understand the world more correctly.

During this career, something has always bothered me inside.

what are you going to do with africa?

What are you going to do with the children I left behind?

In the '60s, things didn't develop the way we expected them to, and things got worse.

Africa was ravaged by poverty, disease and war.

This is very visually represented on the Worldmapper website

The idea is to represent the quantities you want to compare in terms of the area of ​​each country.

Here is a normal world map

Africa, by the way, occupies a very large area

The following map shows Africa's GDP in 1960, the time when many African countries became independent.

This is 1990, then 2002, and this is 2015.

Big changes are happening all over the world, but Africa is in the corner Big changes are happening all over the world, but Africa is in the corner

What about Africa's population? Population is not proportional to land area, but Africa leads the world in deaths from preventable diseases, such as malnutrition, common infections and complications at birth.

plus deaths from HIV/AIDS and war

45,000 people die each month in the Congo as a result of war. In the Congo, 45,000 people die each month as a result of war.

the fight is still going on

Can Africa cope with this situation?

this is the number of doctors in africa

This is the number of people with higher education

And this is -- what shocked me the most -- is the number of scientific papers published in Africa.

In terms of numbers, it's almost non-existent.

And this issue was raised very loudly at TED Africa, where all the aid for Africa is doing nothing to make it self-reliant.

South Africa's transition to democracy in 1994 was literally a dream come true for us.

My parents, along with Nelson and Winnie Mandela, were elected as the first members of parliament.

Also in 2001 - I was working on that crash study.

It was a very busy time - I took a study leave and went to see my parents.

We found that Africa is desperately short of engineers, especially in math, in industry, in government and in education.

The ability to build and test models is not just one branch of science today, it's an essential skill in modern society.

If you can't handle mathematics, I think it's hard to get by in modern times.

I had an idea, a very simple idea

The idea is to start the African Institute of Mathematical Sciences (AIMS).

It means recruiting students from all over Africa, inviting lecturers from all over the world, and giving them excellent educational opportunities.

As a professor at the University of Cambridge, I had many connections.

To my surprise they helped me 100%

They said, 'Let's get started.'

I knew it would be wonderful to bring together bright students from all over Africa who hadn't had the opportunity to get a proper education, and put them together with some of the world's top instructors - yes, Africa is in the spotlight, so the instructors would come - and watch the sparks of passion fly.

We bought an abandoned hotel near Cape Town.

An 80-room Art Deco hotel built in the 1920s.

It wasn't a very popular place, so I was able to buy an 80-room hotel for $100,000.

It was a beautiful building, but we decided to renovate it, and declared that we would start the best university of mathematics and science in Africa in this hotel.

New South Africa is a very exciting country

If you haven't been there, I recommend you go.

It's really interesting what's happening there.

We've recruited a great team of highly motivated staff

There was also the convenience of the Internet being prevalent.

Internet was expensive everywhere in Africa, but Internet cafes were everywhere.

And these bright young Africans, looking for success, desperately want to join the global community, and they're very ambitious.

they want to be the next Einstein

When word got out that AIMS was going to open, it spread quickly through emails and our website.

there were a lot of applications

We designed AIMS to be a 24-hour learning university, and building a university from scratch was a wonderful thing.

We need to rethink what universities exist for.

it was a wonderful experience

We designed it for interactive education.

No lazy classes in front of the blackboard

Emphasis is placed on problem-solving skills and group collaboration. We ensure that each student discovers and maximizes their individual strengths and that progress is not the only goal.

Everyone lives in this hotel -- teachers and students alike -- and sometimes seminars start suddenly at 1:00 a.m.

Students usually don't leave the computer lab until 2:00 or 3:00 in the morning.

and wake up at 8am

Teaching, problem solving, etc. It's a great environment.

We particularly focus on areas that are highly relevant to African development, because those areas have an advantage for academics working in Africa.

They write, they're invited to conferences.

They're doing great work and building great careers.

AIMS has been very successful

Here's a list of students who graduated last June What are the 48 graduates doing now?

and now where the location is shown here

Yes, they all went on to graduate school.

They're doing master's and doctoral programs in great places.

AIMS can educate five students for the cost of one in the United States or Europe.

More importantly, the presence of students across Africa is a lasting source of strength, pride and dedication to Africa.

Show AIMS progress by coloring African countries on the map

The background color of this list is

The countries in yellow are the countries that applied, the orange countries have current students, the green countries have alumni.

This is the situation in 2004, when we had our first graduates.

We set a goal to make every country in Africa green.

This is 2005 -6-7-8

(Applause) We're well on our way to our original goal.

There is a video of a student before coming to AIMS

please see one

My name is Tendai Mugwaguma

I have a Bachelor of Science degree and a degree in Education

I will enroll in AIMS

As far as I know, this educational course covers a lot of things.

From physics to medicine, especially epidemiology and mathematical modeling.

Tendai came to AIMS and did a great job

I will ask him to introduce what he is doing now.

My name is Tendai Mugwagwa I was a student at AIMS from 2003-2004

After graduating from AIMS, I went on to a master's degree in applied mathematics at the University of Cape Town in South Africa.

Then I moved to the Netherlands, where I'm doing a PhD in theoretical immunology.

Professor: Mr. Tendai is very independent in his research.

She communicates well with the hospital's immunology specialists.

So it means that he's a very good student from South Africa.

i'm glad she's here

Another first-year student at AIMS is a chef

Here is a picture of him with his favorite high school teacher.

Then I enrolled in a university in northern Nigeria.

After graduating from AIMS, I came to Cambridge hoping to continue my research in high energy physics.

I'm about to finish my PhD, and I recently shot a video with someone you know.

CA: And from there, we can probably make better predictions, and by comparing this to the graph, we can make even more predictions.

(Stephen Hawking) That's great.

This is a current AIMS student, 53 in all, from 20 countries, 20 of whom are women.

So let me tell you something about TED.

There was a party The place is Africa There are many good parties in Africa Last month there was a surprise party for me

there's someone you already know

(Applause) I would like to introduce you to some very special people in this picture.

At the party, as you can see, nothing was known to me at this point.

This is Ezra from Darfur.

She's a physicist, and she's smiling despite all that's going on in her native country.

She wants to continue studying physics.It is very good.

This is Lydia, the first woman in the Central African Republic to graduate in mathematics. This is Lydia, the first woman in the Central African Republic to graduate in mathematics.

I'm at AIMS now. (Applause) So let's get back to our TED wish.

It's not my TED wish, it's our TED wish, because we're already one

Our wish is in two parts, one is a dream and the other is a plan.

At TED, our dream is for the next Einstein to emerge from Africa.

And it's not just bright scientists, I'm convinced by what they've experienced at AIMS, they're the future Gates, Brines, and Page from Africa.

I said I have a plan, and the plan is very simple.

AIMS is a proven model

we need to increase this

We would like to launch 15 AIMS centers across Africa in the next five years.

Each would be an organization that would cover all of Africa, but each would specialize in a different area of ​​science.

I want to use science to overcome national and cultural barriers, as AIMS does.

I would like to add different elements to the curriculum.

I want to add knowledge about entrepreneurship and policy

Expanded AIMS will be a interconnected pan-African organization. Graduates will build strong networks and work together for peace and progress across Africa.

For the past year, I've traveled all over Africa looking for potential sites for a new AIMS center.

this is the place we chose

Each center has a strong local team, each is a beautiful and interesting place that teachers from all over the world want to visit.

Collaborators across Africa are very enthusiastic about this project.

Everyone wants an AIMS center in their country

And then, last November, the All-African Ministerial Conference on Science and Technology met in Mombasa and proposed a comprehensive plan to help launch AIMS.

And that's how we got political support across Africa.

Executing plans is not easy

Each base requires many challenges

Local scientists are expected to lead the programme, and the government will also need to be persuaded to support the programme.

Conditions are never good, but we have no choice but to give up and compromise on the methods that AIMS has succeeded in.

I'd like to summarize it this way: Organizations want purposeful, innovative, cost-effective, and high quality. Why?

Because I want Africa to be rich.

It's a basic and necessary rule that's easy to remember.

Let me conclude by saying that only talented young Africans can solve Africa's problems.

By unlocking and nurturing their creative potential, we can make a big transformative step in Africa's future.

Over time, it will contribute to Africa's development and science in ways we can only imagine today.

thank you

(applause)

When I was 14, I was interested in science, I was fascinated, I was obsessed with learning.

My high school science teacher said, "Girls don't have to listen to class."

I heard you right

(Laughter) I didn't just follow his words.

Now let me take you to the Chilean Andes Mountains, 500 kilometers northeast of Santiago.

It's a very beautiful place in a remote, arid region.

there is almost nothing

It's home to condors and tarantulas, and at night there's no light, so the sky is the darkest on earth.

That mountain is in a way a magical place.

It's a wonderful combination of remote mountain peaks and highly sophisticated technology.

For all of history, our ancestors have looked up at the night sky and wondered about the nature of our existence.

Of course, so is our generation today.

The only problem is that the modern night sky is obscured by the bright lights of the city.

That's why astronomers go to these remote peaks to observe and study the universe.

A telescope is a window through which mankind looks into the universe.

It's no exaggeration to say that the southern hemisphere will be the future center of 21st century astronomy.

We already have a series of telescopes in the Chilean Andes, and more telescopes with amazing new capabilities are coming soon.

There, two international organizations are building giant telescopes that will detect visible light like the human eye.

It also houses a survey telescope that scans the entire sky every two or three nights.

There's also a radio telescope that catches long-wave radio waves.

In addition, telescopes will be installed in space.

It's the successor to the Hubble Space Telescope, called the James Webb Space Telescope, and it's scheduled to launch in 2018.

The satellite TESS is also coming, which is expected to discover planets outside our solar system.

For the last ten years, I've led an international consortium that, when completed, will be the world's largest optical telescope.

That telescope is called the Giant Magellan Telescope, or GMT.

Each mirror mounted on this telescope is

There is a size of 8.4m in diameter

When placed in this venue, it covers up to the back four rows of the audience.

Each of the seven mirrors in the telescope is 8.4 meters in diameter.

All seven mirrors in that telescope, together, are 24 meters in diameter.

This venue fits perfectly

That telescope will be 43 meters high, and some of you may have seen Christ the Corcovado in Rio de Janeiro.

In height comparison, the Christ is actually smaller than this telescope.

It's as big as the Statue of Liberty

And the case that houses the telescope is 60 meters high, the same height as the 22-story building.

The case is a special construction to protect the telescope.

It opens up into the sky so you can focus on one point and observe the sky, and the platform rotates -- it's a 2,000-ton rotating structure.

The Giant Magellan Telescope has ten times the resolution of the Hubble Space Telescope.

20 million times more sensitive than the human eye

And we may be able to find life on planets outside our solar system that has never been possible before.

You can see the first ray of light at the birth of the universe - literally the dawn of the universe.

It's the dawn of space

This telescope will allow us to see the past of the universe, see galaxies as they are gathering stars, see the first black holes and galaxies in the universe.

For thousands of years, humans have been studying the universe, wondering what Earth is in space.

The ancient Greeks told people that the earth was the center of the universe.

Five hundred years ago, Copernicus put the Earth aside and put the Sun at the center of the universe.

Over the centuries, we've learned, since the Italian scientist Galileo Galilei began looking at the sky with a very small five-centimeter telescope, and every time we build a larger telescope, we discover and learn something new about the universe.

In the 20th century, we learned that the universe is expanding, and that our solar system is not at the center of that expansion.

We now know that there are about 100 billion observable galaxies in the universe, and each galaxy contains 100 billion stars.

Now we're seeing images of the universe far, far away like never before.

This was taken with the Hubble Space Telescope, showing a portion of the sky that appeared dark before the Hubble telescope was launched.

If I were to compare the size of this part, it's 1/50th the size of the full moon, so if you imagine a full moon,

I think it's easy to understand

There are 10,000 galaxies visible

The only reason this image is so small and blurry is because the galaxy is so far away, so infinitely distant.

Each such galaxy would contain billions to hundreds of billions of stars.

A telescope is like a time machine

By looking farther, we're looking at an earlier universe.

A telescope is a bucket of light, it literally collects light.

The bigger the bucket, the bigger the mirror, the more light you can see, and the farther you can see.

Well, in the last century, humans discovered something mysterious in the universe, a black hole.

We even learned that there are things we can't see, like dark matter and dark energy.

You're actually looking at an image of dark matter right now.

(Laughter) You can see it. Some people can't.

(Laughter) Now, the existence of dark matter is inferred from the apparent gravitational pull of gravity, even though it's invisible.

Now we can see a galactic sea in an ever-expanding universe.

What I've done myself is measure the expansion of the universe, and one of the projects I did in the 1990s used the Hubble Space Telescope to measure the expansion rate of the universe.

Now we can trace it back to 14 billion years ago

Over time, we learned that stars have their own histories, meaning they are born, grow, and some die spectacularly.

In this way, the embers of dying stars form new stars, and many stars eventually have planets orbiting around them.

And one of the really cool things we've done in the last 20 years is discovering planets orbiting stars other than the sun.

Such planets are called exoplanets.

Until 1995, we couldn't confirm the existence of planets outside our solar system.

But now we can detect and measure the masses of about 2,000 planets orbiting stars other than the Sun.

More than one planet has been discovered in 500 of those star systems.

And there are 4,000 more candidates - I'm still counting - that I think are planets.

There are various types of planets

There are hot planets like Jupiter, icy planets, water planets, rocky Earth-like planets called giant terrestrial planets, and even planets that are speculated to be made of diamond.

And at least one planet has life here on Earth.

A planet has also been discovered that orbits two stars.

It's no longer sci-fi

We know there is life on Earth. Humans have evolved into complex life forms. Now is the time to question our origins.

What has been discovered so far suggests that there are a huge number of planets -- perhaps millions, perhaps hundreds of millions -- located close enough to the stars they orbit, at a reasonable distance, where the liquid water needed to sustain life could exist.

So we're amazed at how likely it is that extraterrestrial life exists, and the cool thing is that maybe in the next decade, GMT will be able to analyze the spectra of the atmospheres emitted by these planets and determine if life is possible.

So what is the GMT project?

this is an international project

Australia, South Korea, and I'm happy to be here with the newest addition, Brazil.

(Applause) This includes universities and laboratories across the United States: Harvard University, the Smithsonian Center for Astrophysics, the Carnegie Institution, the University of Arizona, the University of Chicago, the University of Texas at Austin, Texas A&amp;M University.

Chile is also participating

It's also fascinating to make the mirrors for this telescope yourself.

The work of melting a lump of glass in a rotary furnace

It was held in the basement of the University of Arizona Football Studio.

Hidden under the 52,000-seat venue

no one noticed that

it's actually a rotating cauldron

The mirror was poured into a mold, cooled very slowly, and then polished with extreme precision.

The precision of this mirror is that, over an eight-meter diameter mirror, the irregularities are less than 1/400,000th of a centimeter.

do you want to see it?

king!

(Laughter) The total diameter of eight meters is 1/5,000th the width of a single hair of mine.

it was a spectacular stunt

The mirror had the precision we wanted.

Why did we focus on precision?

Think of GMT, if I pick up the coin I'm holding right now and look at the obverse, here I can make out the letters on this coin, I can see the face of the coin.

I don't think even the people in the front row can see it.

But if we put a giant Magellan Telescope, 24 meters in diameter, inside this venue, and I'm standing 320 kilometers away in São Paulo, I can still see the surface of the coin.

This is the extraordinary resolution and power of this telescope.

And if we -- (Applause) -- if an astronaut went to the moon 400,000 kilometers away and lit a candle -- just one candle -- we would be able to find it using GMT.

so extraordinary

This is a simulation of how star clusters in nearby galaxies look like.

"Nearby" is a space reference, it's relative.

It means tens of millions of light years away.

A star cluster would look like this

Now look at these four bright objects, and compare them to Hubble Space Telescope camera images.

I can see the details of the stars

Finally - look how dramatic - this is the image the GMT would see.

Now keep looking at this bright image again.

This is how the most powerful telescope in existence on Earth looks, and again, how GMT looks.

Extremely precise

How far did you go?

hauled to the top of Chile's highest peak

and started

tested and polished the first mirror

I poured the second and third mirrors into the mold

and about to cast the fourth mirror

This year, we had a series of surveys, and an international team came to evaluate us, and they said, "You're ready to build."

So we plan to build a telescope with four mirrors first.

Astronomers are calling the first operation, scheduled for 2021, "first light," because they want to get it up and running quickly to capture scientific data.

With seven mirrors installed, the telescope will be completed in the mid-2020s.

We are now ready to observe the distant universe and see the cosmic dawn.

It will also allow us to study extrasolar planets in great detail.

But what excites me the most is the construction of GMT, and it's a great opportunity to discover something that humanity has never known before -- something completely new and unimaginable.

And my hope is that this telescope and other facilities will inspire many young people to reach for the stars.

thank you

(Portuguese) Thank you

(Applause) (Bruno Giusani) Thank you, Wendy.

I have a question.

you touched some facilities

The Magellan Telescope is about to launch, and we have ALMA in Chile and other facilities in Hawaii and elsewhere.

Is it a relationship of cooperation with each other? Or is it competitive?

I understand that there is competition for funding, but is that true for research as well?

(Wendy Friedman) In the world of science, researchers are all working together.

Space telescopes, ground-based telescopes, telescopes that detect signals at different wavelengths, similar but with different instruments, each looking at a different part of our question.

If you want to find out about planets, you'll be able to look at these observations, measure their atmospheres, and look at the universe at very high resolution.

they are very reinforcing

We're competing for funding, yes, but we're very collaborative on the scientific side.

(Bruno) Thank you so much for coming to TED Global.

(Wendy) Thank you

(applause)

Nobel Prize-winning economist Paul Krugman once said, "Productivity isn't everything, but in the long run it's almost everything."

this is serious

There aren't many things that are "almost everything"

Productivity is the key to social prosperity

so it becomes a problem

In Europe's largest economy, in the '50s, '60s, early '70s, productivity used to grow by 5 percent a year.

From 1973 to 1983 it was 3% a year.

2% per year from 1983 to 1995.

Since 1995, it has been less than 1% per year.

The same applies to Japan

The same is true for the United States, even though there were technological innovations all around us, such as the IT bubble 15 years ago, the Internet, information, new information and communication technologies.

A 3 percent annual growth in productivity doubles the standard of living for every generation.

Every generation will be twice as wealthy as their parents.

At 1% annual growth, it would take three generations to double the standard of living.

So many people will be poorer than their parents.

Less everything means less home ownership, no, no more home ownership, less education, less vitamins, less antibiotics, less access to vaccinations, everything.

Think about all the problems you face

yes everything

And that seems to be the beginning of a productivity crisis.

Why is it a crisis?

That's because the guiding principles of efficiency -- effectiveness in organizations and management -- are holding back people's efforts.

Whether it's public service or business, we're trying to learn better ways to work, to create, to invest.

Consider the triad of efficiency: clarity, quantification, and accountability.

This wastes human effort.

There are two ways to prove this.

Of these, I prefer the exact, elegant, and beautiful mathematics.

But explaining it all with mathematics would take a long time, so we'll take another approach.

We will look at the relay race

today's agenda

It's livelier, it's visually better, it's faster - it's a race.

I'm sure it will be fast

(Laughs) World Tournament Finals Women

8 teams will run in the final

The fastest is the US team

'Cause there's the fastest woman in the world

This team is likely to win

If you compare it to the average team -- let's say the French team (Laughter) -- based on their best 100-meter race, and add the individual times of the American runners, they finish 3.2 meters ahead of the French team.

On top of that, the US team is doing great this year.

Based on this year's record, they're 6.4 meters ahead of the French team, but that's based on data.

let's see the race

If you watch all the way to the end, you'll see that the fourth American runner, Tori Edwards, is ahead.

Of course, I won the gold medal in the 100m dash.

America's second fastest runner, Christy Gaines, is the fastest woman in the world.

There are 3.5 billion women in the world

The fastest two are on the US team.

The other two players from the United States are also quite good.

(Laughter) The U.S. team clearly has the upper hand in talent.

But the average team behind them is desperate to catch up.

let's see the race

(Video: Caster commentary in French) (Video: End of narration) (Yves Moreieu) So what's the result?

The team that is not the fastest won

I hope you will appreciate the profound research that I have done to make France look better.

(Laughter) But let's be conservative, because this isn't even archaeology.

(laughs) But why?

because we cooperated

You've probably heard people say, "Working together brings more than the sum to the whole."

This is not poetry, much less philosophy.

it's math

The baton runner was slow, but the baton was fast

The miracle of cooperation, which multiplies the energy and intelligence of human effort.

The essence of human effort is how we work together to make efforts for others.

Together we can do more

Now, if we cooperate, what kind of changes will appear in the Holy Grail - in the three sacred treasures - clarity, quantification, where responsibility lies?

Clarity first

Management reports are full of ambiguities

Consultant diagnostics for compliance audits

We need more clarity and clarity about roles and how to proceed.

It's like a team member saying, "Let me clarify my responsibilities.

Will it run 95m or 96m or 97m? ”

It's important, let's be clear

For example, if it's 97m, if you run 97m anyway, even if there's no one to take it, let go of the baton.

Responsibility

We always try to put responsibility in someone else's hands, don't we?

Who is responsible for proceeding?

I need someone in charge to make it work

In a relay race, passing the baton is important, so we have to decide who is responsible for passing the baton.

This ensures that each runner receives the baton as a dedicated athlete and passes it on to the next runner.

I've secured at least two

Can this win the race?

I don't know, but at least it makes the liaisons clearer and the responsibilities clearer.

you'll know who's wrong

But this won't win the race

Now think about it, I'm more concerned with creating the conditions for success than with who's responsible when it fails.

You put all your human intellect into organizational design -- urban planning, itinerary system design -- but what was the real purpose?

to make someone feel guilty when they fail

We're building failing organizations by following the rules and making sure we're accountable for failure.

It's a really effective way to fail.

Numericalization

how to evaluate work

When you pass the baton, you pass it to the next player at the right time and at the right speed.

You have to put all your effort into it

It's just the arms, not the legs

And then you're sacrificing your running speed.

And before you hand over the baton, you have to shout out to the next runner, so they can be ready for the next runner.

i have to shout out

Then blood flow and energy goes to your throat and not to your legs.

What's more, 8 people shout at the same time

You have to be able to distinguish between the voices of your friends

I can't ask "Is it you?"

It's too late!

(Laughter) Now let's put the race in slow motion and focus on the third runner.

She sees where the effort, the energy, the attention,

Don't just focus on running, use your throat, your arms, your eyes, your brain

Who benefits from this?

You're the next runner

So if the next runner is very fast, is it because of that runner's effort or because of the way the third runner passed the baton?

there is no way to determine the answer

When it comes to rewarding measurable achievements, we direct our energy, our focus, our blood toward what we can do, and we direct it to our legs.

And then you drop the baton, and you end up slowing down.

Cooperation is not blind effort; it depends on where the effort is made.

It's risky, because you're sacrificing your own quantifiable achievements.

And this has very good results for rivals.

Then it would be foolish to cooperate

people aren't stupid so stop cooperating

Now when the world is simple, it's OK to be clear, to be responsible, to be quantified.

But business has become more complex.

My team evaluated the evolution of complexity in business.

Now more than ever, we need to attract customers and generate profits on a global scale.

In business, in the name of clarity, accountability, and quantification, structures, processes, and systems become more complex.

The quest for clarity and accountability instead creates unproductive bridges and management departments where facilitators not only stall people and resources, but add complications.

The more complex the organization, the more difficult it becomes to understand the current situation.

And then you need summaries, proxies, reports, key performance indicators, metrics.

And then everyone starts focusing on what's valued at the company's expense.

And when performance deteriorates, we introduce new structures, processes and systems.

And then people start spending hours in meetings, writing the reports they need, deleting them, and starting over again.

Our analysis shows that teams in these organizations are wasting between 40% and 80% of their time, working harder and harder, and doing less meaningful work.

This is destroying productivity and hurting people at work.

Organizations are wasting human intelligence

People's efforts are wasted

When people aren't willing to cooperate, instead of attacking their mindset, their mentality, their character, think about the situation at work.

Is everyone interested in cooperating, and will they be rewarded for cooperating?

Why do people cooperate?

Because blaming character instead of clarity, accountability, and evaluation creates more inequality in inefficiency.

We have to create an organization that is useful and collaborative to everyone.

You don't need any complex structures like liaisons and management departments.

Seek ambiguity rather than clarity

Blur the Boundaries

Performance evaluation does not require quantification

It prompts "what to do"

Focus on how we work together

How did you pass the baton?

Did you throw it or did you pass it successfully?

Do you focus your energy on your legs, speed, or how you pass the baton?

We are leaders and managers A system where each person can cooperate Are you making it?

The future of our organization, our company, our society depends on that answer.

thank you

(applause)

If you want to buy high-quality, low-cost cocaine, there's only one place to go: darknet anonymous markets.

You can't get to those sites with a regular browser like Chrome or Firefox, because they're on a hidden part of the Internet. They're called Tor hidden services, and URLs are meaningless strings of alphanumeric characters that end in .onion.

The Tor browser was originally a US Navy intelligence project.

Then it became open source, allowing anyone to browse the Internet without knowing their location.

The method is to encrypt your IP address and route it through computers all over the world that use the same software.

It works for the regular internet, but it's the key to the darknet.

It's an extremely sophisticated encryption system that makes it extremely difficult to shut down 20, 30, I don't know, sites that operate there.

A censorship-free world visited by anonymous users

It's natural that it's going to be a place for people who have something to hide, but that "something" doesn't have to be illegal.

There's a site on the darknet where the New Yorker accepts whistleblowers.

There are political activist blogs

There is a library of pirated books

Others Drug market Illegal pornography Paid hacking services And more

I think the darknet is the most interesting and exciting place on the internet.

Because innovation, of course, happens in big companies and world-class universities, but it also happens on the fringes of society, and people on the fringes -- the marginals, the outcasts -- can be very creative, because they have to.

There's no LOLCAT, no pop-up ads in this area of ​​the Internet.

That's one of the reasons why I think many of you are going to the darknet soon.

(Laughter) I'm not saying that any of you will use it to get high-quality drugs.

Let's assume that

(laughs) Please bear with me for a moment.

The first thing you notice when you enter these sites is that they look very familiar.

Thousands of products, each one with high-definition, beautiful images, detailed product descriptions, and prices.

There is a "proceed to checkout" button

Amazingly, there's even a "report infringing product" button

(laughs) I'm impressed.

You browse the site, choose a product, pay with the cryptocurrency bitcoin, enter your shipping address, preferably not your home address, and wait for the item to arrive, most of the time it does.

The reason for this is not due to clever encryption schemes,

important point

implemented in a much simpler manner

Customer review

(Laughter) The vendors of these sites all use pseudonyms as a matter of course, but they continue to use the same pseudonyms to build their reputations.

Buyers can switch vendors at any time, but we judge whether a vendor is trustworthy by whether it's rated positively by other users of the site.

This introduction of competition and choice is exactly what economists would expect.

The price goes down, the quality of the product goes up, and the vendor listens carefully, responds politely, puts the customer first, and comes up with various ideas.

I contacted a vendor called Drugsheaven.

Drugsheaven provided consistent, high quality marijuana at a fair price.

Generous return policy, detailed business terms and fast shipping

"Dear Drugsheaven," I wrote it using an internal message system sent encrypted.

"It's my first time, but can I buy just one gram of marijuana?"

I got a reply about 2 hours later.

they will always reply

"Thank you for contacting us

It's wise to start with small amounts, and I would do that if I were you."

(Laughter) "It's perfectly fine to want to start with one gram.

I hope we can have a good relationship

From Drugsheaven"

(Laughter) I don't know why I spoke in such a pompous way, but I kind of felt like that.

It's this kind of customer-centricity that -- if you look at the 120,000 reviews left on the site in three months -- 95 percent of the ratings are 5 out of 5.

Customer is God here

What does this mean?

On the one hand, it makes it easier for more people to buy more drugs.

I personally don't think it's a good thing.

But on the other hand, it means that when you buy drugs, you have a satisfactory method that guarantees a certain level of purity and quality, which is extremely important when it comes to using drugs.

And you can buy it from home, without the risks you would have to buy in the city.

You need ingenuity and innovation to survive in this market.

So the 20 or so sites that are currently in operation -- and by the way, they don't always work or are perfect. The site I showed you shut down a year and a half ago, but by then it had done billions of dollars worth of transactions.

These markets are constantly innovating and always looking for better ways, because of the difficult operating conditions, the harsh environment, the more decentralized, the harder to police, the more convenient they are for customers.

For example, a payment system

Of course, I don't use my credit card because it's tied directly to me.

That's where the cryptocurrency Bitcoin comes in. It's easy to exchange for real money, and it gives users a high degree of anonymity.

These sites initially had problems with their systems.

There was a rogue dealer inside, who didn't send the product, just took the bitcoin and ran away.

The community has come up with a way to deal with this, called multi-signature escrow.

When I buy a product, I send bitcoin to a neutral and secure 3rd party digital wallet.

When the vendor sees that I have sent the money, he or she is relieved to send the item to me. When I receive the item, the payment is made to the vendor by two of the three parties involved, the vendor, the buyer, and the site administrator, who approves using their electronic signatures.

wonderful!

this is concise

works great

But Bitcoin had another problem, because all Bitcoin transactions are recorded on a public ledger.

Who is involved?

So the "tumbling" service was invented.

Hundreds of people send bitcoins to one address, where bitcoins are scrambled and then sent to the intended recipients in their respective amounts in different bitcoins. It's a micro-laundering system.

(laughs) It's good.

Want to know what the hottest drugs are on the darknet market right now?

There is a search engine called Grams

You can even buy advertising space.

(Laughter) As a moral consumer, are you concerned about what's going on in the drug industry?

If that's the case

There are vendors that sell organically grown, fair trade cocaine.

(Laughter) Not from Colombian drug lords, but from farmers in Guatemala.

They've even pledged to donate 20% of their profits to local education programs.

(Laughter) Some even conduct undercover research for consumers.

The ethical consideration of these sites is a tricky question, but I think it's an extraordinary and astonishing feat to create a competitive and functioning anonymous marketplace where people are constantly at risk of being shut down by the authorities, but where no one knows who they are.

And it's innovations like this that are said to be the harbingers of the future on the fringes of society.

Because of its short lifespan, it's easy to forget that the Internet has changed a lot in the last 30 years.

It started as a military project in the '70s, turned into an academic network in the '80s, was incorporated into commercial enterprises in the '90s, became universal in the 2000s through social media, and I think it's about to change again.

Something like a marketplace on the darknet, something creative, secure, hard to censor, and I think that's where the future lies.

The reason the future is there is because people worry about privacy.

Surveys Show People's Privacy Concerns

The more time we spend online, the more we worry about privacy, and research shows that everyone's anxiety is on the rise.

We all worry about what happens to our data.

We're all worried about who's watching us

Since the revelations by Edward Snowden, more and more people are using a variety of tools to enhance their privacy.

The Tor browser has between two and three million daily users, many of which are used for completely legal, rather mundane things.

Hundreds of activists around the world are working to develop technologies and tools to protect online privacy, such as standard-encrypted message services.

Ethereum uses the hard disks of millions of connected but unused computers to create a decentralized internet that no one can control.

Distributed computing, of course, has been around for a long time.

It's used for everything from Skype to searching for extraterrestrial life.

But distributed computing combined with strong cryptography can make censorship and control extremely difficult.

MaidSafe is based on similar principles.

And there's more Twister and more

The point is, the more people join, the more interesting these sites become, and the more interesting they become, the more people join.

I think that's what will happen in the future

actually it's already happening

The darknet is no longer a hideout for traffickers or a haven for whistleblowers.

It's becoming popular

Musician Aphex Twin recently released an album on a site on the darknet.

Facebook has also started using darknet sites.

A group of London architects have created a darknet site for people concerned about revitalization projects.

The darknet is gaining ground, and I predict that soon all social media, all major news outlets, will be using the darknet, and so will you in this room.

So the Internet will become more interesting, more exciting, more revolutionary, more frightening, more destructive.

This is good news for those who care about freedom.

Good news for those who care about independence.

Good news for those who care about democracy.

This is also good news for people who want to watch illegal pornography or traffic drugs with impunity.

It's not all black, it's not all white

It's not one who wins, but both.

thank you very much

(applause)

Chris Anderson: You're a so-called genius mathematician.

At a young age, he taught at Harvard and MIT.

Then I got a call from the NSA

what was that about?

Jim Simons: The NSA, the National Security Agency, didn't actually call.

They've got a base in Princeton, and they're hiring mathematicians to do things like code-breaking.

knew about its existence

The terms of employment were very good, and if half of my time was spent doing what I was supposed to do, I was free to spend the rest of my time studying mathematics.

And my salary was high.

It was an irresistible attraction

That's why I took the initiative

Chris: So you're on a code-breaking mission?

Jim: That's right

Chris: Until I got fired.

Jim: Yes I was fired.

Chris: How did that happen?

Jim: why?

It was in the middle of the Vietnam War at the time, and the boss's boss there was such a war enthusiast that he wrote a feature article for The New York Times on Sunday about how to win the Vietnam War.

I hate war, so I thought it was stupid.

So I put it in the Times and it ran, Maxwell Taylor's -- I don't know if you remember him, saying that not everyone who works for him agrees with him.

I wrote my own thoughts —

Chris: Okay, so you're going to get fired. Jim: You have a different opinion than General Taylor.

but nothing was said at the time

I was 29 years old at the time, and a young man who said he was a reporter for Newsweek came up to me and said he wanted to interview me and asked me what I was doing about my case.

I said, "I'm doing math mostly now. When the war is over, I'll be back at the NSA."

And I did the only smart thing I did that day: I told my boss I had an interview.

Asked, "What were you talking about?"

I reported it as I said

"I have to call General Taylor," he said.

go call me in 10 minutes

Five minutes after I got back, I was fired.

Chris: I see

Jim: But it wasn't that bad.

Chris: So you got a job at New York University, Stony Brook, and started your career as a mathematician.

And I ended up doing research with this person.

What kind of person are you?

Jim: I'm Shinsheng Churn.

Chern is one of the leading mathematicians of the 20th century.

I've known him since I was a graduate student at Berkeley.

I had a little idea, and I told him about it, and he was interested, and we decided to collaborate.

I think it's easy to understand when you see it on the screen (laughs)

This one

Chris: And that led to a co-authored paper that became very famous.

Could you give us a little introduction about the contents?

Jim: I can't

(Laughter) Jim: I hope someone understands —

(laughs) Chris: How about this explanation?

Jim: There aren't many people like that.

Chris: So you said that theory had to do with this sphere. Let's start here.

Jim: Yes, it's related. I'll talk about that study later. It's related to this sphere, but before I do, I want to say something. That paper was all about mathematics.

Neither me nor Churn have any complaints about that.

It even paved the way for a field of mathematics that is now very developed.

But the interesting thing is that it's now applied to physics.

About 10 years after the paper came out, a guy named Ed Witten at Princeton started applying it to string theory, and the Russians started applying it to the theory of condensed matter physics.

Today, what's called the Chern-Simons invariant is used in many areas of physics.

Awesome

we have no knowledge of physics

I never expected it to be applied to physics.

But that's the nature of mathematics, and I don't know what it's applied to.

Chris: That's great.

I don't know if you understand the truth, but I talked about how evolution shapes the human psyche.

You don't know anything about physics, you create a theory of mathematics, and 20 years later you apply it to describe the fundamentals of the real world of physics.

How is that possible?

Jim: God only knows

(Laughter) A famous physicist named Eugene Wigner wrote a paper called "The Absurd Usefulness of Mathematics (in the Natural Sciences)."

Mathematics is, in a way, rooted in the real world, and people started counting and measuring, and that's what we all do, and then it developed its own way.

But it's a cycle that solves real problems.

general relativity is an example

Hermann Minkowski invented the geometry that bears his name, and Einstein found, "That's what we wanted in describing general relativity!"

I don't know how the theory of mathematics is used.

it's really strange

Chris: Here's an example of a great mathematical achievement.

please explain this

Jim: It's a ball -- a sphere with a grid on its surface. It's shaped like a square.

What I'm describing here was discovered by Leonhard Euler, the great mathematician of the 1700s.

That discovery led to a very important branch of mathematics, algebraic topology.

Our paper also has its roots here.

So let me explain, here we have 8 vertices, 12 edges and 6 faces.

If you subtract the number of edges from the number of vertices and add the number of faces, you get 2.

It's 2

Let's look at another case, covered with triangles, this time with 12 vertices, 30 edges, 20 faces, covered with 20 tiles.

Vertex - Edge + Face is 2 again

In fact, the result is the same even if the covering is a mixture of triangles and other polygons.

Vertex - edge + face is 2.

this time in a different shape

It's a torus, and it's shaped like a donut. We're going to cover it with a rectangle. It has 16 vertices, 32 edges, and 16 faces.

vertex - edge + face is 0

is always 0

A torus can be covered with a square, a triangle, or anything else, and it's zero.

Such a number is called Euler's characteristic.

It's a kind of thing called topological invariant

it's very interesting

No matter how I do it, I always get the same result

The field sprang up in the mid-1700s and is now called algebraic topology.

Chris: So the theory you created took a hint here and extended it to higher-dimensional theories, higher-dimensional objects, and found new invariants.

Jim: Yes, but the higher-dimensional invariants themselves have existed before, the Pontryagin class, and there was also one named after Churn.

There are many such invariants

I was working on one of them, and I had a kind of combinatorial formulation that was different from what was usually done, and as a result, I made a new discovery.

But if it wasn't for Mr. Euler -- he'd written 70 volumes of mathematics -- and he had 13 children -- I'm sure he'd be writing with them on his lap.

Chris: I see. You've shown us a glimpse of the great intelligence.

Now let me tell you about Renaissance.

You're a smart guy, you started out breaking code for the NSA, but then you moved on to finance code.

I don't think you believed in the efficient market hypothesis.

I've found a method that has produced amazing returns over the last 20 years.

I've been told that what makes it amazing is not only the high returns, but also the surprisingly high stability and low risk compared to other hedge funds.

How did you do this?

Jim: First, we gathered the best people.

When I started trading, I was a little bored with math.

I was in my late 30s and had a little money.

I started trading and this worked

I made a lot of money, but it was pure luck.

i think it was a coincidence

It never had anything to do with mathematical models.

But after looking at the data for a while, I realized that there seemed to be some kind of structure there.

So we hired some mathematicians and started building some models, which is the kind of thing we used to do at IDA.

design an algorithm and run it on a computer

I'm trying to see if it works

Chris: Can you see this?

This is a typical market graph

When I look at this, I think, "It's going up and down at random. Maybe there's a little bit of an upward trend when you look at the whole thing."

How were you able to see the non-random part and trade successfully?

Jim: Well, this is from the old days. It's the old charts. Commodities and currencies had trends.

There are cyclical trends, not just gentle trends like the ones you see here.

Once you know that, you can take the average volatility of the last 20 days and predict today's price.

It's worked like that before, and it's not perfect, but it works.

You can make a profit, lose a profit, or make a profit.

If you stick with it long enough, you'll make a little bit of money over the course of the whole period.

It's a method that doesn't work anymore

Chris: So you've tried different trend cycles, like a 10-day cycle, a 15-day cycle, and you're trying to see if it's predictable going forward.

Jim: We try different things and see what works best.

Trend prediction worked well in the '60s, and it worked reasonably well in the '70s.

But the 80's were different

Chris: Because everyone did the same thing.

How did you try to get ahead of them?

Jim: We got ahead of ourselves by thinking of other ways, like short-term forecasts --

The big thing is that we collected a lot of data, which was initially done manually.

It was like going to the Federal Reserve and copying the historical interest rate data, because the computer didn't have the data.

got a lot of data

And hire very smart people, that's the key.

I didn't know how to recruit fundamental investors.

I hired some people

I didn't make enough profit.

But when it came to recruiting scientists, it worked, because I had a good eye for it.

This is the reveal

And so the predictive model got better and better and better.

Chris: You've also credited Renaissance with something unique about your work.

He says that he is motivated by the fact that he can do interesting things with mathematics and science.

Jim: I hope so

money was also a factor

Chris: You make a lot of money.

Jim: I can't say that people don't come for money.

I think a lot of people were drawn to money.

But it was also interesting because

Chris: What role has machine learning played?

Jim: In a way, what we did was machine learning.

We analyze a lot of data, try different forecasting methods, and gradually find better ones.

Feedback doesn't always lead to improvement.

it worked

Chris: I heard that some of your prediction methods were surprising and unconventional.

weather, dress length

You've tried everything, even political opinions, right?

Jim: Yes, but I haven't tried the length of the dress

Chris: What have you tried?

Jim: everything

Whatever you can use - apart from the length of the hem

Weather, Annual Reports Quarterly Reports, Historical Data, Sales

whatever is

Ingesting terabytes of data every day

store, process and make available for analysis

and look for outliers

As you said, the efficient market hypothesis is incorrect.

Chris: If you get one outlier, it's just random.

The key is finding relationships between multiple strange outliers.

Jim: A single outlier might be random, but if you collect enough data, you can tell otherwise.

We find anomalies that persist for a long enough time.

But such anomalies will eventually disappear.

so you always have to be ahead

Chris: A lot of people are kind of shocked when they look at the hedge fund industry, because there's a lot of wealth that's being created there, and there's a lot of talent involved.

Do you have any concerns about this industry or the financial industry in general?

It's like a runaway train - kind of fueling inequality.

How would you defend what is happening in the hedge fund industry?

Jim: Hedge funds haven't done very well in the last three or four years.

Our business is doing well, but the hedge fund industry as a whole is not doing well.

On the other hand, the stock market, as you know, is going up.

Most of the wealth that has been created in the last five or six years has not come from hedge funds.

When asked "What is a hedge fund?"

Answer "1 and 20"

Now it's "2 and 20," which means you get a 2% fixed fee and 20% of your profits.

Hedge funds are a different kind of creature.

Chris: Rumor has it that you're taking a little higher commission.

Jim: At one point we were taking the highest commissions in the industry.

"5 and 44"

Chris: When you say "5 and 44"

That's a 5% fixed fee and 44% of the profit.

Investors still made huge gains.

Jim: We actually got high returns.

People started to get angry, why are you charging such a high fee?

"You can stop," I said.

(Laughter) But I think I told you, at some point, we stopped accepting outside investment.

Chris: But shouldn't we be concerned about the shortage of talented mathematicians concentrated in the hedge fund industry to solve the rest of the world's problems?

Jim: Not only mathematicians

We also hire astronomers, physicists, etc.

but it's nothing to worry about

It's still a small industry.

In fact, I think the world is a better place by bringing science into the field of investing.

Reduced volatility and increased liquidity

Spreads (price differences) between products have narrowed due to increased trading

I'm not worried about geniuses like Einstein abandoning science and starting hedge funds.

Chris: You've come to this point to invest in the opposite supply side, pushing math across America.

This is his wife, Marilyn.

The two of you are doing charity work

please talk about this

Jim: You can see my beautiful wife, Marilyn, who founded the foundation almost 20 years ago.

I think it was 1994

I claim it's '93, but she says '94, whichever year it is.

(Laughter) We set up a foundation because it was a convenient way to donate.

She was in charge of bookkeeping etc.

At the time, I didn't have a clear vision, but over time it began to emerge: to focus on basic research, to focus on mathematics and science.

and implemented this

About six years ago, I left Renaissance to work for the Foundation.

still working

Chris: "Math for America" ​​funds, rewards, supports and mentors math teachers across the United States.

You're making education more efficient and presenting a mission that teachers can aspire to.

Jim: It's better than blaming problem teachers, especially in the fields of math and science, because blaming only serves to demotivate the entire educational community.

Give a reward of less than 2 million yen a year

We currently support 800 math and science teachers in New York City's public schools, and they play a central role in that.

they are motivated

stay in the field of education

Next year, that number will grow to 1,000, or 10 percent of the public school math and science teachers in New York City.

(Applause) Chris: And you're also giving philanthropic support to another project, one about the origin of life.

what kind of research?

Jim: before answering that

you were asked

I want to say that the mystery of the origin of life is a very interesting one.

How was it born?

There are two mysteries. One is how did the transition from geological to biological occur?

Another mystery is what started

Which matter originated in that transition?

These two are very interesting mysteries.

The first mystery is about the incredible evolutionary path from geology to things like RNA, and what the mechanism might have been.

The other mystery, the process of obtaining the substances that make up life forms

It may go beyond the conventional wisdom

This picture shows the process of star formation

There are about 100 billion stars in our galaxy, and about two new stars are born each year.

I don't know how it works, but it's born anyway.

It takes millions of years for a star to form.

So there are two million stars that are constantly forming.

The picture is of a star in this process of formation.

Surrounding it is something like dust.

And then something like the solar system is formed.

Here's what's interesting: we're finding that the dust that surrounds forming stars contains important organic molecules.

It's not just molecules like methane, but basic substances like formaldehyde and cyanide that are the seeds of life.

Maybe this is what's happening

It may be typical that planets are formed from such basic materials of life.

So life is everywhere, isn't it?

maybe so

However, the question remains of how difficult it is to go from the ephemeral primordial state of the existence of seed matter to the birth of life.

The seed material will rain down on dormant planets.

Chris: So you want to unravel the mysteries of the origin and birth of life?

Jim: I hope it will be clarified.

If the birth of life is nearly impossible, regardless of the starting conditions, then life on Earth is unique.

On the other hand, if it weren't so difficult, there might be life all over the place from organic dust floating in space.

I would like to know

CA: Two years ago, I had the opportunity to speak with Elon Musk, and when I asked him what the secret to his success was, he said it was taking physics seriously.

According to you, you take math seriously, and it powers your whole life.

And they're making millions of dollars, allowing them to invest in the futures of millions of children in America and around the world.

Does this mean science can help?

Is mathematics useful?

Jim: Mathematics definitely helps.

and it's fun too

Working with Marilyn and giving back to people is a lot of fun.

Chris: I'm really impressed by how much you can get by taking knowledge seriously.

Come to TED and tell us about your wonderful life.

thank you

It was Jim Simons!

(applause)

I will talk about work today

The question I want to ask and answer is, "Why do you work?"

Why do people drag themselves out of bed every morning? Instead of living a TED-like hopping life from adventure to adventure?

(Laughter) You may be asking yourself this question.

I know, of course, that you have to make a living, but I don't think anyone here would say that's the answer to the question, "Why do you work?"

For the people here, the work will be challenging, immersive, exciting and meaningful.

And if you're lucky, it might even matter.

If you don't work if you don't get paid, that's not the reason you work.

In general, we believe that material rewards are a bad incentive to do the kind of work that we do.

It's not very descriptive to say of someone, "I do it for the money."

(Laughter) I think it's completely obvious, but this obviousness raises a very fundamental question.

If this is so self-evident, why shouldn't work for the overwhelming majority of people have the qualities that make us get out of bed and go to work every morning?

Why do we allow the vast majority of people to do monotonous, pointless, soul-wrenching jobs?

Why did the development of capitalism create a form of production that undermines the immaterial satisfaction that work provides?

The people who do that work, whether it's in a factory, a call center, or a shipping warehouse, do it for the money.

There's no reason to want to do their job other than the wages.

the question is "why?"

And the answer lies in technology

yeah yeah i know yeah yeah technology and automation are the enemy of man or whatever that's not what i'm saying

And the technology I'm talking about isn't the kind of technology that wraps our lives and people come to TED.

We're not talking about the technology of things, which must be important in its own way.

I'm talking about another technology

idea technology

I call this "idea technology" (IT).

(Laughter) Science doesn't just produce things, it also produces ideas.

science creates ways to understand

And the way of understanding that social science has created is a way of understanding ourselves.

And it has a huge impact on how we think, what we want and how we behave.

If you think poverty is God's will, you'll pray

If you think your poverty is the result of your incompetence, you'll fall into despair.

If you think poverty is due to tyranny, you'll revolt.

Whether our response to poverty is obedience or revolution depends on our understanding of what causes poverty.

This is the role of ideas in shaping who we are, and this is why idea technology may be the most important technology that science brings.

And there's something special about idea technology that's different from material technology.

In the case of the technology of things, the bad stuff simply disappears.

bad technology is disappearing

In the case of ideas, false ideas about humans will not go away as long as there are people who believe them to be true.

Because people who think it's right create lifestyles and organizations that match that wrong idea.

And that's how the Industrial Revolution created the factory system, a place where you get nothing but a paycheck at the end of the day to work there.

Because Adam Smith, one of the fathers of the Industrial Revolution, believed that humans are inherently lazy.

That's the only reason people do things

It was this misconception about humans that led to the creation of the factory system.

But once such a system of production arose, it became the only way people could work, the only one that fit Adam Smith's vision.

This work is just one example of how a bad idea can create the environment that makes it right.

It's not true to say, "You can't get good workers anymore."

Because we give them jobs that are humiliating and heartbreaking, "there are no more good workers."

Interestingly enough, Adam Smith, the great invention of mass production and the division of labor,

He understood this, and he said, "Anyone who works on an assembly line — is as stupid as a normal human being can be."

Note the "will" part

"Become as stupid as a normal human being can be."

I don't know if he meant it or not, but what he's saying here is that this way of working creates people who fit the demands of the workplace, and robs us of the opportunity to enjoy the kind of work that we all take for granted.

In the natural sciences, we can come up with some great theories about the universe and still hope that the universe doesn't care about our theories.

No matter what theory we have about the universe, the universe will remain the same.

But we have to be careful with theories about human nature, because theories that are designed to explain what humans are and help us understand them change human nature itself.

The great anthropologist Clifford Geerts once said, "Man is an imperfect animal."

What that means is that human nature is a product of the society in which we live.

Human nature is what human nature is to us, and it's made rather than discovered.

By designing the organizations in which people live and work, we design human nature.

So you, the lords of the universe, who have the opportunity to come closest to me, when you go back and start running your organization, you need to ask yourself:

What kind of human nature do you want to design?

thank you

(Applause) Thank you.

You're overseeing the shipment of essential supplies to a friendly rebel force behind enemy lines.

In order to pass through Imperial customs, cargo must follow strict rules.If the bottom of the box has an even number, it must have a red lid.

The cargo was already being loaded onto the truck when you received the urgent news.

One of the four shipments was mispackaged, but they don't know which one it was.

All the cargo is still on the conveyor belt.

Two are placed upside down, one is labeled "4" and the other is "7".

The other two placed face up, one with a black lid and the other with a red lid.

If you don't follow the rules, all the boxes will be confiscated and your allies will be in danger.

However, the packages you unload from the conveyor to investigate will not be loaded onto the delivery vehicle, and your allies will run out of necessary supplies.

The delivery van will depart soon, regardless of the number of shipments.

Which box will you take off the conveyor belt and examine?

Pause the video if you want to think for yourself!

3... 2... 1 to the answer You'll feel like you're going to have to turn all four packages upside down and look You'll feel like you'll have to turn all four packages upside down and look

But actually, just two are enough.

rethink the rules

"If the box has an even number on it, it must have a red lid."

We haven't decided anything about the odd numbered boxes, so we can ignore the box labeled "7".

What about the box with the red lid?

Should I be sure that the number written is even?

that's not the case

According to the rules, if a box has an even number on it, it's got a red lid.

But I didn't say, "Only even-numbered boxes have red lids," nor did I say, "Red lidded boxes must have even numbers."

The rule is "If the number is even, the lid is red." That's all.

So you don't have to look into the box with the red lid.

But for the box with the black lid, we need to find out if it was mistakenly put on an even numbered box.

If you mistakenly believe that the rules for combining numbers and lid colors are symmetrical, that's normal.

That misconception is so common that it even has a name: "the fallacy of affirming the consequent" or "the reverse fallacy."

This fallacy is to assume that certain conditions are necessary for a certain result, and that those conditions are sufficient.

For example, the existence of an atmosphere is necessary for a planet to be inhabited by life For example, the existence of an atmosphere is necessary for a planet to be inhabited by life

But that's not all it takes. Stars like Venus have atmospheres, but they don't meet the other requirements for survival.

If this explanation still doesn't make sense, let's look at a slightly different problem.

Let's say you have a box with groceries

There are boxes that go to steakhouses and boxes that go to vegetarian restaurants.

And then two more boxes, addressed to invisible upside-down boxes, one with meat and one with onions.

Which box do you think I should examine?

It's easy, just make sure the meat isn't going to the vegetarian restaurant, and that the box going there has no meat in it.

The onions can go either way, because the box that goes to the steakhouse can go either way.

Why is this scenario easy to understand?

Both scenarios are actually dealing with the same problem: two lids, two markings.

But this example uses a familiar, everyday analogy to realize that vegetarians only eat vegetables, and vegetarians aren't the only ones who eat vegetables.

In the first example, the rules seem to be arbitrarily determined. If the story is abstract like that, it becomes difficult to understand its logical structure.

You successfully delivered the supplies the rebels needed to fight another day.

It's a creative way of thinking about the box problem "from different angles."

Everyone needs a reason to wake up.

In my case it was 11,000 volts.

Mind you, you won't ask me, so I'll say it myself.

One night in my sophomore year, I had just returned from the Thanksgiving holiday, and some friends and I were having a blast and decided to climb onto the top of a parked train.

The train was just standing there with wires running over it.

For some reason, it seemed like a really good idea at the time.

it was obviously stupid

I ran up the back ladder, and when I stood up, the current ran through my arms and in a flash -- through my legs -- that's it.

Can you believe that the watch from that time is still working?

I lost!

(Laughter) That clock is now my father's, in solidarity.

That night, I officially began to associate with death, "my own death," and it was also the beginning of a long journey as a patient.

"patient" is a good word

It means one who bears suffering.

everyone is a patient

Now, the U.S. health care system is pretty dysfunctional, but it's also pretty good.

I'm currently a medical doctor, specializing in hospice and palliative care, so I've seen medicine from both sides.

And believe me, almost everyone in the medical field is doing it with good intentions, it's true.

But those of us who work there are often, unknowingly, also workers in a system that doesn't work.

Why you ask?

Actually, that question has a very simple answer, which explains it, because medicine was essentially designed for disease, not for people.

So, of course, it's bad design.

And there's no place like the end of life when bad design breaks your heart, or when good design is so desperately needed.

can't redo

My purpose today is to step outside the medical field and bring design thinking to this big topic.

It's about bringing intention and creativity into the face of death.

What we have before us is a very rare opportunity, an opportunity to rethink and redesign one of the few things that are universal, both for individuals and for societies: the process of dying.

Let's start with the end of the story

When it comes to death, what most people fear most is not death itself, but dying and suffering.

this is an important distinction

To understand that, it might be very useful to separate the suffering that is unavoidable from the suffering that can be changed.

The former is a natural and integral part of what happens in life, and we need to make room for it, adapt to it, and grow.

It's also very good to recognize the existence of a power greater than ourselves.

And that's where the balance comes into being, it's kind of like cosmic right-sizing.

After I lost a limb, for example, that loss became a tangible fact, an inevitably part of my life, and I learned that to reject this fact is to reject myself.

It took me a while, but I eventually learned that

Now, another great thing about unavoidable suffering is that it's what connects care givers and care recipients, it connects people.

We are finally realizing that this is where healing happens.

Yeah, that's exactly what we learned here yesterday, compassion, sharing the pain.

Now, on the other hand, from a system point of view, it creates a lot of pain unnecessarily.

it means nothing

But the good news is that this kind of suffering is manufactured and can be changed.

We have influence over how we die.

Keeping the system sensitive to the fundamental difference between unavoidable and unnecessary suffering is the first clue to the three designs I'm going to talk about today.

After all, our role as caregivers is to alleviate suffering, not build it up.

In keeping with the principles of palliative care, as a physician, I not only prescribe medicine, but I also advocate for life reflection.

As an aside, palliative care is very poorly understood for its importance, and palliative care is not just for the end of life.

It's not just for hospice

It's all about living calmly and well at every stage of life.

So you don't have to try to die now just because you want to benefit from palliative care.

Now let me introduce you to Frank.

to explain this point

I have seen Frank for many years.

He's had HIV for a long time, and he also has advanced prostate cancer.

We also treat bone pain and fatigue, but most of the time we spend time together talking about his life, "our" life, to be precise.

By doing so he is deeply saddened

That's how the loss comes, and he's holding on to it, preparing for the next moment.

Not only loss, but also regret

Frank has always been an adventurer. He looks like he came out of a Norman Rockwell painting. Regret doesn't suit his taste at all.

So I wasn't surprised when he said one day, "I want to raft down the Colorado River."

do you agree?

Some would say no, given the risks to his safety and health.

A lot of people did, but he did it while he could.

It was a glorious, glorious journey, with icy water, scorching thirsty heat, scorpions, snakes and wild howls echoing off the fiery red walls of the Grand Canyon—a truly glorious side of the world beyond human control.

Frank's decision may be dramatic, but many of us would choose exactly this sort of thing if only we could take the time to help find what's best for us.

A lot of what we're talking about today is about shifting perspectives.

When I returned to college after my accident, I changed my major to art history.

I decided to study the visual arts and learn how to see things, and this was a very effective exercise for a child who hadn't been able to change his perspective that much.

Perspective is a kind of alchemy that we can do. It turns agony into flowers.

Now, in a nutshell, I'm working in San Francisco at a wonderful place called the Zen Hospice Project, where we do a little ritual to help shift this perspective.

When one of our patrons dies, the mortician comes, and we carry the body out through the garden, and we make a short stop on our way to the gate.

Fellow patrons, family members, nurses, volunteers, hearse drivers, or whoever wants to share stories, songs, or silence as we shower the corpses with petals.

It's been a few minutes. It's a kind, simple farewell. Instead of trying to shy away from the grief, it's a warm welcome.

In contrast to the typical practice in hospitals, where you're hooked up to tubes and beeping machines in floodlit rooms, lights that flicker even when the patient's life is over.

The cleaning crew swoops in, and the bodies are swiftly removed, as if the person didn't even exist.

Well, of course, in terms of cleanliness, but in hospitals, our senses tend to be overwhelmed.

I respect my work at the hospital because it's what keeps me alive.

But we ask too much of hospitals.

Hospitals are places for acute trauma and treatable illness.

It's not a place to live and die, hospitals aren't designed that way.

Now, let me just say that I'm not giving up on the idea that hospitals can be more humane places.

beauty is found everywhere

I spent several months in the burn unit at St. Barnabas' Hospital in Livingston, New Jersey, where I received excellent care, excellent palliative care for pain, everything.

One night it started to snow outside

I remember the nurse complaining about driving in the snow.

I didn't have a window in my room, but just imagining it snowing was amazing.

The next day, one of the nurses smuggled me a snowball.

she brought it into the hospital

Words cannot describe the joy of holding that snowball, the coldness of the water droplets on your burnt skin, the miraculous feeling, the euphoria of watching a snowball melt.

In that moment, every part of this universe, this planet, became more important to me than whether I lived or died.

That little snowball contained all the stimuli I needed to try to live, to feel like I didn't have to live.

In the hospital, those moments are lost.

Over the years I've worked, I've met many people who were ready to die.

But it's not because I've found ultimate peace or transcendence, but because I'm so sick of the way my life has been, abandoned and disfigured.

The number of people aging with chronic, deadly diseases is already at an all-time high.

And we are not ready for this rapid increase in the elderly population.

We need an infrastructure strong enough to handle this dramatic change in population.

Now is the time to create something new and essential.

you can do it because it's necessary

There is no way not to do it

We know the key ingredients: policies, education and training systems, buildings.

We have a ton of information to work with any designer.

For example, based on research findings, the most important thing for people on the brink of death is a calm mind, an existential peace that is unburdened and unburdened by loved ones, and a sense of wonder and spirituality.

In our nearly 30 years of practice at a Zen hospice, we've learned far more and more detail from our clients.

Even small things are surprisingly important

for Janet

She had ALS and was having trouble breathing every day.

what do you think happened?

She wanted to quit smoking again, French cigarettes.

Not out of self-destructive tendencies, but out of a feeling of filling your lungs while you can.

priorities change

And in Kate's case, she wanted her to know that her dog, Austin, was at the foot of her bed.

It's sensual, aesthetic satisfaction. In that moment, in that split second, we're rewarded just for being.

A lot of it boils down to loving your time with your senses and your body. This is what it means to live and die.

The kitchen is probably the most "smelling" part of a Zen hospice guest house, and it's a bit odd, because the majority of the guests have very little to eat.

But we recognize that we don't have just one type of nutrition, and smell is one of them.

Seriously, with all the heavy stuff going on under this roof, the most tried and effective remedy we know of is baking cookies.

As long as your senses are alive -- even just one -- you'll at least have access to something that makes you feel human and connected.

Imagine how this idea would affect the millions of people living and dying with dementia.

Primordial sensual pleasure expresses the indescribable. It keeps us in the present, no longer needing the past or the future.

So if removing unnecessary suffering from the system is the first design clue, respecting human dignity through the senses, through the aesthetic realm of the body, is the second design clue.

And that makes number three a whole lot easier, and that's the last thing I'm going to talk about today. So what I'm saying is that we need to raise our sights and look at living a better life, so that life, health and medicine are not just about making life less scary, but about making it more wonderful.

It is "Yai".

It's here that the model of care is clearly differentiated between disease-centered and patient-centered, that is, the person-centered, and here care becomes creative, productive, even playful.

"Playful" might sound funny

But it's also one of our most advanced adaptations.

Let's take a look at some of the major human endeavors

The need for food gave birth to recipes

The need to avoid danger gave birth to architecture.

The need for protection gave rise to fashion

And the need to follow the flow of time gave birth to music.

So what can we make out of the essential fact of dying?

By the word "play," I don't mean to suggest a frivolous approach to death or impose a particular way of dying.

The existence of sorrow like a mountain is so immovable that in the end we kneel there

Rather, what I'm talking about is creating room for acceptance, physical and mental space to live life to its fullest, so that aging and dying are not simply a withdrawal from life, but a process towards the climax of the end.

there's no way to get by without dying

Some people are working on this

(Laughter) Until that happens, on our part -- (Laughter) let's design for death.

Part of me died early on, but that's the path we all take.

Based on this fact, I redesigned my life, and it was liberation. I realized that in the rest of my life, I could always find the shock of finding beauty and meaning, like that snowball that only holds its shape and melts at the perfect moment.

If we love those moments furiously, we may learn to live better, not "in spite of death," but "because we die."

Let death lead us, not lack of imagination

thank you

(applause)

What I'm going to talk about is fear, the price of fear, and the age of fear that we're trying to get out of now.

I want you all to listen to me calmly, because I know a lot about fear and anxiety.

I'm Jewish from New Jersey.

(Laughter) Before I even walked out, I had anxiety.

(Laughter) This is where we clap.

(Applause) Thank you.

And I grew up in a time of terror.

When I was little, I was asked to walk into a lecture hall and put a coat over my head and was taught how to protect myself from a global nuclear war.

I understood that even my brain, which was seven years old at the time, was useless.

But at the same time, we knew that a global nuclear war would be a serious event.

We've been living with the threat of war for 50 years, but governments and societies have responded by creating amazing things.

Promoted the space program in response to nuclear war.

Created a highway network

I made internet

So fear can prompt a constructive response.

On the other hand, fear can also prompt unconstructive responses.

On September 11, 2001, 19 men hijacked four planes and crashed them into two buildings.

The men made a terrible number of sacrifices.

This sacrifice cannot be taken lightly

But the reaction to this was clearly overdone, and it was as if the band had come off.

The United States and other governments tried to reorganize their national security regimes to deal with it, even though the threat was still limited when this attack happened.

In fact, according to intelligence agencies, as of September 11, 2001, there were 100 core members of Al Qaeda.

There were only a few thousand terrorists

It wasn't an existential threat.

And yet we have restructured our national security regime in the most radical way since World War II.

then started two wars

spend trillions of dollars

suspend their values

violate international law

tolerated torture

And then I had this thought: if those 19 people could do it, so could anyone else.

So, for the first time in history, we see everyone as a threat.

What happened as a result?

Through espionage, they intercepted hundreds of millions of people's emails and phone calls from all over the world, putting aside their allies and their own interests.

In my opinion, 15 years later, the number of terrorists, the number of terrorist attacks has increased, the number of victims has increased, according to US State Department statistics, and the region that is currently the source of these attacks is probably the most unstable in human history since, perhaps, Noah's Flood.

What we need to consider here is

where we went wrong, what we did and how we went wrong

You may say that the US government is not functioning properly.

Politics is like a child's quarrel

The debate has become like a wire mesh deathmatch...

It is certainly so

But, as hard as it may be to believe, there is an even bigger problem than that, even if I were to argue, "The failure of the world's richest and most powerful country to function properly and to solve its problems is far more dangerous than what groups such as ISIS could possibly do, because this dysfunction is going to stand in the way and hinder progress."

but the problem lies elsewhere

The problem is that both the U.S. government and other governments are in crisis of creative exhaustion.

Think tanks in Washington are supposed to be places where new ideas are born, but they don't have bold new ideas, because if you come up with bold new ideas, you'll get attacked on Twitter and you won't get government jobs.

When political disputes become hostile, we react to them, and governments develop a "government vs. citizens" mentality, making decisions in the minority.

What happens when a few people make decisions behind closed doors?

fall into groupthink

Everyone has the same worldview, and opinions from outside the group come to be viewed as a threat.

this is dangerous

At the same time, there's a process of reacting to the 24-hour press.

The departments of the US government, and similar departments of other governments, that are supposed to make predictions, look to the future, and strategize, can't do their job because they're just reacting to the 24-hour press.

That's why I can't see ahead

9/11 put us in danger because we were looking in the wrong direction.

And the reason we're still in crisis is because of the 9/11 attacks that have us still heading in the wrong direction.

In fact, what we're seeing in those areas may be a precursor.

It may be a response to larger movements.

And if we're too busy dealing with this precursor to ignore the larger movement, we're going to face a much bigger problem.

So what exactly is this movement?

For people like you, this move is clear.

We live in a time when the very foundations of human society are being reconfigured.

If you look at the cover of The Economist magazine a few days ago, it said that by 2020, 80 percent of the world's population will own a smartphone.

Maybe we'll carry around a little computer that's connected to the Internet.

In most of Africa, mobile phone penetration is 80 percent.

As of October last year, there are more mobile devices and SIM cards than there are people in the world.

We're living at a pivotal point in human history, when virtually every human being in the world is, for the first time ever, part of a human-made system that can communicate with everyone, for better or worse.

And the changes that have accompanied it are fundamentally changing every aspect of governance and life around the world, and it's changes that leaders must keep in mind as they think about impending threats.

On the security side, nuclear warfare is so costly that we ended the Cold War without doing it. And we've entered an era of what I call "cool warfare," cyber warfare. Now the cost of conflict is so low that we wouldn't even try to stop it.

We may be entering an era of constant warfare, as evidenced by the fact that we've been in that state for several years already.

And yet we don't have a basic policy to guide us.

There is no set basic idea

If someone launches a cyberattack, do we have the ability to physically counter it?

I don't even know

If someone starts a cyber attack, how do you prevent it?

What will the U.S. government do if China launches a massive cyberattack?

They say they're going to prosecute a few Chinese who won't even come to America after all.

They're never within reach of the police who are supposed to secure them.

It's not a deterrent, it's just a gesture

Now, Special Forces operatives on the ground have confirmed that a small group of rebels have cell phones and access to satellite imagery that was once reserved for superpowers.

In fact, if you have a mobile phone, you don't even have a former superpower, and you can access information that would have been top secret 10 years ago.

I even have an app on my phone that shows the current location, altitude, flight speed, aircraft type, and takeoff and landing locations of aircraft around the world.

They have an app that informs them of our movements, who are their enemies.

And we're using those tools in new ways.

When a cafe in Sydney was taken over by terrorists, the gunman was carrying a rifle.

it was an ipad

The iPad was a weapon

The man grabbed people, threatened them, pointed his iPad at them, filmed a video, posted it online, and it went viral all over the world.

But this doesn't just have security implications.

When it comes to relations between great powers, the era of polarization was thought to be over.

We thought the world was unipolar and all the big problems were solved.

do you remember? It was 'the end of history'.

but it was a mistake

It's become increasingly clear that the basic premise of the Internet, that it connects us and connects society, wasn't always right.

For example, China has the Great Firewall

There are countries that don't want the internet to exist within their own country, and they control it within their own country.

We're controlling content, and eventually we're controlling security.

you will get to manage the net

Interfering with the information that can be passed

will make another rule

You might think it's only about China

It's not just about China

Same in India and Russia

It's the same in Saudi Arabia, it's in Singapore, it's in Brazil.

After the NSA scandal, Russia, China, India, and Brazil all see the current Internet as unreliable and are building a new backbone.

And suddenly this is the world

A new polarized world, a world where our belief in cyber internationalism is attacked by another belief, cyber nationalism.

Changes like this are everywhere

For example, mobile money

Appearing in unexpected places

Millions of people in Kenya and Tanzania used to have no access to financial services, but now they have access to everything on their mobile phones.

It will soon be available to the 2.5 million people who don't have it yet.

In the near future, 1 billion people will be served by mobile phones.

It's not just about being able to do business with banks.

would change the current monetary policy

Currencies will change

Education will change as well.

Healthcare will change as well.

The way public services are delivered will change as well.

Despite this, Washington is still debating whether to call the terrorist groups that occupy Syria and Iraq ISIS, ISIL, or the Islamic State.

We're also trying to figure out how much concessions we can make in our diplomatic negotiations with Iran on nuclear, but nuclear is a technology that's 50 years old.

This brings us to another important discontinuity, another discontinuity that is of critical importance to a group like this. Because America's economic growth, its intrinsic security, and even during the Cold War, progress was underpinned by public-private partnerships between science, technology, and government.

We had canals and railroads, we had telegraphs, we had radar, we had the Internet.

So is the tang you drink at breakfast, but this may not be so important.

But where there used to be collaboration and dialogue, now it's stuck.

The reason is that the US government believes that the less government involvement, the better.

Believe it or not, because governments are at war with science, despite the fact that throughout human history, no matter who you wage war against, science always wins.

(Applause) But the government doesn't listen, and no one at the top of the government understands that.

In the nuclear age, people in senior national security positions had to be able to explain the explosive power of missiles.

I had to know a lot of terminology.

Asking people who are currently at the highest levels of American government to explain cyberspace, neuroscience, and other things that could change the world of tomorrow would only leave you blank.

When I wrote the book, I interviewed 150 people, including tech experts, and I can tell you that they felt like they were relegated to the "children's seat."

On the other hand, in technology, talented people are building amazing things, but they're starting out in garages, and they don't need government, they think it's superfluous.

Many of them have political views somewhere between liberalism and anarchism, and they say, "Leave me alone."

Meanwhile the world is falling apart

All of a sudden there will be major regulatory changes, major conflict issues, major security and privacy issues.

And then we have the next challenge, the philosophical challenge.

In other words, if without access to the Internet, you can't vote, you can't get a job, you can't have money, you can't have health care, you can't have an education, isn't access to the Internet a fundamental human right that should be enshrined in the Constitution?

If the Internet is a basic human right, isn't access to electricity not given to 1.2 billion people a basic human right?

This is a fundamental problem, so what are philosophers doing?

Where did the dialogue go?

that's why i'm talking here

I live in Washington Unfortunately...

(Laughter) There's no dialogue there.

The big challenges that change the world, change security, change the economy, create hope and fear, can only be solved by reviving cooperation between science and technology groups and governments.

both sides need each other

If we don't re-establish this connection and encourage America's growth and the growth of other countries, we're going to be even weaker.

The risks associated with 9/11 cannot be measured by the number of lives lost in the attacks, nor by the number of buildings destroyed or the trillions of dollars spent.

That risk is measured by the cost of distracting us from the issues that matter, and the cost of failing to get our scientists, engineers, and government leaders to cooperate. Right now, we're in a time of change like the dawn of the Renaissance and the beginning of an era of massive change that has happened before in the world, so it's time to ask the right questions, if not the right answers.

We're not quite there yet, but discussions like this and gatherings like this are where those questions come up and are presented.

That's why I believe that in groups like this TED, and in forums like this around the world, the future of foreign policy, economic policy, social policy and philosophy will ultimately emerge.

So it is with great pleasure that I speak to you.

thank you

(applause)

Billie Jean King: Hello everyone!

(Applause) Thank you, Pat.

thank you!

I got nervous!

(laughs) Pat Mitchell: That's good.

Well, I've been watching videos of your fights and it seems like the fate of women all over the world depends on your every shot.

Did you feel that way?

Billy: In the first place, Bobby Riggs was a No. 1 player and he wasn't halfway there.

One of my heroes, I respected him.

Yes, the reason I beat him is because I actually respected him.

(Laughter) Seriously, my mother, and especially my father, always said, "Respect your opponents and never underestimate them."

and my father was totally right

But I also knew that this was a social change,

Every time I went public, I was very nervous and it felt like the whole world was on my shoulders.

I thought, 'If we lose, it could take the women back 50 years.'

On June 23, 1972, the previous year, Title 9 of the Education Act had been passed.

And in women's professional tennis, in 1970, nine players, including myself, signed one-dollar contracts.

The tour was finally in its third year, and I could actually play, I had a place to play, and I was able to make a living doing it.

So nine people signed that one-dollar contract.

Our dream was that no matter where in the world the girl was born, if she had the skills, she would be given the opportunity to compete and be able to make a living.

Before 1968, I was earning $14 a day, and I was under organizational control.

From the bottom of my heart, I wanted to break away

But it wasn't for our generation, it was for the next generation.

Of course, we are built on previous generations.

Every generation has a chance to do better than the last.

I always had that in mind

Mentally, I wanted to be in line with the spirit of Book 9 of the Education Code.

What many of you may not know is that Title IX of the Education Act states that federal funds provided to high schools and colleges, whether public or private, must ultimately be divided equally between boys and girls.

this changed everything

(Applause) Once the law is in place, the bottom line is that the mindset will change to match it.

It's just a breakthrough moment

I was thinking

I wanted to make this change in people's minds.

And surprisingly, two things came out of that match.

Boost confidence and motivation for women

You've actually gained the courage to ask for a pay rise.

Some women waited 10, 15 years to speak up.

In "Both rabbits and horns...Did you get a raise?"

(laughs) I got a raise!

And for men?

Most men today don't realize it, but in their 50s, 60s, and even their late 40s, they were the first generation to experience the women's movement, whether they like it or not!

(Laughter) (Applause) What happened to the men -- it's usually the men who come up to me with tears in their eyes.

They say, "Billy, I saw that game when I was younger, and now I have a daughter.

I'm really lucky to have been able to watch that match when I was young."

Among them is President Obama, who was once 12 years old.

When I met him, he said, "You can't imagine I was 12 at the time.

Now that I have two daughters, it has influenced my own upbringing.”

So both women and men were affected in many different ways.

PAT: So at least a generation or two have experienced the gender equality that came after Title 9 of the Education Act and the battles that went into it.

Furthermore, there is a generation of women who have experienced teamwork.

Women can now participate in team sports that were previously unthinkable.

You've made a legacy as an athlete, and you've also made a name for yourself in the movement to achieve equal pay for female athletes, and the Women's Sports Foundation.

And now, what are you trying to do with the Billie Jean King Leadership Initiative?

Billy: I remember having a sudden epiphany when I was 12.

At age 11, I wanted to be the number one tennis player in the world. When a friend invited me to play tennis, I was like, "What is that?"

My family has no ties to tennis, mostly basketball and other sports.

Skipping all the details, when I was 12 (Laughter), I finally started playing tournaments.

And I was daydreaming at a tennis club in Los Angeles, thinking how tiny tennis is, and yet every tennis player has white shoes, white clothes, a white tennis ball, and all players are white.

At the age of 12, I was asking myself, "Are there any non-white players?"

This thought never left my mind

It was then that I made a vow to fight for equal rights and equal opportunities for men and women, boys and girls, for the rest of my life.

I knew that if I was No. 1 in tennis -- and I knew it would be difficult for a woman at my age to have influence -- I would still have a base [for the struggle].

tennis is global

"Surely I

I'm blessed with a rare opportunity," I thought.

At 12, I didn't know I could do it.

Even if you really want to do it, it doesn't mean you can actually do it.

I just remember the promise I made to myself, and I worked hard to make it come true.

The person who fights for the people is my original form.

Unfortunately, women's rights were limited.

was neglected

I thought, "What should women do?"

You shouldn't do it anyway-

It's about learning to believe in yourself and listen to yourself.

I always hear the same voice.I was very lucky to have a good education.

If you have a goal, you can achieve it

If you have a goal, you can achieve it.

Look at Pat, look at other leaders, look at TED speakers, look at yourself, because everyone can do something amazing.

Each person is

Pat: You yourself are an inspiration to many women everywhere.

The Billie Jean King Leadership Initiative is working on a much larger movement.

I hear a lot about women trying to raise their voices and pave the way for leadership positions.

Isn't it something grander that you're thinking of?

It's inclusive leadership

It's a generation that's grown up to be more open and involved. Billy: Isn't that great? So does technology!

The way you connect people is amazing The important thing is to connect

It's just amazing what technology has made possible.

The Billie Jean King Leadership Initiative is trying to change this by focusing on the use of talent, empowering people to be who they really are in the workplace.

Because most people have two jobs.

An African-American woman spends an hour every morning before she goes to work to straighten her hair in the bathroom, and then she goes to the bathroom four times, five times, six times at work to straighten her curly hair so that it doesn't float at work.

she has two jobs

My job at work and the other thing is to try really hard not to get lost in the workplace.

Another example is this poor guy who also graduated from college, who graduated from the University of Michigan, but he never said he was poor as a kid, he kept it a secret.

To protect the image of a well-educated person.

And the other thing is, he's an NFL player, he's gay, and he's a football player. It's a big deal, isn't it?

It's full of stories like this

My wish is that everyone can be who they really are 24/7. This is the ultimate wish.

We - I'm still surprised to discover who I really am.

I suddenly realized that I was gay (gasp) I was a little uncomfortable, my stomach was sore, and I wasn't completely comfortable just being myself.

I think it is necessary to ask ourselves.

Pat: The first survey results from the Leadership Initiative, including the example you just told me, show that many of us struggle with being our authentic selves.

If you look at the millennial generation (born around the year 2000), it's a generation that enjoys, if not perfectly, equal opportunity in every way. Billy: First, I'm very lucky.

We were able to do this because of our strategic and wonderful collaboration with Teneo.

thanks to the partnership

Twice in my life, I had the support of people in power.

Once, once upon a time, it was Philip Morris of Virginia Slims, and this is the second time in my life.

and it was deloitte

All I wanted was data, facts.

Deloitte has conducted a poll, which has collected more than 4,000 responses so far, and is still ongoing.

How do millennials feel?

Well, it's different, but what's good about them is that in our generation, "I'll let you speak for me."

For them, everyone in the room is a spokesperson.

Individual ability is not enough That's what it's like!

Millennials look for connection and engagement with each other, and that's the beauty of it.

Exchanging feelings and thoughts with each other to tackle problems

We're going to work things out, and of course, I have more information than I did in my time.

Pat: What are the findings about millennials?

Will they make a difference?

Can you create a world that realizes the utilization of diverse human resources?

Billy: Well, by 2025, 75% of the global workforce will be millennials.

they will help you solve the problem

I think you hold the key to the solution.

be aware of the problem

They have big ideas and the potential to achieve great things.

I also don't want to fall behind in connecting with young people.

(laughs) Pat: No way!

But the results of the millennial survey are not what most people feel from their first-hand experience.

Billy: Well, I'm also doing a little mini-research.

I asked the Boomers, who are actually the bosses of the Millennials, "What do you think of the Millennials?"

Hoping for a good answer, excited, they had this look on their faces.

(Laughter) "Do you really think so?

I'm sure they are showing interest in environmental and social issues."

"Billy, they can't concentrate," was the reply.

(Laughter) Indeed, studies have shown that 18-year-olds have an average attention span of 37 seconds.

(laughs) I can't concentrate.

Besides, I'm not really interested

I heard a story the other day about a woman who owns an art gallery and has employees.

I got a text message from one of my employees, as if she was a trainee, and she said, "Speaking of which, I'm at the hairdresser right now, so I'll be late for work."

(Laughter) When she showed up at work, her boss asked, "What's going on?"

Say "I'm sorry I'm late, then?"

When my boss said, "So what? You're fired."

"OK"

(laughs) No problem!

Pat: Billy Yes, but this is what Boomers fear, but I think it's important to understand each other.

(Laughter) No, mutual understanding is important, because we all think we should be who we are, so we should respect each other's ideas, right?

But what I strongly believe is that when you're in the world of sports like I am, you're getting better, generation after generation.

this is a fact

As an advocate for Title 9 of the Education Act at the Women's Sports Fund, I'm trying to keep the law up, and it's always in jeopardy, so I'm really concerned, and I do a lot of research.

it's very important to us

I would also like to hear people's opinions

But the spirit of Title IX of the Education Act must be upheld globally.

You heard President Carter talk about protecting Title 9 of the Education Act.

Every lawsuit filed by a woman, at least in sports lawsuits, wins against any agency.

The ninth education law protects us.

I think it's great

Still, it's very difficult to change people's minds to match the spirit of the law.

Pat: Then your

What is your daily motivation for work? Being an extension of the same-rights movement and its activities What is the driving force behind always searching for new fields and opening up new paths?

Billy: Well, you've been curious since you were a kid, and you annoyed your parents.

I'm so full of energy

My brother was a major league player

Poor parents

(Laughter) Both my brother and I were trying to be the best, so my parents were in a mess.

And I think today's TED Talk will be a driving force.

I think it's about listening to all kinds of women, all kinds of people, and I think President Carter's talk just now. He's 90 years old.

He slurps up and shows the numbers.

Pat: he's really nice

(Applause) Billy: Next up is President Mary Robinson's talk. She's the former president of Ireland. Same-sex marriage legalized with 62% approval rate! LGBTQ!

(Applause) Congress is going to vote on same-sex marriage in June, and that's not something some people want to hear.

But don't forget that we are all independent human beings with a beating heart I want to stick to being who I am

Look, you don't have to agree with those around you, but everyone has a chance.

I think we have a responsibility to always move forward and keep making changes.

All the speakers here are inspiring.

everyone is worth it

everyone can influence

All of the people in the world listening to this, of course, all of us here, all of us can influence those around us.

Never forget this, okay?

never give up on yourself

Pat: Billy, you're our inspiration.

Billy: Thank you Pad

(Applause) Thank you, TED!

(Applause) Thank you very much!

Over the last 50 years, many smart, well-funded people -- I'm sure you all have -- have been looking for ways to reduce poverty in America.

Millions of dollars have been invested in nonprofits under the premise of helping the poor.

Think tanks were created to study issues such as education, job creation, and wealth building, advocating policies to help low-income earners.

Books and columns have been published, passionate speeches have been made, denouncing the gap between rich and poor that keeps more and more people at the bottom of the income spectrum.

Although the effort will help

it's not enough

Poverty rates haven't changed much in the last 50 years since the anti-poverty movement began.

What I want to say here is that we are overlooking the most powerful and practical resource.

here it is the poor

Top left corner is Giovanna, Cynthia Bartha

The three met when they had young children in a parenting class at a family support center in San Francisco.

Growing up together as parents and friends, we talked about how difficult it was to have an income when your kids were young.

Daycare costs more than they earn.

My husband was working, but we wanted to contribute financially.

I came up with something

I started cleaning

I put up flyers in my neighborhood and distributed business cards to my family and friends.

Two of them clean the office and the house, and one of them takes care of the children.

I alternate between cleaning and taking care of the children.

(laughs) Isn't that great?

(Laughter) And then we divided the rewards into three equal parts.

It's not a full-time job, and people can't take care of their kids all day long.

important to each family

When my husband's working hours are cut, it becomes money to help the family

As the children get older, they will have money to buy clothes.

A little extra space makes them feel independent.

Upper right corner is Teresa and daughter Brianna

Briana is a sparkling, bright, outgoing girl.

For example, a girl named Rosie, who only speaks Spanish, moved in next door, and Briana, who only speaks English, borrowed her mother's tablet, found a translation app, and communicated with her.

(Laughter) Okay, right?

Rosie's family trusted Brianna to teach English to their daughter.

A few years ago, Brianna started falling behind in her studies.

She became frustrated and withdrew into her own shell, exhibiting behavioral problems in class.

The mother was heartbroken by the incident

Brianna didn't make it to third grade, and she was devastated.

When the mother found that her daughter could not get the support she needed, she felt desperate and alone, and did not know how to save her.

One afternoon, Teresa was talking to her friends for the first time in a long time, and one of them said, "How are you, Teresa?"

she burst into tears

After I told him what happened, one of my friends said, "About a year ago, my son went through exactly the same thing."

At that moment, Teresa realized that she was suffering because she had no one to share her troubles with.

So she started a support group for parents like her.

The first meeting was three people including her.

By word of mouth, 20 to 30 people showed up at this monthly meeting she held in no time.

She no longer felt helpless because she realized how capable she was of supporting her daughter with the support of others who had gone through the same pain.

Brianna recovered, she got better grades, she became more social.

In the middle is my friend Bakia, standing in front of Blackstar Books & Cafe, which has become part of his house.

As you enter the front door, Bakia greets you with "Welcome to the Black House."

(Laughter) Once inside, you can order an Algiers jerk chicken, maybe a vegetarian walnut burger, or a jive turkey sammich.

It's Samich, not a sandwich.

Buttermilk drops are always the last meal after a meal. They're made with a lot of care from donut dough, and they're made with a secret family recipe.

It's really a secret, and he won't even talk about it.

But "Black Star" is more than a cafe.

For the kids in the neighborhood, it's a place to do their homework together after school.

For adults, it's a place where they can see what's going on in their neighborhood and catch up with their friends.

Also a performance venue

Home of poets, musicians and painters

Bakia and her partner, Nicole, who has a baby on her back, get along well. Over a cup of coffee, she teaches children how to draw Mancala (a board game) and signs for community events.

For over 20 years, I've worked with and learned from people like them.

I've created an organization against the prison system, which is affecting the poor, especially the blacks, the indigenous peoples, the Latinos, at an alarming rate.

I work with young people who express hope and expectation, despite the effects of racism in school and police brutality.

What I've learned from many families is that they don't get caught up in the notions of ingenuity and tenacity, and that they collaborate to create solutions.

they don't care about money

Education, housing, health, community—we're focused on what we all care about.

Everywhere I go, I see people who don't give up even if they don't have money.

We see people striving to find better ideas for better lives for themselves, their families, their communities.

Giovanna, Cynthia, Bertha, Teresa, and Bakia are everywhere, no exceptions.

i am the exception

I was raised in Rochester, New York, by a quiet, strict single mother.

Many of my classmates and parents thought it was dangerous because I was taking a bus from my neighborhood to a school in the suburbs.

At eight years old I was a key kid

Every day, I go home from school alone, do my homework and do household chores, and wait for my mother to come home.

After school, I would always stop by the corner store and buy some Chef Voyage ravioli, which I would heat on the stove for an afternoon snack.

When I had a little money, I used to buy hostess fruit pies.

(Laughter) It's cherry.

Can't beat Buttermilk Drop

(Laughter) I was poor when I was a kid.

He now owns a home in the fast-paced upscale neighborhood of Oakland, California.

i made a career

Husband is the manager of the company

i have a pension account

My daughter isn't allowed to use the stove unless there's an adult in the house, and she doesn't even need to.

Our kids' ravioli are organic and loaded with spinach, ricotta cheese, and more, so when it comes to food for the kids, they have a lavish choice.

I'm not the exception because I'm more talented than Bakia, or because my mother worked harder than Giovanna, Cynthia, or Bertha, or because I was better paid than Teresa.

The low-income population is full of smart, talented people, like highly paid and respected CEOs.

It's full of people who use adversity as a springboard, and they wake up every morning to send their kids to school, and they work for underpaid, and they're busy paying for their education.

And it's filled with people who demonstrate superior intelligence, who are either forced to work for minimum wage or who have side jobs in addition to their main job to make ends meet.

It's filled with people who work for themselves and for others, giving medicine to the elderly neighbors, lending their brothers and sisters phone bills, and watching the neighborhood kids from their front porch.

I'm an exception, not because of hard work, but because of luck and special treatment.

I'm not humble or self-deprecating. That's great.

(Laughter) Most people work hard.

Diligence is the common denominator in this equation, and I'm tired of all the talk that hard work leads to success, because it's -- thank you.

(Applause) Because the "unsuccessful people don't deserve it" implication in that kind of talk makes unsuccessful people believe they don't deserve it.

We think in our hearts and sometimes say out loud, "There must be something wrong with these poor people."

We stubbornly believe that "wrong place"

"Poor people are lazy swindlers who don't really do their jobs and cheat and lie."

"Poor people were hopeless and probably didn't learn enough to read and write from abusive parents. If they had been taught what to do and were shown the right path, they could have succeeded."

In any story that demonizes single mothers and absent fathers -- in any story that demonizes single mothers and absent fathers -- you may think of my parents like this, and there are 50 different rumors about the same person, but I'm diligent and do my best every day.

I'm not saying the negative stories aren't true, but they make us blind to the reality of the poor, because we only see part of them.

Some of the truths and limited conversations convince us that the poor have problems that need to be fixed.

What if they're the ones who actually work, and our approach is wrong?

What if the experts we're looking for, the experts we need to emulate, are the poor? What about poor people?

What if, instead of a grand solution, we just throw fire into the flames that are already blazing?

You don't direct them, you don't force them, you just encourage their initiative.

There's an example just north of here, in Silicon Valley.

The big venture capital industry grew up believing, "If you have a good idea and you want to spread it, you should give them a lot of money."

(laughs) Right? But where is the strategy for Teresa and Bakia?

For them, there are no start-up institutions, no enterprise development institutions, no scholarships.

How are Giovanna, Cynthia and Bertha different from the Mark Zuckerberg of the world?

Bakia has experience and achievements

i invest in him

Think of this as reworking a flawed strategy.

Let's seize this opportunity to let go of the worn-out and false narratives and seek out the true stories and listen to the wonderful but tricky stories about low-income people, families and communities.

I would like to speak to my companions for the rest of my time.

we don't have time to wait for someone else to fix it

Let's remember what we can do With blood, sweat and dreams All the gears that keep turning And those who have been forced to work hard

remember we have magical powers

If you need some inspiration to jog your memory, read Octavia Butler's "Parable of the Sower."

Listen to "Letters from Birmingham Jail" by Level King

Hear "First Writing Since" read by Suheer Hamid and "Black Gold" by Esperanza Spalding

Look at the art of Kehinde Wiley and Fabiana Rodriguez.

Look at your grandmother's hands Look at the eyes of someone who loves you

We have "mysterious powers"

None of us have much wealth or power, but together we are unstoppable.

We've spent a lot of time and energy gathering power to change a system that wasn't for us.

Instead of trying to modify fabrics in the way we do today, let's weave and cut strong new fabrics.

Let's harness the power of imaginative and practical collectives in new ways that work for us.

Desmond Tutu on Ubuntu at South Africa's Truth and Reconciliation Commission after apartheid

He said, "My humanity is so intertwined and connected to you that we are one life."

"one life"

The Truth and Reconciliation Commission started by taking up voiceless voices.

If we're going to promise freedom and justice for all people in this country, we need to take up voiceless voices, voices like Giovanna, Cynthia, Bertha Teresa, Bakia.

We have to leverage their solutions and ideas.

We have to listen to their true stories, their beautiful but tricky stories.

thank you

(applause)

I'm here to appeal to men to support gender equality.

(cheers) Wait a minute what?

What does it have to do with men and gender equality?

Gender equality is a women's activity

The word gender is for women, right?

Actually, I'm speaking here as a very middle-class white man.

I wasn't always a middle-class white male.

It all happened about 30 years ago, when I was in graduate school. One day, we got together and said, "There's been an explosion of papers and reflections on feminist theory, but we still don't have courses for it."

So we decided to do what graduate students would do.

"Then let's hold a study session.

Read the literature, discuss it, have a potluck dinner

(Laughter) So every week, I met with 11 women.

(Laughter) We read the literature on feminist theory, and we talked about it.

During that conversation, I witnessed an exchange that changed the rest of my life.

it was a conversation between two women

one was white and the other was black

A white woman said - it sounds anachronistic now - but because all women are women, they face the same hardships and are subject to the same constraints.

We live in a patriarchal environment, and that's why all women instinctively bond and align with each other."

And a black woman said, "Is that so?

I just want to ask you something."

The black woman said to the white woman, "What do you see when you wake up in the morning and look in the mirror?"

When I answered, "I can see a woman,"

A black woman said, "That's the problem.

'Cause when I wake up in the morning and I look in the mirror, I see a black woman

Race is something my eyes can see, but yours can't."

she said something really heartbreaking

"It's a privilege

Privilege is invisible to those who have it."

To all the white people in this room, it's a luxury not to have to think about race even for a moment in everyday life.

privileged people can't see it

I was the only man there, wasn't I?

(Laughter) Someone said, "What's that reaction?"

I said, "Well, when I wake up in the morning and look in the mirror, I see people.

I'm kind of an ordinary person

Yes, I'm a middle-class white man, regardless of race, social class, or gender.

I'm universally normal

(Laughter) In that moment, I felt like I had become a middle-class white man, and class, race, and gender weren't about other people, they were about me.

I began to think that it was a privilege that I had not seen for a long time.

I'd like to say that this story ended 30 years ago in a small discussion group, but I was just recently reminded of this at the university where I teach.

I teach a semester-long Sociology for Gender course with my female colleagues.

When I teach, she becomes a guest lecturer.

I'll be the teacher when it's her turn

I went to her class to give a guest lecture, and there were about 300 students in the classroom, and when I walked into the classroom, one of the students looked up and said, "Finally, I can hear your objective opinion."

During that semester, every time my colleague spoke, the students were looking at a woman.

Suppose you say to your students, "There is structural inequality in the United States that is driven by gender," and they say, "Our teachers are women.

Because there is prejudice."

When I say the same thing, the students say, "Wow, that's interesting.

Can I come to the test? What is the spelling for "structural"? ”

(Laughter) I hope this helps you understand what objectivity is.

(Laughter) (Applause) Disembodied Western rationality.

(Laughter) Also, I think that's why men wear ties.

(Laughter) If you're going to give a body to disembodied Western rationality, you need a symbol, and to be a symbol of disembodied Western rationality, one end is a hanging rope and the other is pointing to your genitalia.

(Laughter) (Applause) There's a mind-body dualism.

So making gender visible to men is the first step in getting men involved in supporting gender equality.

When men first learn about gender equality and start thinking about it, many men tend to think, yeah, it's fair, it's fair, it's fair, it's an ethical code."

but not everyone

Some men, as if struck by lightning, think, "Yes, gender equality is important."

I think of advocating for gender equality as a kind of cavalry: "Thank you, ladies, for the opportunity to wake up. This is where we come in."

(Laughter) (Applause) But there are groups outright against gender equality, who believe that gender equality does something harmful to men.

I had four white men on a TV talk show.

This is the beginning of my book, "The Angry White Man," where four white men were angry because they said that white men in America were victims of reverse discrimination in the workplace.

They were all throwing out how good they were for the job, how they were worthy of the promotion, and they were really upset that they didn't get the promotion.

I'm telling this story because I want you to know the title of this show.

It was taken from one of the men's words, "A black woman stole my job."

They all told their stories, they were the right people for the job and the promotion, but they were furious when they didn't get it.

It was my turn to speak.

I want to know about the word why did you think it was 'your' job?

Why isn't the title 'A black woman got the job' or 'A black woman got a job'? "We can't understand why so many men oppose gender equality without facing men's sense of entitlement."

(Applause) Look, if you think this is a flat ground, and some policy changes the slope a little bit, you say, "Oh, the water is running backwards up the hill.

It's reverse discrimination against us."

(Laughter) Let's be clear: Western white men are the beneficiaries of the single largest affirmative action program in the history of the world.

it's called "world history"

(Laughter) (Applause) So far, I've described some of the obstacles to getting men involved. Why should we support gender equality?

Because, of course, it's fair, it's fair, it's fair.

But more than that, gender equality benefits us as men.

When I listen to men who say they want their lives to be this way, it turns out that gender equality is the way we live the lives we want.

Gender equality is good for the nation

Numerous studies have shown that countries with the highest gender equality practices also have the highest levels of happiness.

It's not just because they're all in Europe.

(Laughter) The countries in Europe that have the most gender equality have the highest levels of happiness.

It's also good for companies

Research from Catalyst and others clearly shows that the more gender-equal a company is, the more comfortable its employees are and the happier its workers are.

These companies have low turnover and low attrition.

Easy to secure personnel

Retention rates are high, job satisfaction is high, and productivity is high.

The question I'm often asked at companies is, "Isn't this gender equality expensive?"

My answer was, "No, really, what you have to do is calculate how high gender inequality is already.

It's ridiculously expensive."

so this is good for business

It's even better for men

It's good for us to live the life we ​​want, because young men, in particular, are changing dramatically because they want to have great relationships with their children and thrive.

They want their partners, spouses and wives to work outside the home and pursue careers like they do.

Let me give you an example of this change, some of you may remember.

When I was very young, there was a quiz

You may be surprised when you remember-

It's a quiz like this

A man and his son are driving down the highway and have a terrible car accident, the father dies, and the son is taken to a hospital emergency room.

Is this possible?

I get confused

i don't know what

(Laughter) I decided to do a little experiment with my 16-year-old son.

He has a lot of friends who hang out at home playing games and watching TV.

I thought I'd give them this quiz to gauge the level of change.

Now, the 16-year-old boys immediately turned to me and said, "This is your mother, isn't it?"

There's no reason for that.

Except for the son who said, "Maybe you have two fathers."

(Laughter) (Applause) This is a metric, a measure of how much things have changed.

Young men today want a balance between work and family.

They aspire to be a couple whose careers and care are shared by both.

I want to balance work and family with my partner

I want to do fatherhood too.

Now, it turns out that the more pacifist our relationship is, the happier both partners are.

This is pretty compelling data from psychologists and sociologists.

I think that's a compelling number of data points to prove to men that gender equality isn't a zero-sum game, it's a win-win.

here is the data

Now, there are two phrases that men tend to use when they start trying to balance work and family.

"cooperation" and "help"

(Laughter) I would like to take it one step further.

(Laughter) And here's the data, when men share housework and childcare, children do better in school.

Children have low absenteeism and good grades.

never been diagnosed with ADHD

they never see a child psychiatrist

I don't take medication

So when men share housework and childcare, their children are happier and healthier, and men want that.

Wives are happier when men share housework and childcare, of course.

Not only that, it's healthier.

Wives never see a therapist, never get diagnosed with depression, never take medication, go to the gym more often, and report higher marital satisfaction.

So when men share housework and childcare, their wives are happier and healthier, and men certainly want that.

Men are healthier when men share housework and childcare

You smoke less, you drink less, you do drugs less.

You're not going to the ER, you're seeing the doctor for regular check-ups,

I never see a therapist, I never get diagnosed with depression, I never take prescription drugs.

So when men share housework and childcare, they're happier and healthier.

Would you like to be?

And finally, when men share housework and childcare, they have more sex.

(Laughter) Which of these four interesting discoveries do you think made the cover of Men's Health?

(Laughs) "I'm worried about her because of housework."

(You do the housework.)" (Laughter) Let me tell you, I want the men here to remember that these data were really collected over a long period of time.

These data were collected over a really long period of time.

I think there's something really important about it, and when Men's Health magazine put it on the cover, it also said, "You'll love this 'Housework Play.'"

And here's where we see something very important: gender equality is for nations, it's for businesses, it's for men, and it's for their children and their partners. Gender equality is not a zero-sum game.

neither win nor lose

It's a win-win for everyone

What we do know is that we can't fully empower women and girls without involving boys and men.

you should know

And my position is this: I believe that in order for us to live the life we ​​want, we need to acknowledge that women need to live the life they want.

In 1915, on the night of the great suffrage demonstrations on New York's Fifth Avenue, a writer in New York wrote an article in a magazine called "Feminism for Men."

This is the first line of that article: "Feminism will make men free for the first time."

thank you

(applause)

Thanks to everyone at TED, and especially Chris and Emmy.

i can't believe i'm here

I haven't been able to sleep for weeks

I've compared Neil and who couldn't sleep. I've never been so restless. If you're restless, this is what you're doing.

Around the year 2000, I was living in Brooklyn, finishing my first book, and I was taking idly walks every day, writing from midnight to five.

I took a leisurely stroll during the day

My mind may not have been as sharp during the day, but I had some free time.

In Brooklyn, I lived in Park Slope, and there were a lot of writers in that area, and there was a very high percentage of writers compared to the average person.

By the way, I grew up surrounded by many teachers.

My mother was a teacher, my sister became a teacher, and a lot of my friends got teaching jobs after college.

I always heard people talking about life as a teacher and how rewarding it was.

You can also see how many challenges teachers face, how much they struggle.

Many of my friends, especially those who teach in urban schools, struggle especially with reading and writing to keep their students from failing.

English is not used at home by these students, they have unique special circumstances, they have learning disabilities, and their school budgets are often inadequate.

As they talk, they say, "What we really need is more hands, more people, more time, one-on-one time, more expertise, more English skills to work with students."

When I asked, "Why don't you deal with each other one by one?"

"There are five classes of 30 to 40 people.

150 to 180 to 200 people a day

How can we give each student an hour each week? ”

It's impossible unless you multiply your work hours and make a copy of your teacher.

This story started from there

As we were talking about that very thing, I was thinking about people I know: writers, editors, journalists, graduate students, assistant professors.

I have relatively free time during the day, and I'm curious about English as a language -- I'd like to be interested in English, too, but I'm not very good at it right now because of that clock.

But everyone I know is interested in the importance of the written word in developing democracy and looking at life.

So they have the interest, they have the time, but on the other hand, so far there hasn't been anything connecting these two communities.

So when I got back to San Francisco, I rented this building.

I decided to try the Quarterly Maksuini -- a quarterly magazine that we publish two or three times a year, and some other magazines, in this office.

From my old kitchen in Brooklyn

I was going to turn it into an office and share this space with the learning center.

The idea was, "Since writers, editors, and people in the publishing industry come to the office every day, wouldn't it be possible to open up the front of the building so that the kids could come in after school to help with their Japanese homework, and the boundaries between the two communities would disappear?"

First, I recommend that you work as usual. When the students start pouring in at 2:30, you can take a break from your work.

He's going to give a few hours in the afternoon to the neighborhood kids.

So we decided to rent this place, and the landlord would love it. This is a mural by Chris Ware that summarizes the whole history of print.

Well I rented this place

Everything was going well, except for one thing the landlord told me, "This is in a commercial area. Think about it.

i have to sell

A support center alone is no good.”

"Oh my God, is that true?"

But I had no idea what to sell, so I did all the necessary research first.

The room was a weight training area, so it had rubber floors, soundproof tile ceilings, and fluorescent lights.

When we took it all out, we found beautiful wooden floors and whitewashed beams.

I looked around and someone else said, "Why don't we just sell pirate gear?"

This is a pirate goods store

There was a good carpenter, From a sketch on a napkin

They made it all for you. Look, it's appropriate for a pirate goods store.

Planks are sold by length Medicine for scurvy

We also have prosthetic legs.

Eye patches are displayed on the upper side.The black row is for everyday eye patches, pastel colors and other eye patches for evening outings, and formal wear for coming-of-age ceremonies.

Leave this open so the students can stick their hands into the bucket full of treasure.

This is for when you lose your prosthetic eyeball.

There are signs like this everywhere: "Pirate pranks"

I pull the rope behind the counter while I'm reading the bulletin, and a lot of mops fall from overhead.

Just an example -- I had to have something to drop in my head anyway

I made it a mop. This is an aquarium theater, a seawater tank with three seats, and behind it is this: a learning support center.

So there's a learning center there, and behind the curtain is McSuini's office, where everyone edits magazines and books.

The kids are coming in... no, I thought they were coming in.

It took me months to refurbish this place by arranging and tidying up like this.

I prepared a table, a chair, and a computer.

I went to the Holiday Inn in Palo Alto at a dotcom auction and won 11 G4s.

Anyway, we prepared everything and waited together.

When I started, there were about 12 of us in the group. We've known each other for years because we're local writers.

We all sat down and waited.At 2:30, we put up a sign on the sidewalk in front of us.

"Here comes a stormy crowd, I'm sure they'll love it." Nobody came.

I sat at the table and waited for a long time We all waited

Everyone was very disappointed, they waited for weeks and nobody came.

We started to worry that we weren't trusted in the first place, because we were operating behind the scenes of a pirate goods store, and we hadn't made that connection ourselves.

It was about this time that I asked a woman named Neve Carrigan to join me. She had been teaching for a long time in San Francisco and was teaching in Mexico City at the time.

He accepted the position of the on-site director.

She worked with teachers, parents, and students, and the results were immediate, and it's been a full house every day since.

What I wanted to do every day was one-on-one instruction.

The goal is to face each student one-on-one

It's been proven that 35 to 40 hours of one-on-one tutoring each year can improve performance by one level.

Most of the students here don't use English at home.

And it's not just the kids, but often the parents come too. You can't see it, but there's the church pews -- also bought at a Berkeley auction -- so the parents can see the kids being tutored.

In other words, the basis is one-on-one instruction.

And every day was filled with children

At 2:00 or 2:30, if you're within a few blocks of this one on Valencia Street, a kid with a big rucksack will pass you by.

But there's something a little different about how you take it.

And one more thing, it's not a disgrace.

You're not going to a "center for children with special needs", you're going to 826 Valencia.

After all, it's a pirate goods store. It's crazy.

There is a publisher on the back

Often the interns sit shoulder to shoulder with the students and actually work on the computers next to them.

And so we have what we call a learning center, a publishing center, and what we call a writing center.

Children come and study with high school students who are working on novels, and some of them are gifted.

There is no disrespect at all

We are all involved in creative activities

Children look to adults and follow their example

Adults work in their own fields of expertise

When you lean over and ask an adult a question, you interact with each other.

There's something to be gained from both sides. For the grown-ups who unknowingly signed up and worked for Maksuini, the only problem was that there was only one washroom.

Still, it makes sense that the day the children were assigned homework, they would be instructed to complete their homework and then go home.

I don't do my homework in front of the TV, so I can't stop

At 5:30, I come home to spend time with my family, do other things I love, and play outside.

You can have a happy family

A town with many happy families is a happy town

If many happy towns gather, it will become a happy city and a happy world.

So the key to everything is homework, and the key is one-on-one instruction.

We started with 12 volunteers, and then we grew to 50, then to the hundreds.

There are now 1400 volunteers on the roster

Volunteering made easy

The important thing is that even if you only have two or three hours each month, those two hours are spent sitting side by side with a student, sitting next to them, listening, and putting the spotlight on the student's work, their thoughts, and the way they express themselves.

That's why I say, "It doesn't matter if you only have two hours on Sunday once every six months, that's enough."

This is also one of the reasons why the group of instructors grew so quickly.

And then I thought, "If I could use this place before 2:30, what could I do during the day?"

So I started taking classes during the day.

Every day, we go on field trips to make a book together.

One of the writing classes, you're too excited.

This is what happens every time you just point the camera at the class.

The books they made are for example

The title of the book is "The book not taken out Titanic"

The book begins, "Once upon a time, there was a book named Cindy. It was the Titanic book."

Meanwhile, the adults type this in the back Because the adults take it seriously, the kids go crazy

That's why we need more and more instructors.

This is a photo of the instructors taken at an event.

The teachers we work with tell us what to do -- we mentors are nothing like teachers.

I go to class with this thought in mind: "We can respond in any way we can.

everyone tells me

Your parents and teachers will teach you."

In the meantime, I was also asked, "Can you come to school?"

What do you do with children who can't come because their parents aren't willing to take them, or because they don't live in the neighborhood?

If your teacher asks you to do something like this, tell them, "For the next five weeks, we need 12 instructors every Sunday.

I'm working on an essay, so please send me."

Tell this to 1400 instructors

If someone who can help registers and arrives 30 minutes before class

Ask your teacher about what to do, how to do it, what kind of training, the status of the project, etc.

Guided by a teacher, they serve as instructors in one large classroom.

Driven by instructors traveling directly from work or home to classrooms to provide first-hand support to students

Now able to work with thousands of students

Another school said to me, "I'll lend you the whole classroom, so you can use it for a day."

This is the writer's room at Everett Middle School, decked out in pirate style.

Located by the library, where we work with all 529 students at this middle school.

Straight-Up-News is the school newspaper, and it's where Governor Gavin-Newsom writes columns in both English and Spanish.

Another day I received a letter from Isabelle Allende saying, "Hey, why don't you let high school students write a book?

I want you to write about how we can make a violent world peaceful."

So I went to Thoroughgood-Marshall High School, which I had worked with before, and worked with the students on that issue.

"At the end Isabelle Allende read everyone's essays.

I'll make it into a book

help fund the printing of paperbacks

Make it available at any bookstore in the Bay Area, and make it available worldwide on Amazon."

And then the children would have someone on the outside to look at them, and Isabel Allende would be at the finish line.

About 170 instructors participated in the creation of this book, and it turned out wonderfully.

We had a big party at the end.

This book is now available everywhere, and we decided to make it into a series.

Amy Tan is sponsoring the next book, "Maybe It Gets Somewhere"

The series is still in the works and has book after book coming out.

Now I'm obsessed with making books

When they know they're going to make something that will last forever, when they know it's going to be on the shelf in the bookstore, when they know they're going to work harder than ever when they know no one will deny what they think and what they write, when they tell them they'll respect their words and what they think When they know they've spent hundreds of hours working five or six drafts, and they're so involved with what they think.

Once you get to that level and you can write at that level, there's no going back.

change completely

The book is also sold at the shop on the front This is near the plank

All the students' books are for sale

Where else are you going to put it?

I sold it in a store, and then something happened to the store. It started as a joke, but the store became profitable.

I was able to pay my rent

This may be a phenomenon unique to San Francisco. I don't know.

This was before pirate movies and all that, and people started coming anyway.

I started making money, not a lot, but enough to pay my rent and pay my full-time clerk's salary.

There is a map on the left

The shop became the gateway to the community

Everyone walks in and asks, "What the whole --

What is this? (Since it will be posted on the website, I will use polite language.)

Anyway, I say, "What is this?"

I will explain to those who come in.

There's usually a chain attached to it, and you can see the students over there being tutored.

I'm doing an off-campus field trip. Customers start shopping and buy lard for parrots, or millet, or claw covers, or claw covers for the night, or something.

So business is going really well.

Many people also came through the store. Teachers, philanthropists, volunteers, people of all kinds. This is the first floor, so anyone can stop by.

It's not a quiet nonprofit office on the 30th floor of downtown, it's a neighborhood that's serving the community around it, and it's always open to everyone.

This is how this quirky and fun affair went

And my friends in Brooklyn said, "Why don't we build a place like that here?"

Many of our members were former teachers or budding teachers, and they worked with local designers and local writers to start their own ideas, apart from us.

It seems they didn't want to sell pirate goods.

I didn't think it would go well

With New York's crime prevention community in mind, we opened a Brooklyn = superhero = supply store.

Sam Pott did this great design

I made it like this kind of hardware store. It's a store that gathers all the things that all the heroes need.

This store just opened, it's like Costco for superheroes, and it's stocked with the main consumables.

all handmade

There are also various products that are not intended for use

Sam-Pot designed all packaging

There's also a small room to keep the bad guys in. The kids put their parents in here.

There's a small vault where the products are stored. There's an elevator up there. The guy behind the counter tells the customer to recite the oath of heroism.

personally i think this is bad

Because I'm forced to put my hand on my chest and recite

Some of our products are all handmade

secret id kit

A set of files with everything you need to know about Sharon Bonnie, a female marketing executive in Hoboken, New Jersey, who wants to impersonate her.

The cloak corner where you can try on cloaks Climb up three stairs with lattices and turn on the power of the three hydraulic fans, and the cloaks are blown by the wind from the surroundings.

You can check how it flutters. It's the worst if the cape gets entangled in an emergency.

Secret door It's a secret shelf that opens slowly but you don't notice it when you're walking.

It is in the middle of the line of hands

And behind that is the guidance center, so you know what's going on.

I want to emphasize that it's made by locals with local money.

Designers and carpenters are all locals and all work is free of charge.

I just went over here and said, "Yeah, you guys are doing a great job," or something like that, and the clocks are showing the time in the five boroughs of New York.

It's the same principle of being super busy, listening one-on-one, committing to your students' work, and being optimistic and open to the possibilities of creativity and ideas.

Within a few meters of walking across this quaint shop, this switch is turned on in your mind.

It's a school, but it's not a school

Even if you're working side-by-side at a table with pencil and paper, it's clearly not school.

Khaled Hamdan, one of the students

read what is written

I was so engrossed in video games and TV that I couldn't concentrate at home.

When I came here, I listened carefully

there is no escape anymore

In no time he began to write, and while he was quickly completing his assignments, he was engrossed in finishing his homework.

When I finished my homework and had them look at it, I was able to do better, and I was able to make it a habit to prepare for the next day's class.

That's how I started working on other things.

I am currently writing manuscripts for five books.

Co-author of a documentary-style creation called "You're Not a Superhero"

I also wrote a series about penguins boxing called "Penguin Balboa."

A few weeks ago he read aloud in front of 500 people at Symphony Space, this was for the 826 New York charity.

Now I'm trying to spread the word to everyone, and now my cousins ​​are coming with me.

Four people come from his house every day.

let's move on quickly

I'm Ross, a time travel store in Echo Park "Whenever you come, we'll be there." A sort of 7-Eleven for time travelers.

Anything like 7-Eleven

Ganoderma berries, mammoth meat, and sherbet machines are out of order, so please come back yesterday.

The only places we have partnered with are Ward Street in Pittsfield, Massachusetts, Ink Spots in Cincinnati, Youth Speak in San Francisco that we referenced, St. Louis Studios in St. Louis, Austin Bat Cave in Ireland, Fighting Ward in Dublin, started by Roddy Doyle, opening in April.

So let's move on to the TED wish, okay?

So, you have one minute, TED Wish. My request to you is that you personally and every creative person and organization that you know get involved directly in your local public schools and tell me how they got involved.

meaningful positive change

It doesn't matter what you're already doing

Many of you in this room are already doing really interesting things.

Put such a true story on the web and motivate everyone.

we made a website

Switch to "we" wishes instead of "me." We want everyone at this conference to usher in a new era of public school participation.

Leverage your innovative spirit and expertise to develop partnerships with innovative educators in your community.

Let teachers lead the way

I will teach you how to help.I hope you can step in and help me.

There are countless ways

Visit your local school and talk to the teachers, they will tell you how to help

San Francisco's Hot Studios has created this lovely site.

The website already has a lot of stories and a lot of ideas. It's called "At a School."

Documenting all the projects around the world that came out of this conference Go to the website There are a lot of ideas that will inspire you If you start your own project add that too

Hot = Studio did a good job in a short period of time

If you have any questions, ask this guy, he's in charge of this national program, you can call me.

You can email me, he'll answer any questions you need

He will motivate you and guide you through the process of creating change.

The process is fun! This is the point: it doesn't have to be boring, it doesn't have to be bureaucratic.

use the skills you have

Schools need you, teachers too.

The students, the parents, I need you, none other than you. Your personality, your open heart, your listening, your endless compassion, sitting next to you, listening, nodding, and spending hours asking questions.

Some children are completely unaware of how good they are, how smart they are and how much they can say.

Please teach them Please shine a light on them Please reach out to them one by one I hope you will do it together

thank you

In January of this year, I wrote this article in the New York Times' Modern Dating column.

"If you do this, you will fall in love too"

This article is about a psychological study that artificially creates love and my own experience when I tried it last summer.

The procedure is very simple. Two people meet for the first time, alternating between 36 questions.

Let's see some questions

QUESTION 12 If you wake up tomorrow morning with one new quality or ability, what is it?

Question 28 When was the last time you cried in public?

Did you cry alone?

As you've noticed, the further you go, the more personal it becomes.

QUESTION 30 This is my favourite- Say what you like about your partner Be honest about things you wouldn't say when you first met

When I stumbled across this study a few years ago, one thing really caught my attention: it was rumored that two of the participants in the experiment got married six months later and invited the whole lab to the ceremony.

Of course, I didn't believe in the process of simply creating love, but I was intrigued.

And then I got the chance to experiment with someone I knew, but I wasn't particularly close, and I didn't expect to fall in love.

But I failed. (Laughter) I thought it was a good article, and a few months later, I posted it in that dating column.

The article was published in January, and it's now August, and I'm guessing some of you are thinking, are you still in a relationship?

I think so because I've been asked this question over and over again for the last seven months.

And this question is what we're talking about today.

But the answer will come later

(Laughter) The week before the article was published, I was very nervous.

It's been a few years since I started writing about love, and I was used to writing about my love on my blog.

But a blog post can get a few hundred views at most, most of them Facebook friends, so an article in the New York Times might get a few thousand views.

Still, for this relatively new relationship, I thought it was pretty high profile.

But when I opened the lid, I was surprised

The article went live on the Internet on Friday evening, and here are the blog hits by Saturday.

By Sunday, I had two requests to appear on a morning talk show.

Over the course of a month, the article received more than eight million views, or at least I didn't expect it to get this much attention.

It's one thing to have the confidence to write openly about your love life, but it's one thing to realize that your love life has become international news (Laughter) and people all over the world are genuinely excited about my nascent love life.

(Laughter) I've been getting phone calls and emails every day for weeks, and everyone always asks the same question first: Are you still in a relationship? What

In fact, while preparing for today's talk, I took a quick look at my email inbox to see if any of these questions had come up.

I quickly found several

The senders were students, reporters, and well-meaning strangers like you.

I was on the radio and they asked me the same thing.

When I gave a talk, some people in the audience would yell, "Hey Mandy, where's your boyfriend?"

My face turned bright red

I think this is one of the reactions to the article.

If you published an article about your love life in an international newspaper, you can imagine that readers would feel free to ask questions.

I just never expected it to have such an impact.

36 questions seemed to walk alone

In fact, the New York Times ran a follow-up article on Valentine's Day featuring readers who tried this study for themselves, with varying degrees of success.

With all this attention, my first reflex was to protect my relationship.

I declined all requests to appear in front of the press with him.

Even when I was asked for a TV interview and a two-shot photo, I declined.

I think I was afraid of suddenly becoming a symbol of the process of falling in love, because I didn't feel like I deserved anything.

Yes, I know. You want to know if it actually works, not just research.

But it felt like a question I couldn't answer.

We had only been dating for a few months, and it seemed like everyone was asking the wrong question in the first place.

What's the point of knowing if it's still going on?

If we break up, does that make the 36 questions worth trying?

In 1997, Dr. Arthur Aaron published a study of 36 questions, and the purpose of the study was not to create romantic relationships.

The goal was to create rapport among college students, using the example 36 questions, a method that he describes as "sustainably increasing the desire for personal and mutual disclosure."

What a romantic name, right? (smile)

But it certainly had an effect.

Participants grew closer to each other, and his "fast friend" method was used in subsequent studies as a way to quickly build trust and rapport among strangers.

It was used between the police and locals, and between people with opposing political ideologies.

A prototype of an experiment I tried last summer, where you ask a personal question and then stare at each other for four minutes, is also mentioned in this paper, but unfortunately, it doesn't appear to have been published.

A few months ago, after I gave a talk at a small liberal arts college, a student came up to me and said, somewhat shyly, "I tried this research, and it didn't work."

It was like being pinched by a fox

"So you didn't fall in love with the one you tried with?" I asked.

"Hmm..." with a breather

"She just wants to be friends," he said.

I asked, "Did you get closer than before?"

"Did you think you could understand each other better after trying this study?"

he nodded

"It works," I said.

I don't think this is the answer he was looking for.

In fact, in love, I don't think anyone wants that kind of answer.

I first encountered this research when I was 29, when I was going through a really painful breakup.

I've been with this guy since I was 20, which means all my adult life.

So I turned to science

I've researched everything I could find about the science of love, trying to build immunity so my heart never hurts again.

I don't know if I was aware of it at the time. I thought I was just doing research for the book I was writing.

They must have thought that if they learned more about love, they would never again feel the pain and loneliness that they experienced back then.

All this knowledge is useful in its own way

I became more tolerant in love and became more relaxed

I gained the confidence to communicate my needs

I also started to see myself more clearly, and I also learned that sometimes my desires are overpowered.

What I want in love is a guarantee, not a guarantee that I'll be loved today and tomorrow, but a guarantee that the person I love will love me forever.

Maybe what people really want to hear from me and people who want to know if he's following is this "guarantee" part.

The 36 questions article reported by the media may have a shortcut to falling in love

It was about how there might be ways to mitigate the risks that could arise. It's a fascinating story, because being in love is wonderful, but it's also scary.

When you realize that you love someone, you also realize that you have a lot to lose. 36 Questions is certainly a quick way to get to know someone, and it's also a way to get to know them.

But when it comes to love, we tend to want to shorten this process quickly.

The shortened version begins with the question, "Are you still dating?"

I'm satisfied with "yes" or "no"

So I'd like to propose to ask some more difficult questions than that, like, how do you decide who's right for you and who's not?

How do you protect a relationship when things go wrong? How do you know when to break up?

How do you get over the anxiety that comes with love? If I had to ask a more difficult question, how do you deal with the other person's anxiety?

I don't know the answers to these questions, but I think they're important questions to start a thoughtful conversation about what it means to love someone.

Now, if you're wondering, here's a shortened version of my story: A year ago, I tried to see if I could artificially create love with an acquaintance, and we fell in love, and we're still together, and I'm grateful.

But falling in love and staying in love are not the same

falling in love is easy

So at the end of the article, I wrote, "Love didn't just happen to be falling-

Each of them chooses and falls in love according to their own will."

But now that I read it again, I feel a little uncomfortable, not because it's not true, but because at the time, I didn't even think about what that choice meant.

I mean, how many times will each of us have to make these choices, and how many times will I have to make the same choices, even though he won't always choose me?

I was content to answer 36 alternating questions, to decide to fall in love with someone who was generous, kind, and funny, and to publish it in the biggest newspaper in America.

But instead, our relationship has become the kind of myth I don't believe in.

All I want, perhaps for the rest of my life, is for this myth to come true.

I want the happy ending that the title of the article hints at.

(Laughter) Instead, I have the chance to choose to love someone and the hope that he will choose to love me.

thank you

People often ask me why I'm so passionate about human rights and justice.

it goes back to childhood

I grew up in the West of Ireland with four boys, two older and two younger.

So it's only natural that you should be concerned about human rights, equality, and justice.

(Laughter) My continuing interest in human rights has shaped me, especially between 1990 and 1997, when I was elected Ireland's first female president.

During his tenure, he devoted himself to improving the lives of the alienated on the island of Ireland, and to reconciling Northern Irish immigrants with those living at home and building peace.

I was the first Irish president to travel to England, where I met Queen Elizabeth II, and I also invited the British royal family, including, among other things, Prince Charles, Prince of Wales, to the president's residence, Arras Ann Uachtalaan.

During my presidency, Ireland's economy began to grow rapidly.

Our country was enjoying the benefits of the solidarity of the EU (European Union).

In fact, when Ireland joined the European Union in 1973, parts of the country, including my beloved Mayo County, were underdeveloped.

I led trade delegations here in the United States and Japan and India, trying to promote investment, create jobs, improve economic strength, health care, education and development.

The one thing I didn't have to think about as president was to buy land on the European mainland and move Irish people out when our land was submerged under water.

Neither as president nor as a constitutional scholar, I have had to think about the territorial impact of climate change.

But President Tong of the Republic of Kiribati has to think about this every morning when he wakes up.

He bought land in Fiji as insurance just in case, and he calls it "migration with dignity" because he understands that people will have to leave the country.

When I heard about the situation from President Tong, I felt strongly that this was not a problem that one president could face.

When he talked about his struggle with this problem, he thought of Eleanor Roosevelt.

I thought of her as chairman of the Human Rights Commission in 1948, and of the people I worked with, a move that led to the Universal Declaration of Human Rights.

These people could never have imagined that an entire country would be wiped out by human-caused climate change.

I wasn't a scientist, I wasn't an environmental lawyer, I didn't care about environmental issues, I didn't care about images of polar bears or melting glaciers.

What sparked my interest was the impact on people and their rights -- rights like food, clean water, health, education and housing.

I've been slow to draw attention to the issue of climate change, so I'm going to be modest.

Between 1997 and 2002, when I was the United Nations High Commissioner for Human Rights, I didn't care much about climate change.

I don't remember giving a single speech on climate change.

I remember that there was another body in the United Nations called the United Nations Climate Change Conference, and they were talking about climate change.

Later I became involved in development and human rights issues in African countries.

I've started to hear these words all the time: "Things are getting really bad. They're getting worse."

And when I looked into what was behind it, it was about climate change, climate shocks, weather changes.

In eastern Uganda, I met Constance Ocolette, who founded a women's rights organization, and she said, "I grew up in a village, where I had no shortage of food, and the seasons were regular, and I knew when to sow and when to reap, and I had enough to eat.

(I heard this story) In the last few years, we've lost everything, and we've had long periods of drought, severe floods, and droughts again and again.

Schools destroyed, livestock dead, nothing to harvest."

She founded a women's organization to strengthen community cohesion.

This is a reality, and it hit me hard, because Constance Ocolette is not responsible for the greenhouse gases that are causing the problem.

In fact, I was very shocked by what happened in Malawi in January of this year.

Unprecedented floods hit the country, inundating a third of the country, claiming more than 300 lives and leaving hundreds of thousands of people without livestock.

People in Malawi emit an average of about 80 kilograms of CO2 per year.

The average US citizen emits about 17.5 tons

People who don't have cars, don't have electricity, who consume very few things, are suffering a disproportionate amount of suffering and are feeling the effects of climate change more acutely. Climate change is making them unable to grow their crops the way they usually do, leaving them uncertain and at a loss.

This is a flagrant injustice issue, and it's kind of shocking.

We know that we are failing to address these injustices, because we are failing to navigate a safer world.

What the world agreed to at the Copenhagen conference, and has been repeated at conferences on climate change since then, is to limit the temperature to no more than two degrees above pre-industrial temperatures.

But at this rate, the temperature will rise by 4 degrees.

Our planet is facing a life-or-death crisis.

I have come to recognize that climate change is the greatest human rights issue of the 21st century.

I started thinking about a just response to climate change.

From an ethical point of view, climate change should be dealt with justly -- the ethical debate and the issue of climate change are two sides of the same coin.

Ultimately, we should stand with the people who are most affected and affected.

Second, before we do anything, we have to start by making sure no one is left behind and by discussing action plans for climate change.

In today's world of so much inequality, it's amazing how many people are left out of this issue.

3 billion of the world's 7.2 billion people are marginalized

1.3 billion people don't even have electricity, so they light their homes with dangerous kerosene lamps and candles.

Even that kind of light is using a small income.

2.6 billion people use coal, firewood, and animal dung to build fires for cooking.

Breathing toxic fumes indoors kills 400 million people each year, and of course, many of those victims are women.

It's a very unfair world, and we have to let go of the "business as usual."

We must not underestimate the scale of the transformation that is needed and the way it will be, or else we will not reach zero carbon emissions by 2050 and keep the temperature rise below 2 degrees.

This means leaving two-thirds of the known fossil fuel reserves underground untouched.

It's a big change, and it's pretty clear that developed countries need to cut emissions, become much more efficient in their use of energy, and switch to renewable energy as soon as possible.

In developing countries where economies are growing, the problem of growing with low emissions is a thorny problem, because there are people who are very poor and they have to grow.

Developing while reducing emissions is another dimension of the problem.

In fact, no country has grown without emissions.

Every country has developed using fossil fuels, but will move to renewable energy.

This is a huge challenge. No single country can escape the climate change crisis on its own, and international cooperation is required to provide the necessary economic assistance, technology, systems and support, and to provide full support.

This is nothing but the type of issue that calls for complete solidarity with humanity.

Human unity, even if it's rooted in personal gain, as we live together, we must all work together to reach the goal of zero carbon emissions by 2050.

The good news is that there is change in motion, there is rapid change.

Here in California, we've set ambitious emissions reduction targets.

Hawaii has passed a bill to switch to all renewable energy by 2045.

There are countries around the world that are taking bold steps.

Costa Rica has pledged to reach zero carbon emissions by 2021

Ethiopia decided to do the same thing by 2027.

Apple has promised to use renewable energy in its factories in China.

There is a race to develop technologies to convert tidal and wave forces into electricity, which will allow coal to remain underground.

While these changes are welcomed and progressing rapidly,

But that's not enough. We don't have enough political will.

Consider President Ton of Kiribati and his people.

They may have a solution for survival, but it requires strong political will.

The bold idea that President Tong talked about is to build or float islands in the ocean where people live.

Of course, Kiribati cannot do this alone.

It requires strong solidarity and support from other nations, and it also requires creative ideas, such as floating space stations.

Wouldn't it be great if these amazing technologies allowed people to stay in their territories and become part of a global community?

I have to think of ideas like this

The change that is needed will be a great challenge, but it will be solvable.

In fact, we humans have solved many problems by working together.

Participating in the 70th anniversary of the end of the war, which ended in 1945, this year made me very aware of this issue.

1945 is a great year

That year, the world faced an almost impossible challenge: war, especially the devastation caused by World War II.

The leaders at the time were undaunted by the situation.

They were capable and driven by a strong will not to bring this kind of problem to the world again.

We had to build a mechanism to achieve peace and security.

What did you get? What did you achieve?

United Nations Charter International Bank for Reconstruction and Development and International Monetary Fund established by the Bretton Woods Agreement

We have a European Recovery Plan to rebuild a destroyed Europe.

A few years later, the Universal Declaration of Human Rights was adopted.

2015 will be a pivotal year with challenges and possibilities similar to 1945.

We have two important summits this year. The first is the Sustainable Development Summit in New York in September.

And in December, a summit in Paris is expected to reach an agreement on climate change.

The aim of "sustainable development" is to help countries to live sustainably in harmony with Mother Earth, not to continue to deprive the Earth of resources and destroy ecosystems, but rather to live in harmony with Mother Earth and through sustainable development methods.

The 'sustainable development' goal will be put into action in all countries on January 1, 2016.

A deal on climate change -- we need a binding agreement, because scientific evidence shows that we're headed for 4 degrees Celsius, and we need to do something to keep it below 2 degrees.

We must take steps to monitor and review the situation, strengthen our will to reduce emissions, and move more quickly to renewable energy to make the world safer.

In fact, this issue is so important that we can't just leave it to politicians and the United Nations.

(Laughter) It's an issue that everyone should be involved in, and it requires a stronger push.

In fact, the landscape of environmentalists has changed with the spread of justice.

It's now a concern for faith-based organizations as well, with strong leadership from Pope Francis and the Church of England, which has sold its stake in fossil fuel companies.

It's also a concern in the business world, and the good news is that it's changing so quickly, except in the fossil fuel industry.

Not only is the business world looking to rapidly embrace the benefits of renewable energy, but it's also urging politicians to send a message to accelerate the transition.

for trade unions

For women's rights activists

It is also of interest to young people

I was struck by what Jibril Kazan, one of the Greensboro quartet who led the Woolworth sit-in, recently said, "For young people, climate change is like the lunch counter movement."

For the young people of this century, the lunch counter movement is the real human rights movement of the 21st century, which he said is the biggest obstacle to humanity and justice in the world today.

I'm strongly reminded of the climate change protests that took place last September, not just in New York, but around the world.

we should stand on this point

I joined the march with the "Elders," but I saw a placard a short distance away. With 400,000 people filling the streets of New York, so close to each other, I couldn't get close to the placard.

(Laughter) That's exactly what I thought.

I have five grandchildren. As an Irish grandmother, I am very happy to have five grandchildren. For them, in 2050, the world will be shared by nine billion people.

The world will inevitably become constrained by climate change, because we already have emissions. But the world could be more equal, fairer, healthier, with better jobs, better energy security than it is today. If we transition sufficiently and quickly to renewable energy, no one will be left behind.

is anyone

I just looked back 70 years ago to 1945 and made this year 2015 correspond to it, and I hope my grandchildren, 35 years from now, in 2050, will look back on 2015 as 35 years ago and say, "Wasn't it great what we did in 2015?

I'm really grateful to them for making decisions that put the world in the right direction and that we all reap the benefits of it."

This is what 2015 means

These words are inspired by the words of someone I admire very much.

She was my teacher and my friend, but she died young. She was a great character and environmental leader, Wangari Maathai.

She once said, "In the course of history, there comes a time when humanity moves to a new level of consciousness, to a higher ethic."

this is what we are looking for

We should reach a new level of consciousness, a higher sense of ethics.

We should achieve that at the two major summits this year.

And for that to happen, people all over the world must speak up and push forward, saying, "Now is the time to act. We want to turn the tide. We want a safer world, and a safer world for future generations, our children and grandchildren. We all want it."

Thank you

(applause)

I'm so honored. I've always fantasized about how it feels to be standing here.

Eight years ago, I got the worst job advice of my life.

A friend of mine said to me, "Don't worry if you like your job.

It's all about how you can put foil on your resume."

After living in Spain for a while, I had just returned to the United States and started working for a Fortune 500 company.

“I can do work that will have a big impact on the world,” he said.

I thought about it, but after about two months, every morning at 10 o'clock, I felt this strange urge to smash my head out of the computer screen.

I don't know if anyone has ever felt that way.

All my competitors were automating the work I was doing.

That's when I got that insightful advice.

When I was wondering if jumping out of a second-floor window would change anything, I came across a completely different piece of advice from Warren Buffett, "Getting a job to put some foil on your resume is like saving sex for your old age."

(Laughter) I thought, this is the advice I need to hear.

Within two weeks, I was out of there, with one thought in mind: "Let's go find something we can destroy."

I wanted to do something that had an impact, no matter what.

And then I realized that I wasn't the only person who felt the way I did.

I don't think it's the people in this TED room, but according to a Deloitte Consulting study, it's generally the case.

I wondered what separates the two. While there are people who are passionate about doing world-changing work and wake up every morning excited, 80 percent of us live in quiet despair.

So I started hearing from people who were doing interesting work, and I read the literature, I did case studies, and I read about 300 books about purpose and jobs and stuff.

As I was doing that, I started to get asked by people a lot, saying, "You know a lot about careers, don't you?"

I don't like my current job, can we have a little chat over lunch? ”

Okay, but I had to warn you, because my job quit rate was also 80%.

80% of the people I talked to over lunch had quit their jobs within two months.

It's not that I'm bragging about it, it's not like there was a special trick

I was just asking one simple question

"Why are you working now?"

A common answer was, "Somebody told me I should."

And what I've realized is that a lot of people are just climbing a ladder that someone told them to climb, and it might be hanging on the wrong wall, or it might not even have a wall at all.

As I met these people and saw their problems, I started to think, "Can't we create some kind of community?" Can we create a place where people feel included, where they feel it's okay to do things differently, where they're encouraged to take the less-traditional roads, and where they're encouraged to change their lives?

That later became a project called Live Your Legend, and I'll talk more about that later.

In doing so, I've discovered that there are three things that passionate people who are different and who change the world have in common: whether they're Steve Jobs or they run bakeries on the street, they're people who have a job that represents who they are.

Today, I'm going to talk to you about three of them, so that you can see the rest of your day, and hopefully the rest of your life, through that lens.

The first of the three ingredients to finding passion in your work is to become an expert on yourself and understand yourself. If you don't know what you want, you won't find it.

and no one will find it for me

College doesn't have subjects like "passion, purpose, work."

I don't know why it's not a required minor, but it's totally weird.

I spend more time choosing a TV for my dorm room than I do choosing my major or field of study.

Finding yourself is up to you, and you need a framework and a guide.

The first guideline is to find out what your unique strengths are.

It's the kind of thing that wakes you up because you enjoy doing it, even if it doesn't make you money, and people will appreciate it.

There's a book and an online tool called StrengthsFinder 2.0.

I recommend it as an aid to discovering what you are naturally good at.

The other is what the framework or criteria for making decisions is.

I care about my relationships, my family, my health, my achievements, my success.

To make a decision, you have to determine what it is. What is your soul made of? It's necessary so you don't end up selling your soul for something you don't care about.

And then there's the experience.

We all have experiences, and we're learning every minute of the day.

If you don't pay attention to those things and absorb what you've learned and use it later in life, it's all for nothing.

Every day, every week, every month, every year, I take time to reflect, what worked and what didn't, what I would like to do again, what I would like to do more.

Especially when you meet someone who inspires you in a place like this, and you say, "Oh, what a cool thing Jeff is doing! I want to be like him!"

If you think so, open the diary

Write down what attracts you

Instead of everything about that person, I write down what resonates with me, and over time, I'll have a treasure trove of ideas that I can apply in my own life, so that I can become a more passionate person and have a greater impact.

Once you put these things together, you can decide what success is for you, and without these guiding factors, it's impossible.

The trick is to live life on rails, like we're all climbing a ladder that leads nowhere.

Life is like the movie "Wall Street" Has anyone seen it? In that movie, there's a scene where a junior employee asks the CEO of an investment bank, "What's your number? Everyone seems to have a number that they're going to quit after making this much money."

"Oh that's 'more'"

Saying that, the CEO laughs.

It's unfortunate that so many people don't take the time to figure out what's important to them.

But once you've established this framework, you can start figuring out what makes you come alive.

Without it, when passion comes and strikes you on the cheek, or there's a job you want, you might miss it because you don't have a way to tell it apart.

Once you have that framework, you'll start to see things that match your strengths, your values, your personality, and you'll grab them and try to do something with them and follow them to make an impact.

The reason that the Live Your Legend movement exists today is because it has a guiding principle that makes you realize, "Oh, this is what I wanted to pursue and make a difference."

If you don't know what you're looking for, you won't find it. But once you have this framed compass, you can move on.

There are two reasons people don't act.

By thinking you can't do it, or by being told by others that you can't do it.

Either way, I came to believe that I couldn't

Give up or don't even think about doing it in the first place

But nothing was possible until someone did it first

Any invention, any new thing was initially thought to be impractical.

Until Roger Bannister did it, it was believed that it was impossible for a human being to break the four-minute-mile barrier.

So what happened?

Two months later, 16 people were breaking the four-minute-mile barrier.

It often happens that what we think is impossible in our minds is just a milestone waiting to be achieved, if only we could push the boundaries a little bit more --

And I think it's a good idea to start with your body and your health, because it's something you can control.

If you think you can't do something, show yourself that you can do it. Whether it's running a two- or three-kilometer run, or a marathon, or losing two and a half kilos, you'll find that it boosts your confidence, and other things change.

I myself work well with my friends

I've been doing physical adventures in small groups, and recently I've been doing something I'm really bad at.

I am terrified of the deep dark sea

I don't know if anyone has the same fear, but it's been with me ever since I watched Jaws 1, 2, 3, 4 like six times when I was a kid.

When the water is deeper than your crotch and it's murky — it's already scary just sitting there.

I'm sure there must be something over there

It's Lake Tahoe, clear freshwater, and I feel it, even if it's silly to be afraid of it.

Anyway, three years ago, I was on a tugboat near here in San Francisco Bay.

It was a rainy, windy day and everyone was seasick, and I sat in my wetsuit and looked out the window, and I was blue with fear that I was going to swim to death.

I challenged myself to swim across the Kinmen Straits.

I think there are probably people with experience in this venue.

Jonathan, my friend who invited me to this, said he'd come over and see how I was doing.

"Hey Scott it's all right

I'm wearing a wetsuit, so I won't sink

Twenty kayaks will pick you up if you can't swim

Where there were sharks, there are 80 people, so they won't be targeted." "Thank you, I feel better."

When I said, "After all, enjoying yourself is number one, so do your best."

he jumped into the water and swam away

His encouragement really helped me calm down, and maybe Jonathan was 13.

(Laughter) Of the 80 people who swam that day, 65 were children aged nine to 13.

Think about how realizing at the age of nine that you can swim 2.5 miles from Alcatraz to San Francisco in a 13-degree ocean will change the way you approach the world later in life.

What would you say yes to?

What will you not give up? What will you challenge?

After the swim, we got to the aquatic park, and when we got out of the water, half the kids were already there, congratulating us, and they were all so excited.

As anyone who's ever swum in the San Francisco Bay knows, my head was like a popsicle, waiting for it to warm up and watching the people arrive.

I have a child who is a bad swimmer.

I saw you flutter like this

It's just barely breathing air before you put your head back in the water.

I noticed that other parents were watching the kid, and I'm sure they must have been thinking the same thing as me, that it's crazy to let a 9-year-old swim out of Alcatraz.

I don't think it's just fatigue.

Suddenly two adults rushed up and grabbed him by the shoulders and pulled him up, but he was in this languid position, his legs weren't moving.

Then they took another step and put him in a wheelchair.

And then he put his arms up and did the most powerful victory pose I've ever seen.

I can still feel the heat and energy of his accomplishment.

I've actually seen him in a wheelchair before.

I never thought he could swim

where will he be in 20 years?

How many people have told you that you can't do it, you're going to die

Prove what everyone was saying, what you thought you were wrong, and gradually expand what you think you can do.

You don't have to be the fastest marathoner in the world, you just have to do what you can't do right now and start with one small step.

And the best way to do this is to surround yourself with passionate people.

The fastest way to accomplish what you think is impossible is to surround yourself with people who have already done it.

Jim Rohn says

“People always become like the average of the five people around them.”

Choosing who to have by your side is the greatest lifehack ever to get you from who you are to who you want to be.

Those people change everything, it's a proven fact

In 1898, Norman Triplett measured lap times in groups and alone on a large group of cyclists.

I found that cyclists were always faster when in groups.

It's something that has been observed and proven time and time again in all aspects of human life since then, that the people around us are important, and the environment is important.

It's up to you to decide, and this works for good and bad.

The 80 percent of people who don't like their jobs -- not everyone in this room, but most of the people around them -- try to maintain the status quo and get in the way of pursuing what's important to them, so we need to manage our environment.

I myself was in that situation about two years ago -- personally.

Have you ever spent so much energy and so much time on something that you're passionate about, that you'd like to make it your career, but no one cares and you don't get a penny?

I did. I've been trying for four years to grow the Live Your Legend movement. I said, "I want to help people do things that they really care about and are passionate about."

thank you for your support

(Applause) I had a very strong desire to do this, and in four years, I'd seen zero percent growth, and I was about to quit. It was about that time that I moved to San Francisco and started meeting some really interesting people who had very adventurous lifestyles, who were passionate about their jobs, their websites, their blogs, and helping others in a meaningful way.

One of my friends supports his family of eight with a blog that he writes about twice a week.

He has just returned from a month-long trip to Europe with his whole family.

Totally amazed how is that possible?

It inspired me so much that instead of quitting, I decided to go for it.

And I tried to spend all of my waking hours chasing these people, drinking and exercising with them.

From four years of zero growth to six months with them, the Live Your Legend community has grown tenfold.

160 times over the next 12 months

And today, more than 30,000 people from 158 countries use our career and networking tools every month.

And the people who make up this passionate community of humans are inspiring people with possibilities, just as I dreamed of Live Your Legend all those years ago.

People change everything You may wonder what happened

For four years, I didn't know anyone like that, didn't even know they existed, didn't even know that they could do that, that that movement was possible.

You come to San Francisco, and everybody around you is doing that.

It's become the norm, and my thoughts have changed from "How is this possible?" to "How can I not do it?"

When that brain switch happens, your whole world changes.

Standards change from one to another without effort

You don't have to change your goals, just change your environment.

That's why I love being with this group of people, and that's why we all go to every TED event that we can attend, and we watch it on our iPads on the way to work.

Because it's a group of people who inspire us with possibilities.

we have a whole day to spend together

In summary, the three pillars have one thing in common.

It's 100% in your control

No one can say they can't learn about themselves

No one can say they can't push their limits and see how far they can go.

Surround yourself with people who inspire you, and no one can say you can't stay away from those who try to pull you down.

recession can't be helped

I can't help but get fired or get into a car accident

There are many things we cannot do anything about

But those three things are totally up to you.

And that's what's happening all over the world.

I read in Forbes magazine that the US government reports that for the first time in history, the number of people who quit their jobs voluntarily outnumbered the number of people who were laid off.

They think it's crazy, but it's been that way for three months in a row.

In this time of what is known as a harsh environment, people are telling us that life should be scripted and that it's a lot to be told what to do instead of doing the things that are important to us and that inspire us.

We are all awakened to possibilities, and the only limit is our own imagination.

This is no longer a fiction

It doesn't matter what your passion is, what your hobbies are.

If you're crazy about knitting, just find a knitting master and learn from him, anything goes.

That's what this day is all about. Learn from the people who are giving the talks. Live Your Legend introduces us to these people every day. Ordinary people do great things, and if you can be around them, it becomes normal.

We're not talking about doing great things like Gandhi or Jobs.

It means doing what's important to you and doing what only you can do.

Gandhi, by the way, was a debt collection attorney, but he woke up to a bigger mission: to do something that was important to him, something he couldn't help but do.

There are his words that I believe in

"First ignored, then ridiculed, then resisted, then victory comes."

Nothing was possible until someone did it

You can choose to be among the people who say you can't do it and it's foolish to try, or you can choose to be among the people who show you what's possible, the kind of people who are here in this room.

I think it's our responsibility to show the world that what was once thought to be impossible will eventually become commonplace.

and it's already happening

Do something that excites you first, and you'll inspire others to do something that excites you.

But if you don't know what you're looking for, you can't find it.

Do your homework, act with intention, make that discovery.

I dream of a world where 80% of people love what they do

What kind of world would that be?

How would you innovate and how would you treat the people around you?

things will start to change

Before I wrap up, I want to ask you guys one thing, and I think that's the only really important question.

What is the job you can't do without?

Find it, live it, not just for yourself, but for everyone around you, because it will change the world.

What is the job you can't do without?

Thank you very much

(applause)

Last year, on my first book launch tour.

In 13 months, I've traveled to 14 countries and given hundreds of lectures.

Every talk in every country started with my introduction. Unfortunately, every introduction started with a lie, like, "Taye Selasi is from Ghana and Nigeria," or "Taye Selasi is from England and America."

Every time I heard that introduction, I thought, "Whether it's the United Kingdom or the United States or Ghana or Nigeria, it's really not the same."

Yes, I was born in England and raised in America.

My mother was born in England, grew up in Nigeria and now lives in Ghana.

My father was born on the British Gold Coast, grew up in Ghana, and has lived in Saudi Arabia for over 30 years.

For this reason, it was sometimes introduced as "multinational."

"Nike is multinational," I thought, "I'm human."

I was in the middle of the book tour, at the Louisiana Museum of Modern Art in Denmark, where I was giving a talk with author Colum McCann.

I had a sudden epiphany when I was talking about the role of region in writing.

i am not multinational

I'm not even a country

It's impossible that I'm from any country

Is it possible for a tangible human being to come from a concept?

That's a question that has been on my mind for 20 years.

From the newspapers, from the books, from the conversations, I saw nation as a single, enduring, natural occurrence. So I wondered, if that's true, then I came from a nation that was entrenched in a particular place and time. What was the truth?

There are countries that have disappeared in my lifetime - Czechoslovakia Newly born country - Timor-Leste Failed country - Somalia

My parents came from a country that didn't exist when they were born.

It seemed to me that nations, born and dead, expanding and contracting, could not be the basis for understanding human beings.

And then I came to think that it's important to know the sovereignty of a country.

What we call nations are really just multiple representations of sovereign nations, a concept that emerged only 400 years ago.

When I first learned this in my master's degree in international relations, it gave me a sort of sense of security.

it was just as i suspected

The history and culture are real, but the country was made up.

For the next 10 years, I sought to redefine and undefine myself, a quest to detach my world work and experience from the framework of sovereign nations.

In 2005, I wrote an essay called "What is an Afropolitan?", an essay about an individual who puts culture above nationality.

I was pleasantly surprised to find that many people could relate to my experience, but it was also clear that many disagreed with my personal definition.

Some even criticized him, saying, "How can Selasi say he's from Ghana if he doesn't know the cold shoulders when traveling on a Ghanaian passport?"

If I'm being honest, I know what she's talking about.

I have a friend named Layla who was born and raised in Ghana.

Her parents were third generation Ghanaians of Lebanese descent.

She is fluent in Twi, the language spoken in Ghana, and knows the capital, Accra, well, but when I first met her many years ago, I didn't think she was Ghanaian.

In my sense she was Lebanese, in my sense she was Lebanese, even though she had been living near Accra since she was a child.

Like those who criticized me, I thought Ghanaians were brown-skinned and didn't have British passports.

I was caught in a trap where the illusion of a nation puts one's nationality above one's experience, one's nationality above one's experience.

I was talking to Colum McCann that day and the mystery was solved.

"Every experience belongs to the region," he said.

"Experience is everything that makes a person," I thought.

"My personality is not determined by my nationality," I declared on stage.

“My personality is rooted in a region, even multiple regions.”

"Taye Selasi is from America" ​​is incorrect.

I have nothing to do with America, I have nothing to do with the 50 states of America.

It's related to Brooklyn, where I grew up, it's related to New York, where I started working, and it's related to Lawrenceville, where I spend Thanksgiving.

America is my home not because of my passport or my accent, but because of these special experiences and places.

I'm proud of my ewe culture, my black stars, and I love Ghanaian food, but I have nothing to do with the Republic of Ghana in the broadest sense of the word.

It has something to do with the Accra where my mother lives every year It has something to do with the Accra where my mother lives every year It has something to do with the little garden in Dewul where I spend hours talking with my father

It's places like this that shape my experience.

It's the experience I got from where I was

What if instead of asking, "Which country are you from?" they ask, "Which region are you from?"

This one tells us who we are and how much we have in common.

When people tell me I'm from France, I can only imagine a stereotyped impression.

Is it Adichie's perils of a single story, or a false image of France as a country?

If you know that Fez, Morocco, and Paris are local, and if Gutt d'Or, Paris, is local, then you know what the experience is like.

our experience is from where we were

where is your hometown

I suggest three steps

I call it the 3 R's: Habits, Relationships, and Constraints.

Think about the rituals that have become part of your daily routine: when you make coffee, when you get to work, when you harvest your crops, when you pray.

what kind of custom is that

when do you do

In which city are you familiar with the people in the store?

As a child, I was familiar with the peculiar customs of the suburbs of Boston that my mother brought from London and Lagos.

At home, I took my shoes off. I was definitely polite to my elders.

Even though we were in the snowy North America, our customs were Southern.

When I went to Delhi and southern Italy for the first time, I was surprised to feel like I was in familiar territory.

The customs there were similar.

The first R is custom

Think about the people you interact with on a daily basis.

The kind of people you talk to once a week, either in person or through a chat app.

Make sure you're doing the right thing, I'm not talking about your Facebook friends.

It's the people who shape your emotional experiences on a daily basis.

My mother in Accra, my twin sister in Boston, my best friend in New York. Their relationship is home to me.

The second R is relationships

Our hometown is where we shape our customs and relationships, but how we feel about that hometown depends in part on the constraints we feel.

Constraints are where you can live

What country's passport do you have

People don't feel like they're home because of racial policies

From civil wars and dysfunctional governance to economic inflation, do you feel constrained by the locals that shaped the customs of your childhood?

This is an unattractive R. It's an R that doesn't feel lyrical compared to customs and relationships.

Changes to "Why don't you live there?"

Customs, Human Relationships, and Restrictions

Take a piece of paper and write these words at the top of the three columns, and then fill in the three columns as honestly as possible.

We may have a very different picture of life in terms of locality and individuality created from a series of experiences.

try it

i have a friend named olu

he is 35 years old

Born in Nigeria, his parents came to Germany on scholarship.

Orr was born in Nuremberg and lived there until the age of 10.

When his parents moved to Lagos, he was studying in London and then came to Berlin.

He loves going to Nigeria, he loves the weather, the food, the friends there, but he hates the political corruption.

Where did Orr come from?

I have another friend named Udo.

he is 35 years old

He was born in Cordoba, in the northwestern part of Argentina, where his grandparents immigrated from Germany, which became Poland after the war.

Udo studied in Buenos Aires and came to Berlin nine years ago.

He loved going to Argentina, he loved the weather, the food, the friends there, but he hated the economic corruption.

where did udo come from

Udo, who has blond hair and blue eyes, can be called German, but he holds an Argentinian passport, so he needs a visa to live in Berlin.

His Argentinian nationality has a lot to do with history.

His hometown of Buenos Aires and Berlin has something to do with life itself.

Oru, who looks like a Nigerian, needs a visa to go to Nigeria.

He speaks Yoruba with an English accent and speaks English with a German accent.

To say he's not truly Nigerian is to deny his experiences in Lagos, to deny the customs where he grew up, to deny his relationships with family and friends.

On the one hand, Lagos is certainly one of his hometowns, but Orr always feels restricted there, not because he's gay.

Both he and Udo feel constrained by the political situation in their parents' countries, constrained from living where the customs and relationships are most meaningful to them.

Oru's from Nigeria and Udo's from Argentina alienates them from their common experiences.

Because their habits, their relationships, their constraints are all the same.

Of course, "Where are you from?"

It is an idiomatic expression to ask

It's easier to say "Nigeria" than "Lagos and Berlin." And like Google Maps, you can follow country to city, city to region.

but it doesn't matter

"Which country are you from?" and "Where are you from?"

the difference between the question is

It's not the accuracy of the answer, the difference is the intent of the question

By replacing national stories with local stories, we turn our attention to where we really live.

Even the World Cup, which represents a country in its greatest form, is made up of players from different regions.

Country doesn't work very well as a measure of human experience.

Orr says, "I'm German, but my parents are from Nigeria."

The expression "but" indicates the limits of the unit of a country. One fixed and imaginary reality collides with another reality.

"I'm from Lagos and Berlin" suggests overlapping experiences, layers that can't be denied or removed, merging with each other.

You can take my passport away, but you can't take away the experience I have.

I can't take away the experience I have

The story of my nationality follows everywhere

I'm not saying quit the country

As far as the history of the country, I haven't been able to talk much here, let alone sovereign states.

Culture exists in community, and community exists in context.

Things like geography, traditions and shared local memories are important.

What I'm skeptical about is prioritizing the country.

All my introductions on the book launch tour started with my nationality, as if I could tell you who I am.

What do we really want to know when we ask someone where they are from?

What are you really looking at when you hear the answer?

Here's one possibility: basically the state represents power.

"Where are you from?" Mexico Poland Bangladesh No power

USA Germany Japan has power

China Russia Unknown

(Laughter) We may be playing power games without even realizing it, especially in the case of multi-ethnic nations.

As any recent immigrant knows, "Where are you from?" and "Where are you really from?"

It often means "why are you here?"

Scholar William Deresiewicz wrote of elite American students:

"Students say that if they know students from Missouri or Pakistan, and their parents are all doctors or bankers, their backgrounds are diverse."

i agree with him

Calling one of the students American and the other Pakistani and declaring them a diverse student body ignores the fact that they are a cohort of like-minded people.

The situation is the same even if the economic situation is exactly the opposite.

A Mexican gardener in Los Angeles and a Nepali housekeeper in Delhi have more in common in terms of habits and constraints than nationality.

I think the biggest problem with nationality is the fiction of returning to the country.

I am often asked if I plan to "go back" to Ghana.

I go to Accra every year, but I can't "go back" to Ghana.

Not because I wasn't born there

my father can't go back there

Because the country where my father was born no longer exists.

Coming back to a place isn't the same as leaving it

something somewhere is changing often we

that's the people there

So we're talking about that famous, noble, chaotic human experience.

When writing creatively, locality represents humanity.

The more you know where the story is set, the more you understand the locality of the story, the more real the characters are, and the more you can relate to them.

The myth that nationality is identity, and the conversations based on this myth, create confusion by placing us in mutually incompatible categories.

In fact, we all have some localities, some layers.

By embracing these complexities and starting conversations, we can feel closer to each other.

Next time I'm introduced, I want to hear the truth: Taye Selasi is here, human just like you.

Inhabitants of several worlds, not just one

New York, Rome and Accra are my hometowns.”

thank you

(applause)

I've had the incredible privilege of traveling to amazing places, photographing landscapes and cultures around the world.

i love this job

People think my life is a series of discoveries, sunrises and rainbows, but the reality is more like this.

(Laughter) This is my office.

I can't afford the luxury of staying at a nice hotel, so I often sleep outdoors.

If you can sleep in a dry place, it's profitable

I don't have the luxury of eating around nice restaurants.

So they will eat whatever is available on the land.

If you're in the highlands of Ecuador, you'll be eating large rodents called cooi.

(Laughter) If there's one thing that makes our experience a little bit different than most people, it's that even when we're going through a rough time, in the back of our minds, we think, "Maybe I could take a funny picture," or "Maybe I could tell a funny story."

Why are stories important?

Because stories connect us to our cultural and natural heritage.

And in the southeastern United States, there's a dreadful disconnect between the natural realm and the public realm that allows us to live here in the first place.

We are visual creatures and we learn by seeing.

Most people don't dare to go to the swamp.

How can we expect these people to act to protect that nature?

It is a consultation that cannot be done

My job is to use photography as a means of communication, to bridge the gap between science and beauty, and to encourage people to talk, think, and ultimately care.

I started this 15 years ago in my backyard here in Gainesville.

I fell in love with exploring and discovering different places that were just minutes from my house.

There are many wonderful places to discover

Many years later, I still see the world through the eyes of a child, and I try to capture as much wonder and curiosity as I can in my photographs.

Luckily, here in the South, we still have a relatively blank canvas to fill with fantastic adventures and incredible experiences.

It's just a matter of how far you can stretch your imagination.

A lot of people look at this picture and think, "Oh, that's a pretty tree."

But I'm not just looking at trees here, I'm looking at opportunities.

watching the whole weekend

These are the images that made me, as a child, want to get off the couch and go explore, go through the woods, stick my head in the water and see what I could find.

I've taken pictures all over the world, and I can assure you that this one here in the South, in the Sun State of Florida, is second to none.

But the travel industry is advertising the wrong things.

By the age of 12, most children have experienced more Disney World than canoeing or camping under the stars.

I didn't mean to criticize Disney or Mickey, and I went too.

We've lost the essential connection that creates pride and a sense of belonging to the place we call home.

To make matters worse, the landscapes here that define our natural heritage and fill our aquifers with drinking water have been seen as frightening, dangerous and eerie.

When our ancestors first came to this land, they said, "This place is cursed, don't go near it.

It was full of demons and ghosts,' he warned.

I don't know where that idea came from.

And that led to negative emotions and disconnection that led to indifference and silence that endangered the environment.

Even though this state is surrounded by water and is made up of water, for centuries we have seen marshes and marshes as obstacles to overcome.

We've treated it as a second-class ecosystem because it has little economic value and is home to alligators and snakes.

(Laughter) So it turns out that a good swamp is a swamp without water.

Not so long ago, it was thought that draining the swamps for agriculture and land development was the way this place was supposed to be.

But we changed our minds, because as we learned more about this waterlogged land, we began to uncover hidden interactions and connections between habitats, river basins and migration routes.

For example, this bird, the American Warbler

It's my favorite bird, all the way through, because it's a swamp bird.

In this waterlogged primeval forest, they nest, mate and reproduce.

After spring, they raise their chicks and fly thousands of miles across the Gulf of Mexico to Central and South America.

When winter passes and spring comes around, we fly thousands of miles across the Gulf of Mexico

Return

Where do you think it will go? where will you land?

come back to the exact same tree

It's a startling story

I'm a bird no bigger than a tennis ball, but I'm not even coming to my hometown

You say you need GPS

(Laughter) It's just amazing.

what's going on with that? When this bird crosses the Gulf of Mexico over the winter to Central America and comes back in the spring, what awaits is a brand new golf course.

It's a story that happens too often in this state.

It's a natural process that's been going on for thousands of years, and we've only recently come to know about it.

You can imagine how much more there is to learn, as long as you don't destroy the environment --

Despite being so full of life, this swamp has a bad reputation.

Stepping into a stagnant river in Florida makes many people uneasy.

it is understandable

What I love about being born and raised here in Florida is that so many people live with an invisible but tangible fear.

It's uncomfortable, but welcome, to realize that you're not the one on top.

How often do you find yourself in this modern, urban, digital world feeling vulnerable and reminded that the world isn't meant for you?

Over the last decade or so, I've explored the places where concrete turns into forests and pines into cypresses, taking mosquitoes, reptiles and anything unpleasant as signs that you've found true wilderness, and taking it for what it is.

As a blackwater-obsessed conservation photographer, it was only natural that I ended up in the Everglades, the swamp most famous for.

As someone who grew up in north-central Florida, there are some fascinating place names that I've heard all too often: Loxahatchee Fakahatchee Corkscrew Big Cypress.

I embarked on a five-year project to reintroduce the Everglades in a new, more beautiful light.

I knew it was going to be tough, it's a huge area that's one-third the size of Florida.

When I say the Everglades, most people just think, "Oh, that's the national park."

But the Everglades is more than just a natural park. It's a vast watershed that begins in northern Kissimmee, where summer rains run into Lake Okeechobee, and when it's full, it spills over the shores and slowly follows the terrain south, into rivers of grass, into pampas meadows, where it melts into cypress swamps, and further south to mangrove swamps and finally to Florida Bay.The green gem of the Everglades. It's a big cove of 2,200 square kilometers.

The national park is at the southern end of the river system, but what makes this place unique is the freshwater that flows in, starting 150 kilometers north.

But there are no invisible political boundaries that protect the Everglades from dirty water and drought.

And unfortunately that's exactly what we've been doing.

Over the last 60 years, we've been draining, damming, and draining the Everglades, and only a third of the water that ever reaches Florida Bay.

So this is not a story about a bright sun or a rainbow.

For better or worse, the story of the Everglades is intrinsically linked to the ups and downs of the relationship between man and nature.

I'm showing you this picture of this beautiful landscape because I want you to participate.

Before your attention runs out, let's tell the real story.

With alarming speed, we're replacing this landscape with this landscape.

What many people don't realize is the sheer scale of it.

The Everglades not only provide drinking water for 7 million Floridians, they also provide farmland that supplies 300 million Americans with tomatoes and oranges year-round.

And it's created by the same summer floods that created the River of Grass 6,000 years ago.

Ironically, today it also supports an endless 2,000-square-kilometer cane river.

There, too, very high concentrations of fertilizer are sprayed into the water system, permanently altering the environment.

I've decided to break it down into a series of narratives so that you can not only understand how this environment works as a system, but also feel more familiar with it.

I wanted to start that story at the heart of the Everglades, Lake Okeechobee.

As its ambassador, I chose a creature that represents this place.

It's a snail kite

They're amazing birds, and thousands of breeding pairs once nested in the northern Everglades.

Today that's down to 400.

Why?

That's because they only eat one type of food, apple snails, which are water-dwelling gastropods the size of ping-pong balls.

When humans dammed the Everglades and reclaimed Lake Okeechobee and drained the wetlands, this snail lost its home.

As a result, the number of snail kites has also decreased.

What I wanted to do was photograph something that would not only show the relationship between this marshland and the snails and the birds, but it would also show how wonderful this relationship is, the interdependence of the three, the health of the marshland, and how important this bird is.

I thought of many ideas

So I started planning a shoot, and I sent it to a wildlife researcher at Lake Okeechobee, because this bird is an endangered species and needs special permits.

So I built a platform to hold the conch under the water.

I've spent months working on this crazy plan.

We took the platform to Lake Okeechobee and spent a week in the water, waist-deep in water, nine hours a day from dawn to dusk, all to capture the one picture that tells this story.

And finally, the day has come.

looking for food in the water

I could see it coming over the trap and noticing it.

And descended in a straight line into the trap

That was the moment when all those months of planning, the wait, the sunburn, the bug bites, all paid off.

"Oh, how wonderful!" You can imagine how excited I was at that moment.

I did this because if people hadn't seen this bird before, they wouldn't care, so this picture, this new perspective, will help shine a light on the one creature that makes this marsh so amazing, so precious, so important.

You can't come down to Gainesville and talk about the creatures of the Everglades without touching an alligator.

I like crocodiles.I grew up admiring crocodiles.

My parents used to always tell me that your relationship with alligators was unhealthy.

I love alligators because they're like a freshwater shark.

Crocodiles are feared, hated and tragically misunderstood.

Because it's not just an apex predator in an ecosystem, it's a unique creature.

For the Everglades, alligators are the architects. During the dry season, when the water level is low, alligators start digging burrows called alligator burrows.

So that when the water level goes down, they can stay in the water and get food.

This isn't just about crocodiles, other animals depend on it, so crocodiles are a pivotal species.

An apex predator, an ancient reptile, how can you appear to be the master of an ecosystem and at the same time be fragile?

Step into a hollow with 120 alligators and pray that you made the right decision.

(Laughter) I didn't lose a finger.

I'm not calling out, "Save the Everglades for alligators!"

Now they're everywhere, and alligators are one of America's greatest conservation success stories.

There's one creature in the Everglades that everyone can't help but fall in love with: the Roseate Spoonbill.

They're wonderful birds, but they've had a rough time in the Everglades, when thousands of nesting pairs once nested in the Florida Bay, but by the early 20th century there were just two pairs.

But why

This is because the women thought that it would look better with a hat ornament than flying in the sky.

Their numbers began to rise after the feather trade was banned.

As their numbers grew, they came to the attention of biologists and were studied.

What we found was that the behavior of these birds was closely tied to the wet-dry cycle that characterizes the waters of the Everglades.

These birds begin nesting in the winter when water levels are low because of their habit of eating whatever they touch with their beaks.

They wait for a time when there is a dense pool of fish and enough food to feed the chicks.

As an indicator of the health of the entire ecosystem, this bird has become a symbol of the Everglades.

In the middle of the 20th century, populations recovered and increased to 900, 1,000, 1,100, 1,200, but at the same time humans began draining the Everglades.

It blocked two-thirds of the water going south.

the impact was great

The Roseate Spoonbill population began to decline, and today the true story of its true appearance is a photograph like this.

Today, fewer than 70 pairs nest in the Florida Bay, because we've destroyed so much.

That's why organizations are calling out, "The Everglades are fragile!"

it's not

It's elastic

Draining, damming, dredging, despite all that humans have done, the pieces are still there, waiting to be reassembled.

This is what I love about South Florida, where the irresistible force of man collides with the irresistible tropical nature.

This new frontier demands a new assessment of us.

How much is nature worth?

What is the value of biodiversity? What is drinking water worth?

Fortunately, after decades of debate, we're finally starting to answer these questions.

A project to bring more water back into Florida Bay is slowly moving forward.

But it's up to us, as citizens, residents, and caretakers, to make politicians keep their promises.

what can we do for that?

That's easy

to go out into nature

with friends with children with family

hire a fishing guide

Let's show state officials that conservation is not only environmentally viable, but economically viable.

It's fun, so go ahead and put your feet in the water

The swamp will surely change you

Wrapped in American pride, we have long ceded our place as the place that defines us to landscapes elsewhere in this country: the Grand Canyon, Yosemite, Yellowstone.

These natural parks have been used as cultural guides.

Unfortunately the Everglades were leaking from there.

But I think the Everglades is as iconic and representative of America as any other place.

it's just a different kind of nature

I feel confident that the time has finally come, and what was once considered only a muddy wasteland is now a World Heritage Site.

Wetlands of global value

We've come a long way in the last 60 years.

As the world's most ambitious wetland restoration project is underway, all eyes are on Florida.

If we succeed in healing the Everglades, it will be the beacon of wetland restoration around the world.

It's up to us to decide which legacy to put our flag on.

They say the Everglades are our biggest touchstone.

If successful, we will save the planet

Good words, this is a challenge and a question.

can we do it? will we do?

if you don't do it, absolutely

But the Everglades are not just a touchstone

It's a gift, and it's ultimately entrusted to us.

thank you

(applause)

This past year, we've all been glued to a certain show. It's not "Game of Thrones," it's a real-life, terrifying drama that's so funny that people just watch it.

Created by a murder group, it's being streamed all over the world on the internet.

I'm getting used to the names of the victims: James Foley, Stephen Sotloff, David Haines, Alan Henning, Peter Kassig, Haruna Yukawa, Kenji Goto.

The Islamic State's act of cutting off their heads is barbaric, to be sure, but somehow it's a mistake to think that it's a custom from the distant past, an ancient custom.

Rather, it's a very modern act, because the perpetrators know what millions of people are watching.

In the media, it was reported as a "barbarian" and "barbaric", probably because the act of cutting off the neck of a helpless person to kill them has a primitive and ancient image, which is the exact opposite of modern civilized customs.

It is assumed that we modern people do not do such things.

That's the real irony

A paradox of clicking the screen and watching while thinking that decapitation murder has nothing to do with me

rather much related

Islamic State decapitation is not ancient or otherworldly

It's a global phenomenon that's happening in the 21st century, it's happening in your living room, on your desk, on your computer screen -- it's a modern phenomenon.

It's a phenomenon that relies entirely on the power of the internet.

Like it or not, everyone who watches has a part to play in this show.

so many people are watching

Exact number of viewers unknown

Of course, these calculations are difficult.

But in August 2014, for example, a study in the UK found that James Foley's beheading video had 1.2 million viewers in the first few days after its release.

This is just the number in the UK for the first few days.

In November 2014, a similar survey was conducted in the United States, where 9 percent of respondents said they had seen the beheading video, and another 23 percent said they had seen the video but stopped just before the killing took place.

Nine percent might sound like a small percentage of your audience, but it's still a pretty big number.

And that number, of course, will only continue to grow, as the number of video downloads and views continues to rise every week and every month.

11 years ago, before YouTube and Facebook came along, the same thing happened.

It was during the Iraq War that footage circulated when innocent civilians like Daniel Pearl, Nick Berg, and Paul Johnson were beheaded and murdered.

Nick Berg's beheading video quickly became the number one search term on the Internet.

In less than a day, it became the top keyword in search engines like Google, Lycos, and Yahoo.

Here are the top 10 most searched words in the United States the week after Nick Berg was murdered.

A keyword related to Berg's beheading video remained at the top for the week and remained the second most popular keyword for the entire month, behind "American Idol."

The Al-Qaeda-related website where the beheading video was released for the first time was forced to shut down after a few days due to the flood of hits.

According to one site operator, daily visits jumped from 300,000 to 750,000 every time a beheading scene was shown in Iraq.

A year and a half later, they said they had downloaded millions of videos from this site alone -- that's just one website.

During the Iraq War, every time there was a beheading video, it was a pattern that repeated itself.

The rise of social media has made these images more accessible than ever, but if we go a little further back in history, it was the camera that, for the first time in the history of beheading as a form of public entertainment, gave rise to a new kind of audience.

A whole generation ago, on June 17th, 1939, when the camera came out, history changed in an instant.

On that day in France, a documentary film of the first ever public beheading appeared.

Here's a video of the German serial killer Eugen Weidmann being guillotined outside the Saint-Pierre Prison in Versailles.

As was customary at the time, the execution was scheduled to take place at dawn, but the executioner was a newcomer, and preparations took longer than expected.

The execution took place at 4:30 in the morning, at this time in June, when the light was bright enough to take a picture, and one of the bystanders recorded the scene from behind the scenes.

Some stills were also taken, which you can still see online, and you can still find photos.

The media criticized the crowd that gathered on the day of Weidmann's execution, calling it 'crude' and 'horrific'. But in today's world, it's nothing compared to the fact that there are millions of people who can take a close look at the image of the beheading scene, which is clearly captured in every corner, over and over again.

Cameras have certainly made these scenes more accessible, but it's not just cameras.

If you go even further back in history, there have been speculators ever since the appearance of public executions and beheadings in human history.

In London, even in the early 19th century, 4,000 to 5,000 spectators gathered at the time of the usual execution.

It is said that 40,000 to 50,000 people gathered for famous criminals.

When it came to decapitation, which was rare in England at the time, more people gathered.

In May 1820, the five leaders of the Cato Street conspiracy to assassinate government ministers were executed in London.

hanged and then decapitated

it was horrible and cruel

One by one, they were decapitated and exposed to the public.

100,000 people gathered to see it, a crowd that exceeds the capacity of Wembley Stadium, one of the largest stadiums in the world, by 10,000 people.

the road was full of people

someone who rents a room or rooftop for viewing

person climbing on wagon

A person who climbs a streetlight and tries to see

Back then, days like this were notorious for being so crowded that people were crushed to death.

Ever since public executions and beheadings first appeared in human history, it's been documented that the vast majority of people who come to see these events are people who like to see executions, or even people who don't feel anything when they see them.

Relatively few people were disgusted, and even if they did, they would end up coming to see it, just like everyone else, even though they said it was appalling.

The most notable example of the human nature to remain unconcerned or even disappointed in the face of a beheading scene was perhaps the appearance of the guillotine in France in 1792, the so-called beheading machine you all know.

For those of us living in the 21st century, it might seem like a terrifying, monstrous device, but to those who saw the guillotine for the first time, it was rather disappointing.

Until then, a long and painful execution on the scaffold, burned and chopped and slowly torn to pieces.

For a familiar audience, the guillotine execution was quick and boring.

When the blade falls, the head falls off and can be put into a basket and quickly put away.Onlookers saw it and shouted, "Decapitation is boring! Back to hanging!"

The reason that cruel public executions have disappeared in the West is partly out of consideration for death row prisoners, but partly because the behavior of the spectators who come to watch is so bad that it's completely unmanageable.

Far too often, when there was an execution, the day turned into a celebration rather than a solemn ceremony.

In modern Europe and the United States, public executions under the law are unthinkable, but it would be too short-sighted to think that the times have changed or that modern people don't do such barbaric things.

Now let's think about "suicide triggers."

A crowd of people come to see a person who is thinking of committing suicide and goes up to the roof of the building.

This is a fairly well-known phenomenon

A study published in 1981 found that out of 21 suicide threats, 10 were jeered or "instigated" by bystanders.

Similar incidents have been reported this year.

In England, events in Telford and Shropshire in March made headlines.

In this day and age, people take pictures and videos of these moments with their cell phones and post them online.

The internet has created yet another new kind of audience when it comes to brutal murder gangs posting videos of beheadings.

These days, incidents like this happen far away in time and place, so you can't feel the incident close to you.

don't matter to me

react like it's over

At the same time, it's also true that it's more accessible than ever before.

Now everyone can see it from the front row.

You can secretly watch what you click in your own time and space without anyone knowing.

This sense of distance, distance from other people, distance from events, is the key to understanding the modern human beings who are willing to watch brutal images. The Internet creates a sense of distance to things and lessens our sense of ethical responsibility. There are several reasons for this.

People tend to distinguish online activities from real life, as if they weren't real.

I feel less responsible for my actions online than in real life.

Anonymity and facelessness make us feel less responsible for our actions.

It's also easy to unwittingly stumble upon things online that you would normally avoid.

Even though I don't want to watch it, sometimes the video starts playing on its own.

You want to see things you wouldn't see in your normal life or with other people.

What's more, when this has already been recorded and happens far away in time and space, it creates the illusion that watching is passive.

there's nothing i can do now

I think it's already happened

All of these factors are at work, and online, people's curiosity about death causes them to cross personal boundaries and watch videos like a shock test.

But the act of watching is the exact opposite of passiveness.

Because it's moving according to the murderer's intentions that he wants to show

Bound and helpless, the victim, ready to be killed, is inevitably a pawn in the perpetrator's show.

If it's the head of an enemy general won during a battle, it might be said that it's proof of a warrior's luck and combat prowess.

So "watching" is an essential ingredient in this kind of crime.

Even if it looks like something happened in the past that happened at a certain place at some point, it's really not.

Now it's an ongoing, ongoing event everywhere, and everyone who watches is playing the part of the spectator.

You should stop watching it now, but you can't.

History tells us that, and the killers know it too.

thank you

(Applause) Bruno Giussani: I'll keep this.

Let's switch places. While we're preparing for the next one, let me ask you a question.

Francis Larson: I used to work at the Pitt Rivers Museum in Oxford, which is famous for its display of shrunken heads from South America.

It was even called the "Horned Head Museum" locally.

At that time, my research topic was the history of skull collections for scientific research.

When I was looking at the collection of skulls, I suddenly noticed an irony: people who come to museums come to see a primitive, barbaric, cruel culture that they have created in their imaginations, but they don't really know what they're looking at.

So I wanted everyone to look at themselves from a different angle.

The history of us humans looking at the shrunken head through a glass case

I wanted to draw attention to the culture that is attracted to these things.

Bruno: I see. Thank you.

Francis: Thank you

(applause)

I fell in love with poetry when I was just a child of three or four. I was drawn to the rhythm of poetry, the musicality of words, the power of metaphors and images.

All the poems I read today are from my seventh book of poetry, which I just finished writing.

I was diagnosed with Parkinson's disease five years ago.

Even though it's an incurable disease, the progress in treatment has been remarkable.

But, as you can imagine, I was horrified that in many cases, women were not being tested. And as gender medicine has shown us, we're definitely not smaller versions of men -- (Laughter) -- we just happen to have different reproductive functions.

Gender-sensitive medicine should be good for men too.

Anyway, what happens when this person is in crisis -- someone who has learned that to gain momentum, it takes passionate dedication and action, and that energy takes energy, and energy comes from it.

So I started working with the Parkinson's Foundation, called pdf.org, to put women on the Parkinson's map.

And as a poet, I approached this task and found it to be tragic and sometimes funny, even hilarious.

I don't feel like Parkinson's has made me weaker. Instead, I feel more pure, like the woman in poetry.

"Never mind" A strong will is essential when your body is shrinking Just sitting still and quiet in the waiting room of the hospital Thinking hard about the future With your back hunched - I stare at you trying not to make eye contact with me

It's unlikely that we'll exchange words with an awkward smile and a stiff expression

i'm new here

A road that everyone here has traveled once

As my body shrinks, I know I need an open mind, but I still can't get used to it.

If you drink the contents of the bottle that says "drink me", you'll find yourself shrunken

The usual furniture stands in front of me, the floor tilts, and the doorknob won't move unless I wrestle with both hands.

Shrinking your body is also something you endure a lot.I can't sleep well at night.My hands are dry, my voice is hoarse, and my height is shrinking.

The best woman in the world who has shrunk A quiet woman who knows contentment more than the tradition of Buddhism

Being humble isn't all good

But in space that is lost, space becomes faintly luminous and comprehensible.

Behind my eyes is a familiar place called recollection

It's a world of merciless poetry, a gift I've never been aware of in my busy days

Now I have to pay attention to every move and keep my eyes open

Because I can't control my body

I never knew a button could be so infuriating With one arm sticking out of my sleeve I'm walking a tightrope in the dark

This modest hero Who will notice that these people are relentlessly reminded every day?

There is such a modest power here A dancer who shakes her body awkwardly with all her strength even in trivial movements

There's such a quiet beauty here People who whisper and move clumsily Hidden in each quiet face

If you get smaller, you'll be asked for more Bow your head to that indomitable grace

(Applause) Thank you.

"On donating my brain"

(laughs) No problem.

Religious people, skip any page

Kidneys, corneas, livers, lungs, tissues, hearts, veins, everything has been donated.

Oddly enough, this humble brain failed to realize the value of its own research, and was still useful to others.

I don't feel bad

So get your papers in order, answer all your questions, spit out your soul

Slice me, cut me into pieces, put it on the slide

find something from me

Get me, learn, scan, examine with a magnifying glass.

find some clue

Don't hesitate to do your best and look for clues

Had a great brain while he was alive

Because it's a brain with enough experience

Slice me, cut me into pieces, put it on a slide, stain it, decipher it, drink it all up

Hear what I have to say I want to help you till the end till the very end

(Applause) (End of applause) Next is "Ghostlight."

Inner light is the only safe way to cross dark matter.

Some living organisms--mushrooms, snails, jellyfish, and insects--have their own glow.In fact, even humans glow.The brightest selves emit infrared rays.

Unfortunately, it's an invisible destiny

we see reflected light

You need your own light to see true colors

but it doesn't look right in outside light

If gravity bends light, vast galaxies act as telescopes, and the star systems behind them are stretched out into vague arcs, the action of a lens, like looking through a glass of wine at a distant streetlight.

Now a glass or two of wine and I'm staggering Like I'm drunk As if I'm drowning in unrequited love Turner's canvas in motion Hubble I could run out of a street set Without any passer-by staring at me

Take a good look and see as much as you like

Walking and standing is utterly irrational - standing on such tiny feet! - (Laughter) My body is no longer al dente.

(Laughter) Also, the ultimate creature, if you ask me, Apollo is a beautiful but boring little blonde.

Dionysus can't balance staggered feet

I've always had a hard time keeping my balance

I digressed

More and more deviating seems to be the shortest path these days From where I've been strayed Where I've gone Hearts Turns Time

As you walk, be careful when you turn, if you go too fast, I'll fall.

Take time to guide the audience to the exit, take time to say goodbye to the actors

A ghost light is a single small light that shines above an empty stage.

In such an empty stage of night There is no external glow This is the final battle The only beacon that beckons me in the darkness Let the rest begin Seeing myself and others through the lens is a vivid remnant of original sin The inner light

(Applause) This is the last verse.

"This Dark Hour" At the end of summer, at four o'clock in the morning

The rain weakens and eventually stops.In the dark garden, the blue hosta leaves that are invisible continue to drip quietly.

Barefoot Carefully navigating slippery slate floors No lights I know where I crouch beside a mint bush Take a handful of damp soil Grab a chair Wrap a shawl around your shoulders Sit down Breathe the moist green August air

These few quiet moments Before the newspapers are thrown through the front door like grenades Before the phones are deafening Before the computer screens blink and wake up glowing

I have this time Poetry in my heart And a handful of soil A moment of indescribable contentment

At this time, the one who shares my bones and my blood Now that my children are grown-- Strangers and dear friends, all near and far-- When I lie quietly Dreaming of the melody When my beloved sleeps quietly in my arms.

Come to this place and live in this moment, immeasurable lightness

The jet black gradually fades to amber

Cardinal's rolling soprano is also momentary

A faint hint of sable turns gray Things begin to emerge with their shadows, and the dawn breaks

the town has awakened

The sun rises, night falls again, and the moon rises

someday i lost my way

You will stumble and curse the darkness

No matter what happens in the future, there was this time when I miss everything

Even though I'm in the sunshine And my friends keep crying, remember that I had this moment, this dark and perfect moment -- and smile.

thank you

(applause)

(Arabic) Allah's protection against the devil In the name of Allah, the Most Merciful and the Most Merciful

I was born into a middle-class family

My father lost his own father when I was five, but by the time I was born, he was a businessman.

But regardless of that, my father was going to send his children to school, whether they were boys or girls.

so i guess i was lucky

mother got pregnant 16 times

Only five of them survived

I think you can imagine my childhood experience.

Every day, I saw women and children being carried to cemeteries.

By the time I graduated from high school, I wanted to be a doctor.

I wanted to be a doctor and save mothers and children.

So after graduating from school, I wanted to go on to college.

But unfortunately, my country doesn't have a women's dormitory, and although I got accepted to medical school, I couldn't attend.

That's why my father sent me to study in America.

This is how I came to America

I graduated from school

When I was about to graduate, my homeland was invaded by Russia.

When I was in school, I had no idea what was going on with my family or my country.

For months and years, I didn't know

the family was in a refugee camp

So as soon as I graduated, I brought my family over to America.

I was hoping for the safety of my family.

But deep inside

There was a motherland Afghanistan

It was heartbreaking to hear the news on a daily basis and find out what was going on in my country.

I really wanted to go back to my country, but I knew I couldn't because there was no place for me.

i had a good job

I was a university professor

well paid

had a good life

family stay close

could live together

but i wasn't satisfied

I wanted to go back to my hometown

so i went to a refugee camp

I went to a refugee camp in Pakistan and there were 7.5 million refugees.

7.5 million people

About 90% of the refugees were women and children

Most of the men were either killed or gone to war.

I went to the refugee camps every day to investigate, and I saw scenes that were unimaginable.

One widow, who had five or eight children, was just sitting there crying, and she was at a loss.

I saw a young woman who had nowhere to go, no education, no entertainment, no place to live.

I saw boys who had lost their fathers and homes. They were 10 to 12 years old, but they were still supporting their families.

this was a very shocking situation

Even though I was thinking of my fellow countrymen, I didn't know what to do...

That's when I got the chance

That's when I felt, what can I do for them?

How should I reach out?

What can I do as an individual?

That's when I realized that education changed my life.

Education changed me and gave me social status.

My education gave me confidence and a career.

It was my education that allowed me to support my family and bring them abroad to be safe.

That's when I realized that education and health were what I had to give to my people at home, and that was what I was after.

Think it was easy?

No way, back then, girls' education was completely banned.

And because of Russia's invasion of Afghanistan, the people didn't trust anyone.

It was difficult for me to say, "I want to do this."

Who am I anyway?

I'm a man from America

I am an American educated person.

Can you trust me? no matter how you look at it, it's impossible

So we had to build trust in the community.

What should I do?

I did my research on the ground, and I did a lot of research.

I also asked

and finally met a man

he's 80

He was a mullah, a person familiar with Islamic law.

I went to his tent in the camp and asked him, "Will you be my teacher?"

And he looked at me and said, "You crazy girl, why do you think I can be a teacher?"

I said, "I'm going to make you a teacher."

Eventually he accepted the offer and started teaching classes on the property, and word spread all over the place.

And in just a little over a year, we had 25 schools, 15,000 children attending them, which was amazing.

(Applause) Thank you.

thank you

Of course, we did all kinds of jobs, we were doing teacher training.

I gave classes on women's rights, human rights, democracy and laws.

I took all classes

One day, I was in an office in Peshawar, Pakistan.

And all of a sudden, I saw an employee rushing around to lock the room, and he said to me, "Run, hide!"

What should I do here as a leader?

I'm terrified and I know danger is approaching

Being exposed to life-threatening danger

But if you're a leader, you have to be firm.

I have to be firm and show strength.

So I said, "What's wrong?"

At that time, men flooded into the office.

i invited them in

They came with nine Taliban soldiers.

They were really ugly looking men.

(Laughter) He walked into the office with a sly look on his face, dressed in black with a black turban.

"Sit down and have some tea," I said.

But the men didn't respond

They raised their voices, and I was, of course, terrified, but I was fired up.

I stood still

At that time, I was wearing a black head-to-toe hijab.

All I could see was my eyes

Men ask me, "What are you doing?

Don't you know girls' schools are banned?

what are you doing here ”

I looked at them and said, "What's a school? Where's that?"

(Laughter) (Applause) The men looked at me and said, "You're educating women here."

"This is the house of someone I don't know

Some students come, and they're all learning the Quran.

The Quran also says, "If women study the Scriptures, they will become good wives and obey their husbands."

(Laughter) One thing I can tell you is that these guys should be treated like this. (Laughter) And the men started speaking in Pashto.

And after we talked, I said, "Let's leave this woman alone. She'll be fine."

At this time, I offered the tea again. They drank the tea and laughed.

At that time, all the staff came into the office.

everyone was terrified

i wasn't killed or taken away

didn't seem to understand why

But everyone was relieved to see me

I was very happy, of course I'm glad I'm still alive.

(Laughter) Of course I'm glad I was alive.

On the other hand, I continued to teach during the Taliban's decline, which was not the case when they had their momentum.

We went underground, and we continued to educate and teach 3,000 students, including 80 girls.

When the Taliban weakened, we entered Afghanistan and started building schools.

We also opened a study center for women.

We also built clinics one after another.

worked with mothers and children

There was also a sex education class.

I took every class I could think of.

I was very happy I was satisfied with the results of my work

One day, four teachers and one security guard were on their way to the north of Kabul when suddenly again they were stopped in the street by 19 young men.

They had rifles on their shoulders and they were blocking roads.

Even if you ask the driver, "What's wrong?"

Just answer "I don't know"

Even if the driver talks to them, the men say "You don't care"

Call my name

A guard got out of the car and said, "I'll talk to you, what do you want?"

asked

They said "nothing" and called my name

Women were crying in the car

I was trembling too and thought it was all over

This time everyone will be killed

I definitely thought so

And yet, at times like these, strength comes from our beliefs and our actions.

the power is in the heart

If you believe in your worth, you can rely on it.

So I was holding on to the door inside the car,

Shaking my legs, I got out of the car and asked the men

"What do you want?"

what do you think they said?

"I know you

where you might be going

I'm going around the north every day

They teach women, they educate them, they give them opportunities to get jobs.

I'm giving you the skills, can you do it for us too? ”

(Laughter) (Applause) "What if we're against each other?

what should I do? ”

I looked at them and said, "I don't know."

(Laughter) And they said,

"It doesn't matter, ever since we were born, we've only killed people with guns in hand.

That's all I know."

you know what that means

I thought it was a trap

So when I tried to leave, I was told, "You can go."

So I got back in the car, took a seat, and said to the driver, "Make a U-turn and go back to the office."

At that time, we were only supporting girls.

All I had was money to pay the women to teach and to send them to school.

By the time I got back to the office, all the teachers had left.

I ran away and there was no one left

The only one left was the guard, and I was speechless.

I pulled myself together, sat down at my desk, and said, "What are we going to do now?"

how to solve this problem?

Because classes in the north had already started.

Hundreds of women had gathered to take classes.

I'm sitting there, and I think this is exactly what happened, and then out of the blue, one of my supporters called me about a report.

She said "Sakena?" and I replied

"You don't look like you. What's wrong?"

I say "nothing"

I tried to hide it, but she didn't believe me and asked me again.

"What happened?"

i confided all

And she said, "The next time you go, you can help them.

you can save them

Two days later, I was on the same road, and they weren't in the middle of the road, but in a little bit of a recess.

so stop the car

I got off and said, "Okay, let's go together."

they answered yes

I said, "I have one condition, listen to whatever I say."

they said they would do just that

So I took them to the mosque, and since it's going to be a long story, I promised them that I would give them a teacher.

Now those guys are the best teachers.

They learn English, they learn what it takes to be a teacher, they learn about computers, they guide me.

They follow us everywhere in the mountains we don't know, they lead and we follow.

they will protect

And -- (Applause) Thank you.

(Applause) What this tells us is that education changes people.

Educating people changes them, and today, everywhere, we need to strive for gender equality.

Not only should we train women, but we must also remember men, because the ones who make women suffer the most are the men in front of them.

(Laughter) That's why I started teaching classes for men, because men should know what women are capable of and what they're capable of, and they should know that women can do the same jobs as men.

We continue to teach men and we have a strong belief in that.

The country I live in was once a beautiful place

I just want to tell everyone

This was a beautiful country - a beautiful and peaceful country

we could go anywhere

Women were educated, they became lawyers, engineers, teachers, and we moved freely from house to house.

I didn't lock the door

But as you know, something happened in my country.

Now I have to worry about my safety even when I walk outdoors.

But we want the old Afghanistan back.

on the other hand

Afghan women are working really hard right now.

I have a degree, I'm a lawyer,

I am training to become a doctor

Trained to be a teacher and run a company

It's really amazing, because we get to see these people's talents blossom, and that's what's happening.

I wanted to share that with you because it's a testament to love and empathy -- love and empathy -- and trust and loyalty.

With that, people can achieve something

There is a poet named Maulana Rumi.

He says that with kindness and love, we can conquer the world.

we should be able to

And if it can be done in Afghanistan, I'm 100 percent sure that anyone in the world can do it.

thank you very much

(Applause) Thank you, thank you.

(applause)

Imagine being unable to say, "I'm hungry," "I'm in pain," "Thank you," and "I love you."

I feel trapped inside my body and unable to move my body at will.

I'm completely alone with people around me

They want contact with the outside world, connection, comfort, and social engagement.

that was my reality for thirteen years

Most people don't give much thought to speaking and communicating with people.

i have thought about this many times

because I had a lot of time

For the first 12 years of his life, he was just a normal, happy, healthy boy.

Then everything changed

had a brain infection

The doctors couldn't pinpoint the disease, but they worked hard to treat it.

the condition is getting worse and worse

Eventually I couldn't control any movement, I couldn't make eye signals, and eventually I couldn't even speak.

While I was in the hospital, I couldn't help but want to go home.

I asked my mother, "When are you going home?"

were the last words out of my mouth

Finally checked consciousness, stopped responding to all tests

My parents were told that I had lost consciousness.

A plant human being treated as a baby with only 3 months of intelligence.

The doctor sent me home and told me to leave him alone until he died.

Because my family, not just my parents, spent all their time giving me the best possible care.

i lost a friend

1 year passed 2 years passed 3 more years passed

It was as if the existing personality of me was being lost.

My favorite LEGO bricks and electronic circuits were put away.

I was moved from my bedroom to a more accessible place to care for.

His record as a boy, once known and loved by the people, was forgotten and turned into a ghost.

After a while my heart revived

gradually regained consciousness

But no one noticed that I came back to life.

I knew everything like a normal person

I could see everything and understand it, but I couldn't communicate it.

My personality was trapped in a mute body, my body exposed to the outside world, but my living mind hidden in a cocoon.

I was faced with the harsh reality that I was going to spend the rest of my life trapped inside myself in total solitude.

Only my thoughts live with me

without being rescued from there

no one will treat me kindly

I can't even talk to my friends

no one will ever love me

No dreams, no hopes, no expectations

nothing to bring joy

I lived in fear, and to be honest, I longed to die and be set free. I wanted to die alone in a care home.

You may not be able to articulate what it means to not be able to communicate with people.

My personality disappears into a dense fog, all my feelings and desires are suppressed, erased, and weakened within me.

The hardest part was feeling completely helpless.

it simply existed

I can't find myself in total darkness, because I've kind of disappeared.

other people controlled my life

what and when to eat

Like sleeping on your side or being strapped to a wheelchair.

I would often be forced to sit in front of the TV and spend the day watching reruns of "Bernie."

Barney seemed so happy and joyful, and I was the other way around, which made me feel even more depressed.

I was completely powerless to change my life or get other people to notice me.

I silently observed people who acted without thinking that I was watching them.

Unfortunately, not only was I an observer,

They became complete victims with no means of communication, objects with no defense, and seemingly devoid of even emotions, revealing the darker side of people.

For over a decade, the people who cared for me physically, sexually and verbally abused me.

They didn't think so, but I did.

The first time I was abused, I was shocked and couldn't believe it.

How is this possible?

i was confused

Why should I be treated like this?

There was a me who wanted to cry and a me who tried to fight

Pain, sadness and anger swirled through my mind.

Am I worthless?

there is no one to comfort me

Even my parents don't know I'm in pain

I lived in fear that the abuse would repeat itself.

The only thing I didn't know was when it would happen

I thought this abuse would change me.

Whitney Houston sang, "You can take everything from me, but you can't take my dignity away."

I wanted to say, "Will you bet it's true?"

Maybe my parents will find out and rescue me.

But years of caregiving, waking up every two hours and turning me around, compounded by the grief of losing a son, became an emotional burden for my parents.

Out of desperation and desperation, my parents argued violently, and then my mother turned to me and said, "I hope you die."

It was a shock, but as I thought about my mother's words, I was filled with intense pity and love for my mother.

Many times I reached the point of giving up and fell into the deep darkness of my heart.

reminds me of an incident

When my father left me alone in the car and rushed to the store to buy something

A stranger passed by and looked at me and smiled.

I don't know why I smiled, but it was that moment of connection that made me change my mind and make me want more connection.

The days were tormented by monotony, and many times I felt unbearable.

Watching ants cross the floor and drawing intricate fantasies while I'm only thinking about myself

I tried to tell the time by watching the movement of shadows.

I learned how shadows move during the day, and that helped me figure out when to pick them up from home.

The best moment of the day was when my father opened the door and walked in and took me home.

I have learned to manipulate my mind to escape reality and enter vast worlds filled with illusions.

I wanted someone to realize that reality had changed and that I had regained consciousness.

My wishes are swept away like a sandcastle built too close to the waves, so that when someone looks at me, they always see the same me.

To some, I am a closed-mouthed empty shell or plant, Martin who deserves harsh words, banishment, and even abuse.

For others, it was someone who unfortunately had a brain injury as a boy and went on to become an adult.

they treated me kindly and looked after me

For better or worse, I was a blank canvas on which various aspects of myself were reflected.

There appeared a person who looked at me with different eyes

We started having an aromatherapist come to the care home once a week.

Either by her instinctive powers or by her attentiveness of observation that others cannot, she was convinced that I understood what she was saying.

I urged my parents to get tested by an Augmentative/Alternative Communication specialist.

In less than a year, I was able to use communication software.

It was a great pleasure, sometimes I have so much to say

I couldn't tell you that right away, and there were times when I got irritated.

I learned to speak, so I often talked to myself

I believed that now that I had a listener, myself, there would be people who would listen to my thoughts and desires.

As communication increased, I realized that this was just the beginning of my attempt to create a new voice for myself.

I jumped into a world where I didn't know how it worked.

I stopped going to care homes and got my first job making copies.

It may seem simple, but it was great.

It was an exciting new world, but it was also very overwhelming and scary at times.

I grew up as a child, and while I felt free, I also suffered.

What I learned there is that people who've known me for a long time can't get past the image of Martin in their memories.

On the other hand, people who have just met for the first time can't get rid of the image of a man sitting in a wheelchair, silent.

I've also noticed that some people only listen when I tell them exactly what they expect.

They don't pay attention to the rest of the story, they act the way they see fit.

True communication is more than just physically conveying a message.

I realized that it should be listened to and respected.

Things are getting better and better

The body gradually regains its strength

I got a computer job that I love, and I got the dog I've been dreaming of for years, Kojak.

But I wished that I had someone to share my life with.

On my way home from work in my father's car, looking out the window, I realized that although I love people so much, there is no one I would love to give it to.

The time finally came when I was free from spending the rest of my life alone, and I met Joanne.

Meeting her was not only the best thing that happened to me in my life, but she helped me to clear up some misconceptions about myself.

Joanne said she fell in love with what you said.

I don't feel confident when people say that, because I don't think anyone can get over the fact that I'm disabled and accept them as a person.

I had a hard time understanding if I was really a full-fledged man.

I was treated as a man for the first time, and I stiffened on the spot.

It makes me want to look around and say, "Who? Me?"

Joanne changed everything

It's a great bond. I've learned the importance of being open and honest.

It gave me peace of mind and I was able to speak my mind with confidence.

I'm starting to feel like I deserve to be loved

I tried to change my destiny

I made a few requests about the job

I told people around me to help me that I needed to do it on my own.

Being given a means of communication changed everything.

With words and intentions, I challenged the preconceived notions of those around me and even myself.

Communication, connecting on a deeper level with the people around us, is what makes us human: telling stories, expressing wants, needs, wishes, and listening attentively to what others say.

This is how the world's people can know who they are.

What if you don't have this?

True communication deepens understanding and creates a world filled with compassion and compassion.

I was once in a vegetative state, seen as an unconscious ghost bound to a wheelchair.

not now

Husband, son, friend, brother, business owner, high school graduate and avid amateur photographer.

It's all thanks to your communication skills.

It is said that actions speak more than words

I doubt it's true?

Language is a very powerful means of communication.

You can speak with your mouth, you can speak with your eyes, you can communicate without words through an advocate, but language is the most powerful of these tools.

I was rescued from a world of great darkness by people's care, and I was able to meet you because of your words.

Thanks to all of you for listening today, I can enter into a world where more light shines.

we can shine together

My biggest obstacle to communication is the inability to say or whisper words of love or gratitude out loud.

It's always the same

But if you can, please take these two words as warmly as you can. Thank you.

(applause)

All of us have contributed to climate change through our lives.

And our human actions, our choices, our behaviors, will also determine how much greenhouse gas emissions will increase in the future.

This is certainly a very convincing opinion.

So when you hear those words, some of you may feel guilty when you think about where you've moved, how many times, how you've traveled, whether you've made the right decisions, whether you've wasted your energy at home or at work, or whether you've spent too much of your life trying to have fun.

On the one hand, we can reflect on our past actions and reflect on the impact that has had such a profound effect on the planet's climate, and by doing so, we can limit the scale of climate change that we will be forced to face in the future.

now is the time to choose

The first option is to take climate change seriously, to cut greenhouse gas emissions significantly, to narrow the range of climate change that we are about to face.

Another option is to continue ignoring the issue of climate change.

But it also chooses to deal with a future with more intense climate change.

that's not all

Citizens in countries with high per capita emissions will also have a choice for those in countries that do not.

Unfortunately, there is no chance that climate change will not occur in the future.

Over the past 20 years, government officials and policy makers from around the world have come together to discuss climate change, with the goal of limiting the increase in average temperature to no more than two degrees Celsius above pre-industrial levels.

That temperature range is associated with dangerous effects on many other indicators, both for humans and the environment.

A change of 2 degrees Celsius would be "dangerous" climate change.

But "dangerous" is a subjective term.

Let's take extreme weather somewhere in the world as an example. In a country with adequate infrastructure for humans and a well-prepared disaster preparedness system, the effects of extreme weather would be catastrophic.

chaos and some damage

death may occur

On the other hand, if the same extreme weather were to occur in another country with poor infrastructure, a country with inadequate disaster preparedness and no network of people to support each other. In this case, extreme weather would have disastrous consequences.

Not only will many homes be lost, but many more will die.

This is a graph of carbon dioxide emissions from fossil fuels and industry, from pre-industrial times to the present.

You can see at a glance that carbon dioxide emissions have increased exponentially.

Looking at the shorter period since 1950, the Intergovernmental Panel on Climate Change was established in 1988, the Rio Earth Summit was held in 1992, and after several years of debate, the Copenhagen Accord was adopted in 2009, setting the goal of keeping temperature rise below 2 degrees Celsius, in line with scientific advances and under the principle of equity.

2012 is 20 years after the Rio conference.

During this period, the conference I just described and many other conferences were held, but greenhouse gas emissions continued to rise.

If we look at the recent historic increase in emissions, combined with what we've learned about the future direction of the global economy, we can surmise that we're heading towards a four-degree global warming rather than a two-degree warming.

Let's take a moment here and think about what it would be like for the average global temperature to rise by four degrees.

Most of the earth is covered with ocean

The ocean has more thermal inertia than the land, so the average temperature rise on land is greater than on the ocean.

Second, humans don't experience the average global temperature.

Hot days, cold days, rainy days, especially in Manchester where I live.

Now let's think about what happens to the city center.

Think of the big cities of the world: Mumbai, Beijing, New York, London.

the hottest day you've ever had

The sun is blazing down I look around and see nothing but concrete and glass

But what if that same day was 6 or 8 degrees, maybe 10 or 12 degrees hotter in a heat wave?

So this is what we're really going to experience when the average global temperature rises by 4 degrees Celsius.

These extreme weather events not only lead to higher maximum temperatures, but also storms and other weather events that are more intense than they used to be.

Roads and rail networks are designed for long-term use, but any infrastructure only assumes a certain impact of where it is placed.

Therefore, it will be subjected to great trials

For example, our power plants are water-cooled, and this requires a range of temperatures to remain efficient and durable.

Our buildings are also designed to be comfortable only at certain temperatures.

So a 4 degree rise in temperature will put these under a big test.

Infrastructure was not designed to deal with climate change

And when it comes to a 4 degree increase in temperature, we need to consider not only the direct effects, but also the indirect effects.

For example, the impact on food security.

Corn and wheat production are projected to decline by up to 40 percent in certain parts of the world with a four-degree increase in temperature, and rice production is expected to decline by up to 30 percent.

This is definitely a critical situation for global food security.

The bottom line is that if the temperature rises by 4 degrees, the projected effects will make it impossible to maintain the harmonious way of life that we have been.

So let's go back to the trajectories of the 4 and 2 degree temperature rise charts.

Is a 2 degree Celsius target still reasonable?

Many of my colleagues and other scientists say it's too late to keep global warming below two degrees.

But my research shows that dangerous temperature rises for energy and food systems, aviation and shipping can be kept below 2 degrees Celsius.

It requires a deep understanding of the numbers to achieve the goal.

If you look closely at the trajectory of this graph, it's getting close to the point where the red line, marked by the yellow circles, marks a four-degree rise, and the green line marks a two-degree rise.

This is because we have cumulative emissions, aka the carbon budget.

In other words, the lights and projectors in the room you're in now consume electricity, and the carbon dioxide released into the atmosphere has long-lasting effects.

Some of the carbon dioxide will remain in the atmosphere for 100 years or more.

This is how greenhouse gases accumulate.

Also, the curve in this graph needs to be viewed with caution.

First of all, it's the area under the line on the graph that matters, and it doesn't really matter which day in the future it hits.

In other words, even if we develop a brilliant technology that solves the problem all at once, it doesn't matter if it's on New Year's Eve 2049 or at the last minute.

Because the emissions have accumulated in the meantime.

So if we keep the red line showing a 4 degree increase in temperature, the longer it goes on, the more it will pay off later on, because we don't want the carbon budget to stay the same, and we don't want the area under the graph to change.

In other words, if we don't cut our emissions soon, we'll have to make big cuts every year in the future.

We must decarbonize our energy system

Moreover, if we do not achieve results in reducing emissions from an early stage, we will be forced to rapidly promote decarbonization.

that will be a huge challenge for us

The carbon budget also has implications for energy policy.

It means that we, living in countries with high per capita emissions, need to reduce our energy demands.

Because people around the world want it, we have to deploy a massive technological infrastructure very quickly to decarbonize the supply side of our energy system, and that change won't be immediate.

It doesn't matter if you choose nuclear power, carbon capture and storage, increased biofuel adoption, or wind or wave power.

both need time

Only the area under the graph matters. Energy efficiency is important, but so is energy conservation, energy conservation.

And saving energy means continuing to spread technology on the supply side, and the only way to manage to reduce energy consumption is to reduce the activity itself, because then we can reduce the infrastructure needed on the supply side.

And we also need to address another issue: welfare and equity.

There are many parts of the world where living standards must be raised.

But our current energy system relies on fossil fuels, and economic growth comes with increasing emissions.

As a result, if we have to increase emissions in one region of the world, as long as we don't change the amount of the carbon budget, we have to reduce emissions in other regions.

It's going to be a huge challenge for rich countries.

Our research shows that if you're in a country with very high per capita emissions - like North America, Europe, Australia, for example - you need to reduce your carbon dioxide by 10 percent or more each year now to avoid a temperature change of more than 2 degrees Celsius.

let me quote here

Economist Nicholas Stern has said that in the past, carbon emissions could be cut by more than 1 percent annually only in times of economic recession or turmoil.

So it's a big challenge for economic growth, because if you're using carbon-intensive infrastructure, that means that as your economy grows, so do your emissions.

Here's an excerpt from a paper I co-wrote with Kevin Anderson in 2011, where we wrote that economic growth would have to be sacrificed to avoid a dangerous two-degree Celsius temperature rise, where rich countries would engage in planned austerity for a period of time.

This is a very tough message, because it says we need to change our behavior.

Small changes are not enough

It means changing behavior, changing whole systems, and sometimes inhibiting behavior.

This is what all of humanity needs, and I don't know how far we can change the planet.

It could be writing a letter to your local politician, talking to your boss, acting as your boss, talking to your friends and family, or changing your own life.

because we really need big changes

We're now facing a four-degree scenario.

If we're serious about avoiding a two-degree increase in temperature, we have to act now.

thank you

(Applause) Bruno Gissani: Alice So the point of this talk is that if rich countries don't cut their emissions by 10 percent a year now, not in 2020 or 2025, they're headed for a 4 degree scenario.

What are your thoughts on the figure of a 70% reduction in emissions by 2070?

Alice Bowes-Larkin: Avoiding two climbs is not enough

Modeling studies are often used to find the measures we need, but the problem with this approach is that we tend to expect too much that other countries will be ready to cut their carbon emissions soon enough.

As a result, we make bold predictions.

Because what we did was a cumulative emissions study, short-term issues are very important.

That makes a big difference

If a large country like China, for example, continues to grow, even for a few years, it has a big impact on when decarbonization is needed.

So when we reach our goal is unpredictable, because it depends on what we do in the short term.

But now that we know the big picture, I think it would be a shame if we didn't change our behavior to reduce energy demand.

Thank you for sharing valuable data at TED.

thank you

(applause)

It's such an honor to be here, and it's an incredible feeling to be in an organization that makes a difference in the world.

Thank you very much for the opportunity to speak with you today.

And I'm surprised, too, because when I look back on my life, getting involved in religion was the last thing I wanted to do.

After I left the monastery, I said I had no religion

I was thinking

I shunned religion for 13 years, and I wanted to become a professor of English literature.

I didn't mean to be a writer, of course.

(Laughter) I told Bill Moyers, and he said, "Oh, we put everyone on."

The show was well received in England, where religion is extremely unpopular.

So for once in my life, I've joined the mainstream.

Then he was sent to Jerusalem for a film about early Christianity.

It was there that I first encountered other religions, Judaism and Islam, the sister religions of Christianity.

Despite my highly religious background, I realized that I knew nothing about these faiths.

But when you see the three faiths clashing and tingling in that chaotic city, you realize they're deeply connected.

And by studying other religions, I was able to rethink what religion was and to see my own beliefs in a different light.

In my research, I've made some surprising and unexpected discoveries. To be honest, when I said goodbye to religion, I didn't trust the whole religion at all.

Doctrine is groundless and abstract.

Amazingly, as I began to seriously study the teachings of other religions, I realized that the beliefs that are making headlines today were a very recent fanatic phenomenon in the West around the 17th century.

The word "faith" originally meant love, respect and mercy.

In the 17th century, it narrowed its meaning, for reasons I'm writing about in a book I'm writing, and it came to mean any intellectual act of assent to a belief.

"Believe" does not mean "accept the doctrine of faith"

It meant "to be devoted and involved."

In fact, there are some religions in the world that don't really care about orthodoxy.

In the Qur'an, orthodoxy is dismissed as "zannah," and it's said to be a random, unverifiable, random guesswork.

All religions teach us to change behavior.

Before believing in God or not, there is some kind of action, and there is-

Creed emerges, and that is the beginning of understanding the truth of religion.

Religious doctrines are designed to lead to action, and you can't understand them without putting them into practice.

And at the top of this practice is compassion.

Compassion, as we've been thinking about with you, is the ability to feel what others are feeling, but what is remarkable is the fact that in every faith in the world, compassion is the test of devotion and the affirmation of the existence of what we call "God" in Judaism, Christianity and Islam.

"Kindness leads to Nirvana," said the Buddha.

Why? Because when we care about others, we forget about ourselves and focus on others. If we can get rid of our ego, we can meet God.

What is consistently emphasized and central to the teachings of each of the world's major religions is known as the "Golden Rule."

The "Golden Rule" was first proposed by Confucius in the 5th century BC.

Because this is so central to all his doctrines, his disciples were to practice this teaching daily.

The "Golden Rule" leads them to the state of excellence that Confucius called "Ren." "Ren" itself is an experience of excellence.

And this is also very important in monotheism.

A famous story of the great rabbi Hillel from the time before Jesus

A heathen suggested that if Hillel could stand on one leg and recite all of Judaism, he would convert to Judaism.

Hillel stood on one leg and said, "Don't let what you hate be your neighbor, that's the whole teaching, the rest is just commentary.

Now go learn." (Laughter) "Go learn." That's what he meant.

He says, "Get it your way. Every verse of the teaching is a commentary on the Golden Rule."

In the words of the great rabbi Meir, "Any interpretation of the Bible, whoever it is, that leads to hatred and contempt of another is counterfeit."

Augustine's claim is exactly the same.

"Because the Bible teaches nothing but compassion, do not stop interpreting the Bible until you can interpret it compassionately."

If we try to find compassion even in the boring passages of the Bible, we can do the same in our daily lives. (Applause) But in our world today, religion has been hijacked.

Contrary to what Jesus said, "Love your enemies and do not judge others."

Christians continue to openly judge others, to use the Bible as a tool of argument and to condemn others.Religion has been used throughout the ages to oppress others because of human ego and greed.

We humans have a knack for ruining great things.

That's why we insist on the precepts. This is a very important point. Don't limit your compassion to those within your own country, to people of the same religion or nationality as you.

"Tribes and nations exist to understand each other," says the Koran.

But these universal efforts are also being overwhelmed by the abuse and abuse of religion, because of runaway desires.

When I get into a taxi and talk about my job, the driver often tells me, "Religion is always the cause of world wars." But this is wrong.

The cause of the current disaster is political

But it's true that religion is like a fault line, and when the roots of conflict run deep within a region, religion gets caught up and becomes part of the problem, and it's a very violent time.

Between 1914 and 1945, 70 million people died in armed conflicts in Europe alone.

Even things like soccer that people used to enjoy, many of which now cause deadly riots.

Of course, religion is also affected by these violent trends.

I think the lack of understanding of religion is also a big factor.

People seem to think that faith and believing in things are the same thing.

The most important ones are compassion and the golden rule, but it's all too common to see the less important purposes being pushed to the fore, and partly because of the term "believers," believing seems central.

The reason this happens is because the golden rule is difficult. When I give a talk on compassion, there are a few people in the audience who look defiant, because many religious people prefer being right to being compassionate. (Laughter) But that's not all.

Since 9/11, activism in Islam has taken me to the limelight in unexpected ways, allowing me to go anywhere in the world, and wherever I go, I've seen the yearning for change.

Thousands of people flocked to my talk in Pakistan the other day, and they wanted friendly opinions coming from the West.

Especially young people, and they asked me, "What can we do to change the situation?"

The moderator of the talk said, "Don't be shy.

Let's talk about where we went wrong and where religion went wrong."

I think the current situation is so serious that any ideology that ignores international understanding and mutual understanding is no longer able to keep up with the times.

And religion has a wide range of support, and recent surveys show that, in America, people do it in many different ways, but ultimately people are trying to be religious. Western Europe is the only place in the world where secularism persists, and the old-fashionedness of it seems almost comical.

People want religion, and religion is, and should be, a force for world harmony, and the reason is the Golden Rule.

"Don't do to others what you don't want to be done to you" is a spirit that should be spread throughout the world.

You shouldn't treat other countries the way you don't want to be treated.

These beliefs, however bad they may be, are religious and spiritual issues.

It's a serious moral issue that we should all be involved in.

As I said earlier, there is a hunger for change in the world.

Here in America, you've seen the yearning for change in this presidential election.

After 9/11, people from churches and mosques from all over America came together and worked together to build networks of understanding.

Mosques and chapels chant, "We must start a dialogue."

It's time to move beyond the notion of being patient with others and understand them.

I want to talk to you about one more thing

The source is the Iliad, but it's about this sublime spirituality.

The Iliad is about the ten year war between Greece and Troy.

One day, when Achilles, a great Greek general, left the battlefield with his men, the battle situation fell into a predicament, and in the ensuing melee, his best friend Patroclus was killed by Prince Hector of Troy after a duel. Achilles, out of grief, anger, and revenge, went into a rage, killed Hector, chopped up his body, and even though his family wanted him to be buried, he refused to hand over his body. Thor's spirit will wander forever

One night, the elderly Trojan king Priam came incognito to Achilles' tabernacle in the Greek camp, seeking the body of his son.

Everyone was shocked when the old man uncovered himself.

When Achilles saw Priam, he thought of his father and wept.

Priam had many of his sons killed by Achilles, but he too cried at the sight of Achilles, and the tent filled with cries.

In Greece, it was believed that crying together created a bond.

Achilles graciously handed over Hector's body to his father, Priam, and they looked at each other and saw God in each other.

This is also a concept that can be found in all religions.

It's about overcoming fear of the enemy, and it's the beginning of understanding others.

It is very important that the Hebrew word for "God" means "another."

Perhaps it is precisely because the existence of the enemy is "other" that we receive revelation from "God," who transcends the perfect mystery.

And my hope is that you'll help me build, launch, and spread the Charter of Compassion, which was created by a mixed team of thinkers from the three Abrahamic religions -- Judaism, Christianity, and Islam -- based on the basic principles of The Golden Rule.

All the people I've met on my travels want us to work together, and I'm sure you all know that there needs to be some movement among them to restore their hijacked faith.

We need to empower and guide people to remember the spirit of compassion. This charter is not a thick document.

I would like to provide some guidance on how to interpret the abused teachings. Remember the principle of mercy that the rabbis and Augustine preached that the Bible should adhere to.

Let's get back to that. Jews, Christians, and Muslims, who are at odds right now, worked together to create this charter, and I hope that at least 1,000 of the world's major religious leaders will sign it.

You are the protagonists, I'm just a naive scholar.

I was surprised at times when people said I was playful, but I've been a researcher all my life, and I'd like to ask some media savvy folks to show me how to get this idea out to the world.

We also plan to collaborate with the United Nations Alliance of Civilizations.

The Alliance of Civilizations is a United Nations initiative, which I joined at the call of Secretary-General Kofi Annan, whose purpose is to identify the causes of extremism and to provide guidance to member states on how to avoid ideological radicalization.

The allies say they're happy to cooperate.

When you hear about the United Nations, some of you may be worried because you think it's a slow and cumbersome organization. But the involvement of the United Nations is important.

So I urge you all to join us in creating this Charter, publishing it, disseminating it, so that eventually every college in the world -- every church, every mosque, every chapel -- has a charter, so that people can see and take back their teachings, so that religion can be the source of world peace.

In 1901, a woman named Augusta was brought to a psychiatric hospital in Frankfurt.

Augusta was delusional and couldn't remember even the simplest things in her life.

Her doctor's name was Alois

Alois didn't know how to help Augusta, so he just watched her until her death in 1906.

Alois performed an autopsy on her and found strange plaques and tangles of nerve fibers that had never been seen before in Augusta's brain.

The surprise here is

If Augusta were alive today, we would be as helpless as Alois was 114 years ago.

Alois is Dr. Alois Alzheimer

And Augusta Dieter was the first patient diagnosed with what is now known as Alzheimer's disease.

Medicine has advanced a lot since 1901.

Antibiotics, vaccines, various treatments for cancer, antiretrovirals for HIV, statins for heart disease, and more have been discovered to protect us from infection.

But little progress has been made in treating Alzheimer's disease.

I'm part of a team of scientists searching for a cure for Alzheimer's disease for more than a decade.

i always think about it

Alzheimer's disease currently affects 40 million people worldwide.

But by 2050, Alzheimer's disease will affect 150 million people, and you may be among them.

If you want to live longer than 85, you have a one in two chance of getting Alzheimer's disease.

In other words, you're more likely to spend your old age suffering from Alzheimer's disease or caring for a friend or loved one who is suffering from Alzheimer's disease.

In the United States alone, Alzheimer's costs $200 billion every hour to treat.

One-fifth of Medicare is spent on Alzheimer's disease

It's one of the most expensive diseases today, and as the baby boomer generation ages, the cost of treatment is projected to quintuple by 2050.

It may surprise you, but Alzheimer's is the greatest medical and social challenge of our generation.

but we've done very little about it

Alzheimer's disease is the only one of the top 10 causes of death in the world today that cannot be prevented, treated or slowed.

We invest less time and money into Alzheimer's research, so we don't understand how Alzheimer's works than other diseases.

Alzheimer's disease costs more to care than cancer each year, and the U.S. government spends 10 times more research on cancer each year than on Alzheimer's disease, even though it kills about the same number of people.

Resource scarcity stems from a root cause: lack of awareness.

Because there's something that few people know, but that everyone should know: Alzheimer's is a treatable disease.

For 114 years, everyone, including scientists, has mistaken Alzheimer's disease for aging.

It was thought that our blurring was normal and inevitable in the aging process.

But if you look at pictures of a healthy aging brain and a picture of someone with Alzheimer's disease, you can quickly see the damage caused by the disease.

Brain damage from Alzheimer's disease, along with severe deficits in memory and mental performance, significantly shortens life and is always fatal.

A century ago, an Alzheimer's doctor found strange plaques and tangles of nerve fibers in Augusta's brain.

For a century, no one knew exactly what this was.

now known to be made of protein

A protein molecule is folded like an elaborate origami.

The paper has places where it tends to stick

When properly folded, this place will be on the inside.

When something goes wrong, the sticky spots are exposed, and this causes the proteins to clump together.

They form clumps that eventually become tangled with large plaques.

This is what we see in the brains of people with Alzheimer's disease, and we've spent the past decade at the University of Cambridge trying to understand how this disorder works.

There are many steps, and figuring out where to stop is as complicated as defusing a bomb.

It's possible that cutting a wire might not cause an explosion,

If you cut another wire, it might explode.

We have to pick the right steps to stop it and create a drug that works there.

Until recently we basically

We cut the wire and hoped for the best, but now we have doctors, biologists, geneticists, chemists, physicists, engineers, mathematicians.

By forming a diverse group, we were able to identify a key step to block, and now we're testing new drugs that specifically block that step and cure the disease.

Let me show you some of the latest research results.

No one outside the lab has seen this result yet.

I'm going to show you a video of this new drug being administered to a worm. Now here's a healthy worm.

As you can see, they're moving around normally, whereas these worms are inside like Alzheimer's patients.

protein aggregates

You can clearly see that they're sick, but if you give the worms this drug early on, they'll be healthy and live to a normal lifespan.

While these are early positive results, studies like this show that Alzheimer's disease can be understood and treated.

After 114 years of waiting, I am hopeful that we will finally be able to achieve this in the next 10 to 20 years.

To further improve your chances of overcoming Alzheimer's disease,

I need your help, not a scientist like me.

I want to spread the awareness that Alzheimer's is a disease and that it can be cured through action.

In other diseases, patients and their families have put pressure on governments, pharmaceutical companies, scientists and agencies to demand more research.

This was critical to the advances in HIV treatment in the late 1980s.

We're seeing a similar movement with cancer today.

But people with Alzheimer's often find it difficult to speak up for themselves.

And the hidden victims, family members, are exhausted day and night caring for their loved ones and are unable to advocate for a change in the situation.

it's up to you

Alzheimer's disease is mostly not a genetic disease.

everyone with a brain is at risk of Alzheimer's disease

Right now, 40 million patients like Augusta are unable to make the changes they need.

I want you to raise your voice to seek treatment for their disease.

thank you

(applause)

Raise your hand if you've ever been asked, "What do you want to be when you grow up?"

Remember, how old were you when you first asked that question?

you can use your finger

3 only 5 only 3 only 5 only 5 only OK

Now raise your hand to that question

a person who has a problem

(Laughter) Any problem

I'm the one who never got the answer to that question, "What do you want to be when you grow up?"

The problem wasn't that I wasn't interested in anything, it was that I had too much.

In high school, I loved English, math, art, and even built a website.

Have you heard of it?

(Laughter) This trend continued after I graduated from high school, and at some point, I noticed a pattern: You get interested in a field, you dive into it, you get hooked, you get good at it to some degree, but then you get bored somewhere along the way.

I try to stick with it, because I'm spending time and energy and sometimes money.

In the end, I got tired of it and thought that I had already done it and it wasn't worth the challenge

I will end up throwing it out

Then you get interested in something else, and then you jump into a totally unrelated field, and you're hooked and you're like, "I've found this."

You end up throwing it out

But again, I find something completely new and dive into it.

This pattern bothered me for two reasons.

First, how do you connect what you're doing to a decent career?

After all, do you have to choose one thing, ignore the other things you want to do, and resign yourself to getting bored?

Another reason is a little personal.

I started to worry that there was something wrong with me that I couldn't get one thing done.

Are you afraid to commit to something, are distracted, fear your own success, and sabotage yourself?

If you remember something like this, ask yourself, I wish I had done it back then.

It's wrong to do a lot of things Where did you learn that it's not normal?

Shall I tell you? from our culture

"What do you want to be when you grow up?" was the first question asked

were you about 5 years old

nobody really cares about your answer

(Laughter) It's considered a naive question that elicits an innocent response from a small child: "I want to be an astronaut," or "ballerina," or "pirate."

I think I need a Halloween costume

(Laughter) But this question comes up over and over again in many ways, like, for high school students, what are they going to study in college?

And at some point the question, "What do you want to be when you grow up?"

Innocent exchanges become a concern that keeps me awake at night.

Why?

Look, this question encourages kids to have dreams, but it doesn't encourage them to keep all their dreams alive.

It's the other way around, because I can't give you 20 answers to that question. Any innocent adult who asks the question will chuckle and say, "Okay, but I can't be a violin maker's psychologist."

I have to choose one"

This is Dr. Bob Childs (Laughter), luthier and psychotherapist.

This is Amy Ann, magazine editor turned illustrator, entrepreneur, teacher, and creative director.

Most kids don't listen to these people

Many are just told to choose

more than that

A focused life is glorified in society

It's called destiny or vocation, and people are born with one great thing, and they say that they must fulfill it in this world, and that they must find it and dedicate their lives to it.

But what if you weren't born that way?

Interested in many things What if you want to do many things?

You don't fit that way of thinking

lonely

You may feel like you have no purpose in life

I wonder if there's something wrong with me

nothing is wrong

because you are a multipotentialite

(Laughter) (Applause) A multipotentialite is someone who has many interests and creative pursuits.

long words that are difficult to pronounce

It's easier to pronounce if you divide it into three parts: multi-potential ait

You can translate it into other words like 'erudite' and 'Renaissance man'.

In fact, during the Renaissance, the ideal was someone who was well versed in many disciplines.

Barbara Sher called such a person a scanner.

You can call it whatever you want, or you can make up a new word.

I think it's impossible for society as a whole to agree on a single model.

(Laughter) You might say that there are limits to multipotentiality, that we need to overcome our afflictions.

What I've learned from talking to a lot of people about this idea and writing about it on my website is that multipotentialites have a lot of power.

These three are its super powers

The first is to integrate ideas.

It's about combining two or more disciplines and creating something new where they meet.

Sha Huang and Rachel Binks founded Meshu from their shared interests in cartography, data visualization, travel, mathematics and design.

Meshu makes bespoke geo-inspired ornaments.

Shah and Rachel arrived at this unique idea not in spite of, but because of, their wide range of skills and experience.

Innovation happens at such intersections

That's where new ideas come from.

Multipotentialites from diverse backgrounds have easy access to many intersections.

The second is the ability to learn quickly.

When multipotentialites are interested in something, they become obsessed.

Absorbs at random

I'm also used to being a beginner, because I've been a beginner a lot, so I'm not afraid to try new things and step out of my comfort zone.

In addition, many of the skills are applicable in different fields, and they bring skills they've acquired in the past to new fields, so they rarely start from scratch.

Nora Dunne is a traveler by profession and a freelance writer.

As a child, he was a concert pianist who honed an incredible ability to remember things with his body.

She's now the fastest typist she knows.

(Laughter) Before I became a writer, I was a financial planner.

When I opened, I had to learn how to sell, which now helps me appeal to editors about my work.

Pursuing what you are attracted to is rarely a waste of time, even if you end up quitting halfway through.

And that knowledge can be applied in completely different fields, in ways you never imagined.

The third is adaptability, which is the ability to adapt to whatever situation you encounter.

Abe Kafud is part video director, web designer, part kickstarter consultant, part teacher, part James Bond.

(Laughter) He does a good job, so he's valuable.

More importantly, it can change roles to meet the needs of the customer.

Fast Company magazine ranks adaptability as the most important skill for success in the 21st century.

In the midst of global economic upheaval, it is the individuals and organizations that can easily pivot to meet the needs of a growing market.

Idea synthesis, rapid learning, and adaptability are three things that multipotentialites excel at, and skills that they can lose if they are forced to narrow their focus.

There's good reason for our society to cherish the multipotentialites for who they are.

We need creative, unconventional people to tackle the multitude of complex, multidimensional problems in the world today.

if you are a true specialist

Let's say you decide right from birth that you want to be a pediatric neurosurgeon.

It's okay - there's nothing wrong with you

(Laughter) In fact, the best teams are specialists and multipotentialite pairs.

Specialists explore ideas in depth and put them into action, while multipotentialites bring a wide range of knowledge to the project.

great partnership

We should pursue our lives and careers according to our individuality.

Alas, multipotentialites are often told to become specialists.

So one thing I want you to take away from this talk is this: take care of your inner qualities.

If you are a true specialist, do it

that will be your best job

But to all the multipotentialites in this room, including you, who realized that in the last 12 minutes, (Laughter).

go through many holes

Pursue that intersection of curiosity

Taking care of your inner passion leads to a happy and authentic life

More importantly, you multipotentialites, the world needs us.

thank you

(applause)

Can new neurons multiply in adulthood?

It's a fairly new field of research, so there's confusion. It's a fairly new field of research, so there's confusion.

For example, I was talking to my colleague Robert, an oncologist, and he said, "Sandrine, you're insane.

Some cured cancer patients still develop symptoms of depression."

My response was, "From my point of view, it makes sense.

The drug we gave the patient stopped the growth of the cancer cells and at the same time stopped the production of new nerve cells in the brain.”

Robert looked at me, wondering if he was sure, and said, "Sandrine, this is an adult patient. New nerve cells aren't made when you're an adult."

When I said, "Actually, you can make it," they were very surprised.

This is a phenomenon called neurogenesis.

[Neurogenesis] Robert isn't a neuroscientist, and he didn't learn the latest knowledge in medical school that the adult brain also generates new neurons.

Robert is a good doctor, so he came to my lab to try to understand the problem better.

So I showed him one of the most interesting parts of neurogenesis, the hippocampus.

This is the tissue shown in gray in the center of the brain.

What we've known for a very long time already is that it's important for learning, memory, mood and emotions.

But what we've recently discovered is that this is a special structure in the adult brain that can generate new neurons.

If you zoom in on a section of the hippocampus, what you see here in blue are new neurons in the adult mouse brain.

When it comes to the human brain, my colleague at Karolinska Institutet, Jonas Friesen, estimates that the hippocampus creates 700 new neurons every day.

You might think that's not much compared to the billions of neurons we have.

But by the time you're 50, all of the hippocampal neurons you were born with have been replaced with those you were born with in adulthood.

Why are new neurons important and what are their roles?

primarily important for learning and memory

In the lab, inhibiting the generation of new neurons in the hippocampus in the adult brain inhibits certain types of memory.

This is a new fact, especially with respect to spatial awareness, let's think about, say, navigating through a city.

There's so much we're learning, and neurons are important not only for memory capacity, but also for memory quality.

It adds an element of time to your memory and helps you identify similar memories, like finding your bike parked in a slightly different spot in the same area of ​​a train station every day.

My colleague Robert was more interested in studying neurogenesis and depression.

We found a reduction in neurogenesis in an animal model of depression.

Administration of antidepressants stimulates the production of new neurons, reduces symptoms of depression, and establishes a clear link between neurogenesis and depression.

And just by blocking neurogenesis, you're also blocking the effectiveness of antidepressants.

Now Robert understands that the reason patients have symptoms of depression, even after their cancer is cured, is that the cancer drugs have blocked the production of new nerve cells.

It takes time to create new neurons that function normally.

Based on our results so far, we think there is good evidence to target neurogenesis if we want to improve memory formation, improve mood, and prevent age-related and stress-related brain decline.

The next question is, can we control neurogenesis? about it

this can

give a little quiz

I'm going to list some attitudes and activities, and I'd like you to answer whether neurogenesis is increased or decreased Please answer whether neurogenesis is increased or decreased

Are you ready?

let's get started

How is your learning?

Would you like to improve?

I agree

Learning improves the generation of new neurons

How's your stress?

Yes, stress slows down the production of new neurons in the hippocampus.

What about sleep deprivation?

certainly slows down neurogenesis

how about sex?

wow amazing!

(Laughter) Yes, that's right. It improves the production of new neurons.

But it's all about balance

(Laughter) I don't want to be in that situation.

(laughs) What about getting older?

Neurogenesis declines with age, but it's still being generated.

How about running at the end?

I'll let you all decide

This is an early study by my mentor, Rusty Gage at the Salk Institute, that showed that the environment influences the generation of new neurons.

First, here's a cross-sectional histology of the hippocampus from a mouse grown in a cage without a wheel.

The little black dots are cells that become new neurons.

Next is a cross-sectional histology of the hippocampus of a mouse in a cage with a running wheel.

There's a massive increase in the number of black dots that become new neurons.

Activity affects neurogenesis, but that's not the whole story.

Food affects the generation of new neurons in the hippocampus Food affects the generation of new neurons in the hippocampus

Shows foods and nutrients with proven efficacy

I'd like to point out a few things: 20 to 30 percent caloric restriction improves neurogenesis.

Intermittent fasting, or spacing between meals, which improves neurogenesis.

Consuming flavonoids found in dark chocolate and blueberries improves neurogenesis.

Omega-3 fatty acids, found in oily fish, such as salmon, enhance the production of new nerve cells.

Conversely, a diet high in saturated fat negatively impacts neurogenesis.

Ethanol, or alcohol consumption, slows down neurogenesis.

But it's not all bad. Resveratrol, found in red wine, has been shown to promote the survival of new nerve cells.

The next time you go to dinner, you might opt ​​for this neurogenesis-neutral drink.

(Laughter) And the last thing I'm going to talk about is novel.

A group in Japan looked at texture and showed that soft foods impair neurogenesis, the opposite of crunchy foods that require chewing.

All data examined at the cellular level are from animal models.

But when this food is fed to humans, it has been shown to alter memory and mood in the same direction as it modulates neurogenesis. For example, calorie restriction increases memory capacity. A high-fat diet exacerbates depression, while omega-3 fatty acids increase neurogenesis and alleviate depression.

Mental health The effect of food on memory and mood Mental health The effect of food on memory and mood is actually involved in generating new neurons in the hippocampus.

It's not just what you eat, it's the texture of the food, when you eat it and how much.

Neuroscientists are interested in neurogenesis, but they need a better understanding of how new neurons work and how they control their survival and generation.

We need to find a way to protect neurogenesis in Robert's patients.

I leave you in charge of your own neurogenesis.

thank you

(Applause) Margaret Heffernan: Great study.

It changed my life. Now I eat a lot of blueberries.

Sandrine Thule: Amazing

Margaret: I'm interested in running stories.

Do you have to run?

Or do you mean aerobic exercise to get oxygen to the brain?

Any vigorous exercise is fine?

Sandrine: Right now I can't say for sure if it's the running itself, but anything that boosts nerve cell production or improves blood flow to the brain must be beneficial.

Margaret: So you don't need a running wheel at work?

Sandrine: I don't need it.

Margaret: I'm relieved it was good

I'm Sandrine Chule. Thank you very much.

Sandrin: Thank you

(applause)

"Here rests the king of the past and the king of the future, Arthur," inscribed on Arthur's tombstone in The Death of King Arthur, by Thomas Mallory.

Mallory wrote it in the 15th century, so I had no idea that it would follow this tombstone.

King Arthur has captured our imagination many times, with his knights, Queen Guinevere, the Round Table, Camelot and, of course, Excalibur.

Where does this story come from and is it historically based?

King Arthur as we know him is a late medieval creation, but his legend actually has its roots in much older Celtic poetry, dating back to the time of the Saxon invasion of Britain.

After the Roman withdrawal from Britain in 410, the Saxons invaded from what is now Germany and Denmark, exploiting the weaknesses of these abandoned regions.

The inhabitants of Britain fought fiercely against the invaders during centuries of chaos.

It's difficult to know the exact history, because few records remain from this period.

There are some clues in the surviving poems of this era.

One of them, "A Goddin," mentions Arthur, but King Arthur himself doesn't appear.

Instead, we have another warrior, Gwawrddur, a very strong warrior, but not Arthur.

It's unlikely to be a clue. Arthur was certainly a good warrior, whoever he was.

It's not even clear if he ruled someone or even existed.

Despite this uncertainty, Arthur's account caught the attention of historians hundreds of years later.

In 1130 an ambitious minor priest Geoffrey of Monmouth

Using Celtic and Latin sources, I spent a lot of time writing a long chronicle, and this is "History of the Kings of Britannia."

The most notable of these is King Arthur.

As Jeffrey wrote, history was a treasure trove.

Six hundred years after the Saxon invasion, they collected fragments of legends and poems to fill in the gaps in the public record.

Several of his sources referred to Arthur, and others had realistic accounts of wars and places.

But more often than not, it features legendary heroes who fight hard battles with the help of enchanted swords and wizards.

He added all of these things, including the magic sword Caledovulf and the Roman fortress of Caleon in his sources, so that Geoffrey's Arthur ruled over Caleon and wielded Caliburnus, the Latin translation of Caledovulf.

Geoffrey also added to Arthur's story a great advisor named Merlin, based on the Celtic bard Marzin.

If Arthur were real, he would have been a military commander, but a king in a castle fits Geoffrey's royal history better.

Geoffrey's Chronicle got the attention it desired, and was quickly translated from Latin into French by the poet Werth around 1155.

Besides Geoffrey's sword, Worth added other major additions to the legend: the castle, the Wizard, and the Round Table.

He wrote that Arthur had a table built at which all the guests would be seated equally so that no one could claim that he was the highest.

A romance written by the French bard Chrétien de Troyes, who read Werth's translation, made Arthur's story famous.

He incorporated the stories of individual knights such as Lancelot and Gawain, adding a touch of romance to his adventures.

He created the Arthur Lancelot Princess Guinevere love triangle.

In addition to the tangle of relationships, he also embraced the Holy Grail.

The power of this chalice is probably borrowed from magic items in Celtic mythology.

Chrétien lived during the Crusades, and there were those who turned the world's attention to the Grail, claiming that it was a relic from the crucifixion of Christ.

Chrétien's work was followed by numerous adaptations outside of French.

In the meantime, Carleon became Camelot and Caliburnus changed its name to Excalibur.

In the 15th century, Thomas Mallory brought these stories to fruition in "The Death of King Arthur," which laid the foundation for the image of King Arthur as we know it today.

In the thousands of years since Arthur appeared in Celtic poetry, his story has been transformed many times to reflect the interests of the writers and readers of the chronicles.

We are still rewriting and adapting legends.

Even if he didn't exist, even if he didn't love, even if he didn't rule or go on adventures, there's no doubt that he would have attained eternal life.

The Big Bang created the universe about 14 billion years ago, and it's still expanding.

To what?

it's a very difficult question

Because the equations of Einstein's general theory of relativity describe time and space as components of an intertwined universe.

In other words, time and space as we know them exist only as part of the universe, not outside of it.

Now, as an everyday object expands, it expands into more outer space.

But if there is no space to expand, what exactly does it mean to expand?

In 1929, astronomical observations by Edwin Hubble gave a clear answer.

He observed the night sky and noticed that all distant galaxies were moving away from Earth, or moving away.

On top of that, the farther away the galaxy is, the faster it moves away.

How should we think?

Think of buns that rise in the oven.

The dough between each raisin rises evenly.

If the raisins are the galaxies and the fabric is the intergalactic space, then the stretching or expansion of the intergalactic space causes the galaxies to move apart from each other. From any given galaxy, galaxies that are farther apart will move further apart in the same amount of time than those that are closer to them.

Indeed, the equations of general relativity predict a tug-of-war between gravity and expansion in the universe.

Only in the pitch black space between galaxies does expansion overcome and the universe expands.

This is the answer

the universe is expanding towards itself

So cosmologists push the boundaries of mathematical models to infer what exists beyond space and time.

It's not a guesswork, it's a hypothesis that tries to solve a flaw in the scientific theory of the Big Bang.

The Big Bang predicted that matter would spread evenly throughout the universe as dilute gas, but if so, how did galaxies and stars form?

The inflation model describes a short period of very rapid expansion, which relates quantum fluctuations in the energy of the early universe to the formation of accreted gas that eventually becomes galaxies.

If this paradigm is correct, it means that our universe expands infinitely, forever - a realm in the universe's larger reality.

We know nothing about this speculative expanding entity, except that mathematical predictions suggest that infinite expansion would be caused by unstable quantum energy states.

But in many localized regions, the random outcome may be that the energy state settles into a stable state, stops expanding, and forms a bubble universe.

Each bubble universe -- ours is one -- will be described by its own big bang and physics laws.

Because our universe is part of a larger multiverse, expanding infinitely at such an alarming rate, it may be impossible to meet our neighbors.

The Big Bang theory also predicts that in the early, hot universe, the fundamental forces might unify into a single superforce.

The mathematical string theory explains this unification, along with the basic structure of the subatomic particles quarks and electrons.

In the proposed model, vibrating strings are the building blocks of the universe.

Competing models of strings are now brought together by a unified description, proposing that these structures will interact with large-scale, high-dimensional "membrane" surfaces.

Our universe may be contained in one of these membranes, hovers in an unknown, higher dimension called the jokingly named "bulk," or hyperspace.

Other membranes, including other types of universes, coexist in hyperspace, and adjacent membranes may even share fundamental forces such as gravity.

Both infinite expansion and membranes describe the multiverse, but while infinitely expanding universes are isolated, membrane universes can collide with each other.

Collision echoes may be present in the cosmic microwave background, a remnant of the early days of the Big Bang - radiation that echoes throughout our universe.

So far, no such cosmic echoes have been found.

Some believe that these different multiverse theories will eventually be merged into a common description, or replaced by something else.

For now, these theories are speculative searches through mathematical models.

While these models have inspired and directed many scientific experiments, few objective experiments have so far tested them directly.

Until the next Edwin Hubble comes along, scientists will just be arguing over the simplicity of competing models, and will continue to fantasize about what lies beyond our universe.

From asteroids capable of destroying entire species, to gamma-ray bursts and supernovae capable of wiping out life on Earth, space has no shortage of physical forces to wreak havoc on our little planet.

But there's something in the universe that's even more terrifying than those forces, and it obliterates anything that comes its way.

Will the Earth be sucked into a black hole?

A black hole is an object so dense that it inevitably alters the space-time around it, distorting it into an endless suction mouth.

Everything, even fast-moving light, cannot escape the gravitational pull of a black hole beyond the boundary of the event horizon.

A black hole is an infinite vacuum cleaner of space, sucking up everything in its path.

To know if the Earth is going to be sucked in, we first need to know where each other is.

But how do we make sense of a black hole that doesn't emit light?

Fortunately, it's possible to observe the effect black holes have on the space around them.

When matter approaches a black hole, the strong gravitational field accelerates it to high speeds.

At this time, it emits an enormous amount of light.

Even objects that are far away and can't be sucked in have strong gravitational forces that still affect their orbits.

If you observe a few stars orbiting around an apparently empty space, it's probably due to the influence of a black hole.

Similarly, light passing near the event horizon has its trajectory distorted by a phenomenon called gravitational lensing.

Most of the known black holes can be broadly divided into two types.

The smaller one is a stellar (mass) black hole, with a maximum mass of 100 times that of the Sun.

It forms when a large star consumes its own nuclear fuel and its core collapses.

These have been observed as close as 3,000 light-years apart, and there may be up to 100 million tiny black holes in our Milky Way galaxy alone.

Should I worry?

maybe you don't need it

Even with a large mass, a stellar black hole has a radius of less than 300 kilometers, and the probability of a direct collision with Earth is slim.

However, because of their gravitational fields, they can affect planets from great distances, and even if they don't collide directly, they can still be dangerous.

If a typical stellar black hole were to pass by Neptune, Earth's orbit would be distorted to such an extent that it would be disastrous.

But given that stellar black holes are small and our galaxy is huge, we don't have to worry about stellar black holes.

But we also have to consider a second type, the supermassive black hole.

It has millions and billions of times the mass of the Sun, and its event horizon spans billions of kilometers.

These giant black holes got bigger by consuming matter and merging with other black holes.

Also, unlike a stellar black hole, it doesn't roam the universe.

It sits at the center of the galaxy, and our galaxy is no exception.

Our solar system is at the center of the galaxy -- in a stable orbit around a supermassive black hole -- 25,000 light years away, so we're in safe zone.

change can happen

When our galaxy collides with another galaxy, the Earth will be thrown toward the center of the galaxy, and if it gets close enough to a supermassive black hole, it will eventually be sucked in.

In fact, a collision with the Andromeda galaxy is expected to occur in 4 billion years, which is bad news for Earth.

But don't be too quick to label them as bad guys. Black holes aren't just about destroying.

It plays a major role in the formation of galaxies, the basic building blocks of our universe.

Far from being the shadowy thugs of what's happening in space, they're fundamentally contributing to making the universe a bright, shiny, wondrous place.

Let me tell you about the future of medicine.

But before that, let me also introduce you to its past.

For most of the modern history of medicine, we've been thinking about disease and its treatments in terms of very simple models.

In fact, the model is so simple that it can be summed up in six words: get sick, take medicine, kill pathogens.

Now, the reason this model prevails, of course, is because of antibiotics.

What many of you may not know is that this year marks the 100th anniversary of the introduction of antibiotics into the United States.

We all know that antibiotics have completely changed the way we treat people.

There are chemicals that come from the natural world or are artificially synthesized in the lab, that race through the body, find targets, take aim -- microbes or parts of them -- and then unlock locks and locks with astonishing dexterity and specificity.

That's how previously deadly diseases like pneumonia, syphilis and tuberculosis became treatable diseases.

If you have pneumonia, you give them penicillin, and that kills the germs and cures the disease.

It's such a compelling idea that it's easy to understand the analogy of a lock and a keyhole or to kill something, and it quickly took the biology world by storm.

It was a transformation like no other.

Over the next 100 years, we've replicated this simple model over and over again in the treatment of non-communicable diseases, chronic diseases like diabetes, hypertension, heart disease.

Yes, it worked, but it was partial.

let me explain

Think of all the possible chemical reactions that can occur in the human body, and most people think the number is in the millions.

Let's say 1 million

So the question is, "If you take any drug compound, drug, how much of this response is targeted?"

the answer is only 250

Others are still shrouded in mystery

In other words, only 0.025% of the chemical reactions that occur in the body can be targeted by this lock and key mechanism.

Human physiology is likened to a vast telephone network, with communicating nodes and communicating segments, where pharmaceutical compounds act at one corner of the network -- at the edge.

All of medicinal chemistry is like a telephone operator in the Wichita office in Kansas operating 10 to 15 lines.

How should we think about this?

What if we changed this way of thinking into something new?

In fact, nature teaches us to think about disease in a very different way, not like disease, drug, target.

The natural world is organized hierarchically upwards, not downwards, but upwards. Its composition begins with the autonomous, semi-autonomous building blocks, the cells.

These autonomous, semi-spontaneous building blocks give rise to similarly autonomous, semi-spontaneous building blocks called "organs," which collectively create "humans." Humans inhabit natural environments, and natural environments can also be said to be partially autonomous and semi-spontaneous.

And the nice thing about this hierarchical scheme, which stretches upwards instead of downwards, is that it also allows us to think differently about disease.

Take cancer for example

Since the 1950s, I've tried haphazardly to apply the lock-and-key model to cancer.

We've used all kinds of chemotherapies and targeted treatments to try and kill the cancer cells, and you know, they've worked.

diseases such as leukemia

It worked for some types of breast cancer, but over time, we began to see the limitations of this approach.

Very recently, over the last decade or so, we've started thinking about harnessing the immune system, cancer cells, nowhere else.

grow inside the human body

Could we use the body's ability to direct the immune system to attack the cancer?

This has led to some great cancer drugs.

And then, finally, there was the natural environment hierarchy, right?

We don't think cancer affects the environment.

There are examples where the environment is very cancer-prone.

it's a prison

Loneliness, depression, confinement, plus nicotine, the most potent neuroactive substance wrapped in a piece of blank paper, the most addictive substance, creates a cancer-prone environment.

But there are also circumstances that are more conducive to cancer control.

Efforts have been made to create such an environment, such as altering the hormonal environment in breast cancer.

We're trying to change the metabolic environment for other cancers.

Or take other diseases, like depression.

In the same way, up and down the hierarchy, since the 1960s and '70s, we've been desperately trying to find ways to treat depression by inhibiting serotonin and dopamine, molecules that function between nerve cells.

Now, apparently, we need to change the physiology of the organ, the brain. Rewire it, reshape it.

Is it possible to create an environment that changes depression?

What about blocking signals that trigger depression?

Let's climb up this hierarchically chained organization.

Perhaps what's really important isn't the drug itself, but the way the treatment is compared.

In the case of chronic degenerative diseases like kidney failure, diabetes, hypertension, osteoarthritis, rather than killing something, perhaps we should use the analogy of growing something.

And perhaps that's the key to reconfiguring the way we think about medicine.

Now, this idea of ​​transformation, of shifting perspectives, began with a personal incident that happened to me about 10 years ago.

About 10 years ago -- I've been running most of my life -- I went running on Saturday morning, and when I got home, I couldn't move.

My right knee was swollen and I heard that nasty bone creaking sound.

Because I can order my own MRI with the privilege of a doctor

I had an MRI the next week.

It turned out that the meniscal cartilage between the bones had completely torn, and the bone itself had shattered.

I will tell everyone who has sympathy for me

If I were to take an MRI of an audience member, I would find that 60 percent of them would have signs of bone mutations or cartilage degeneration like this.

By age 70, 85% of women will have moderate to severe cartilage degeneration.

50 to 60 percent of these men do the same.

So this is a very common disease.

The second privilege of a doctor is that he can do research on his disease.

So about 10 years ago, we brought this process of cartilage degeneration into the lab and started doing simple experiments, trying to mechanically treat this degeneration.

We've tried injecting chemicals into the knees of animals to reverse cartilage degeneration, and this very long and painful process ultimately yielded nothing.

nothing happened

And about seven years ago, a student from Australia came to study.

The good thing about Australians is that they always see the world upside down.

(Laughter) Dunn said, "Maybe it's not a mechanical problem.

It may not be a chemical problem, but a stem cell problem."

In other words, he had two hypotheses.

The first is the existence of skeletal stem cells, which form the entire spine, bone, cartilage and skeletal fibers, just as there are stem cells in the blood and stem cells in the nervous system.

Second, it's likely that this stem cell degeneration or dysfunction is responsible for a very common disease, such as osteochondroarthritis.

So it seems that where we've been looking for drugs for so long, what we're really looking for are cells.

So we changed the disease model and started looking for skeletal stem cells.

Long story short, I found these cells about five years ago.

present inside the bone

Schematic diagram and actual image

The white stuff is bone, and these red columns and yellow cells are cells that emerged from a single skeletal stem cell, and the cartilage and bone columns are made up of a single cell.

These are interesting cells, they have four properties.

One is that it exists where expected.

Under the surface of the bone, under the cartilage tissue.

Location is very important in biology.

From there, they migrate to specific locations where they become bones and cartilage.

that's the first

Next, this property is also interesting.

You can take them out of their skeletons and culture them in laboratory dishes, and they'll actively try to form cartilage.

Until now, no matter what I did, I couldn't create cartilage.

These cells are dying to make cartilage.

creates a layer of cartilage around itself

And then the third, it heals bone fractures amazingly.

This is a broken mouse bone, and it's been allowed to heal naturally.

Stem cells are almost completely repairing bone, shown in yellow, and cartilage, shown in white.

When stained with a fluorescent dye, we can observe that they act like specialized cell glues, cluster at the fracture site, act locally, and then cease activity.

The fourth is the most ominous, and that is the sudden decline in that number, from a tenth to a fiftyth of a sudden, with age.

What ended up happening was a shift in perspective.

The quest for a cure resulted in discovering a theory.

In a sense, I would say that our research was based on the following concepts: cells, animals (individuals), environment.

So the next question is, what about organs?

Is it possible to create organs outside the body?

Can cartilage (produced outside the body) be transplanted into the damaged area?

And this is probably the most interesting question, but can we go even higher up the hierarchy and create an environment?

Exercise rebuilds bones, but nobody exercises for that, right?

So, could it be possible to passively stress and relax bone to rebuild and regenerate degenerating cartilage?

A more interesting and important question is whether this model can be extended further and applied outside of medicine.

The overarching concept here is "nurture something, not kill something."

This raises the most interesting set of questions to consider about how we think about medicine in the future.

What if your medicine was a cell instead of a pill?

how would it be cultivated?

How can cells be prevented from becoming cancerous?

We've also heard about the problems of untangling cell proliferation.

Is it possible to put a suicide gene into those cells and put a stop to it?

Is it possible that the "medicine" is an organ that is generated outside the body and then transplanted?

Can degeneration be stopped by that?

What if organs needed memory?

In neurological diseases, there are examples where organs have memories.

How can those memories be brought back with a transplant?

Can organs be stored?

Do organs have to be uniquely generated for each individual and put back into the body?

And the hard question is, can the environment be the medicine?

Can the environment be patented?

In all cultures, sorcerers have used the environment as medicine.

Can you imagine such a future

I started with the disease treatment model, so

Let's wrap up by talking about model building.

That's the natural thing to do as a scientist.

When an architect makes a model, he shows a model of a world.

But when a scientist makes a model, he or she is giving an analogy to the world.

and try to create new perspectives

So the former is a shift in magnitude, but the latter is a shift in perspective.

Antibiotics have brought about such a shift in perspective that over the past 100 years has completely colored and twisted the way we think about medicine.

But we need new models for future medicine.

that's what's important

It's often said that the reason we don't have a revolutionary, impactful treatment for a disease is because drugs aren't powerful enough yet.

But the real reason is that the idea of ​​medicine isn't strong enough yet.

It's certainly great when new drugs come out.

But it's these three concepts that are fundamentally important: mechanism, model, and metaphor.

thank you

(Applause) Chris Anderson: I really liked that analogy.

how does that connect?

There's a lot of talk in the tech world about personalized medicine. With so much medical data, will future treatments be more specific to who you are, what your genetics are, and how you're feeling at the moment?

Can they also be applied to your model?

Siddhartha Mukherjee: Interesting question.

Yeah, we've also thought about personalizing medicine, based on genetics.

Genes, again, in today's medicine, I think this is a powerful metaphor, and I think genes bring about the personalization of medicine.

But of course, genes are the bottom of the long chain of human existence.

The "minimum organized unit" is the cell

So if we're going to offer anything to medicine in this way, we have to think about personalizing cell therapy, then personal organ therapy, and ultimately personalizing the environment around us.

So at every stage, this metaphor is at the heart of it.

Personalization comes with everything

Chris: When you say that the drug could be your cells, it's not a pill, it could be your own cells, right?

Siddharda: Absolutely. Chris: It will be converted into stem cells - probably tested and prepped for all sorts of drugs and stuff.

Siddhartha: And this is what we actually do.

It's actually happening, and instead of moving away from genetics, we integrate it into multidimensional, semi-spontaneous, autonomous systems of cells, organs, environments.

Chris: thank you

Siddhartha: Thank you very much.

This twin dome was born from a radically opposite design.

One made from thousands of steel parts, the other from a single silk thread.

The former is artificial, the latter is organic.

The former interrupts nature, and the latter creates nature.

The former was designed for nature, the latter was designed by nature.

Michelangelo said he saw a statue trying to break loose in the pristine marble.

The chisel was his only tool

But living things are not created by sculpture,

it will grow

Our cells, the smallest units that make up our lives, contain all the information we need to function and replicate.

There are also side effects of using tools.

Since the Industrial Revolution, the world of design has been dominated by manufacturing and monolithic mass production.

The assembly line created a world of parts, narrowing the imagination of designers and architects to seeing things as made up of parts, each with its own function.

But nature is not made up of homogenous substances.

Let's take human skin as an example.

Our facial skin is thin and has large pores.

But the skin on the back is thicker and has tiny open pores.

One side acts as a filter, the other side acts as a barrier, and yet they're both the same skin, not put together piece by piece.

This is a mechanism in which its function gradually changes as its elasticity changes.

This split screen represents my split view of the world, the split personalities of contemporary designers and architects: chisels and genes, machines and organisms, assembly and growth, Henry Ford and Charles Darwin.

These conflicting worldviews, my left brain and my right brain, split and integrated, they appear on two screens behind me.

My job, at its most straightforward, is to gradually move away from the world of connecting and assembling these two worldviews and into the world of growth.

You're probably wondering why now?

Why couldn't we do that 10 years ago, or even 5 years ago?

We live in a very unique time in history, because four disciplines come together to give designers tools they've never had before.

These are computational design, which designs complex shapes with simple code; additive manufacturing, which designs the properties of materials to the very smallest level; and synthetic biology, which designs new functionalities by editing DNA.

My team is creating at the intersection of these four realms.

Let me introduce you to the ideas and techniques of my students.

We create objects, products and structures of all sizes, from mobile, 24-meter-diameter robotic arms that one day will be able to print buildings themselves, to nanoscale graphics from genetically engineered glow-in-the-dark microbes.

We used mashrabiya, the archetype of the old Arab architectural style, as the base of our design, and created screens with windows of different sizes so that we could control the light and heat passing through them.

In my next project, I experimented with a cape and skirt for Iris van Herpen's Paris fashion show, which was like a second skin made from a single piece, with a stiff contour and a flexible waist.

Together with one of our longtime 3D printing collaborator, Stratasys, we created this cape and skirt with no seams between cells.

This helmet combines hard and soft materials on a scale of 20 microns.

This is the thickness of human hair and

Similar to CT scanner resolution

Designers can use high-resolution analysis and integrated design tools to not only fit the body, but also design for the characteristics of the body's tissues.

Next, we created a soundproof chair, a chair that's structured and comfortable, and that also absorbs sound.

Together with my colleague Professor Carter, we took inspiration from nature and designed a non-uniform surface pattern that would have a sound dampening effect.

Based on 44 different properties, the surface of this chair was printed with varying degrees of hardness, transparency and color, depending on where the force of the body is applied.

The surface of this chair, like our bodies, changes from place to place. Instead of adding new materials or assembling them, it is itself a continuous, gradual and subtle change in the properties of the material.

But is nature ideal?

Do parts not exist in nature?

I didn't grow up in a religious Jewish family, but when I was young, my grandmother would quote stories from the Jewish Bible, and one of them stuck with me deeply, and probably influenced my values.

My grandmother said: "On the third day of creation, God commanded the earth to grow fruit-bearing trees."

I don't think there was any need for this first tree to have a trunk, a branch, a leaf and a fruit.

the whole tree would have been fruit

Instead, the earth grew trees with trunks, branches, and flowers.

The earth created a world made up of parts.

I often ask myself, "If an object were made up of just one part, what would it look like?

Can we go back to a better origin of creation? ”

So we found an object that looked like that biblical fruit-bearing tree.

The second most abundant biopolymer is called chitin, and hundreds of millions of tons of chitin are produced each year by shrimp, crabs, scorpions and butterflies.

I thought that if we could tune the properties of this material, we could create structures that are one part but have multiple functions.

so i tried

First, I called Regal Seafood -- (Laughter) -- and I ordered a bunch of shrimp shells, and they ground them up to create a paste of chitosan.

By varying the chemical concentration, we were able to create a diverse range of properties, from dark, hard, opaque materials to light, soft, transparent materials.

To 3D print this structure at scale, we created a system that ejects multiple mechanically controlled nozzles.

This robot changes the properties of materials in an instant, creating structures as long as four meters out of one material, and it's completely recyclable.

When the parts are finished, they are allowed to dry and naturally take shape in contact with the air.

No more plastic

The bubbles created during the printing process were enveloping photosynthetic microbes that first appeared on Earth 3.5 billion years ago, and this is something we only recently discovered.

With collaborators at Harvard and MIT, we implanted it with bacteria genetically engineered to quickly take up carbon from the atmosphere and convert it into sugar.

For the first time, we were able to create a structure that seamlessly transitioned and connected from beams to meshwork, and could be made as large as a window.

It is a "fruit tree"

Using an ancient material that first appeared on Earth, with lots of water and a little bit of tweaking in synthetic biology, we were able to turn a shrimp shell structure into a tree-like structure.

And the most amazing thing is that we were able to design a material that biodegrades, so that when you put it in the ocean, it feeds the marine life, and when you put it back in the soil, it feeds the trees.

Our next adventure using this design principle was in the solar system.

I even thought about developing clothes that would serve as a life support system for interplanetary voyages.

To do that, we need to store microbes and manage their movements.

We created our own symbolic table of elements, like the symbolic table of the elements, where new life forms were calculated to grow, to be additive, to grow biologically.

I think of synthetic biology as liquid alchemy, and instead of creating precious metals, we're synthesizing new biological functionalities into very tiny channels.

This is called microfluidic technology

We 3D printed channels to control the flow of this fluid microbial community.

In the first clothes I made, I combined two microbes.

The first was the blue-green algae that lived in the sea and freshwater lakes.

Next is E. coli, which lives in the human intestine.

The former converts light into sugar, the latter consumes sugar and produces green biofuels.

These two microbes never mix in nature.

I never actually met

Now, for the first time, it's been remade in this way, and it's related to each other in clothing.

Think of it as evolution by design, not by natural selection.

To maintain this relationship, we created channels similar to those in the digestive tract, allowing these microbes to move back and forth and their functionality to vary from place to place.

Then, depending on the desired functionality, they changed the properties of the material and grew these channels on the surface of the human body.

We added more transparent channels where we wanted photosynthesis.

This wearable digestive system is 60 meters wide when fully extended.

It's half the length of a football field and ten times the length of our small intestine.

And here at TED, we're seeing it for the first time, the first photosynthetic wearable material, the channels that carry the fluids inside the garment, and it's glowing with life.

(Applause) Thank you.

Novelist Mary Shelley said, "Human beings are half-finished, incomplete creatures."

I said, what if design could fill the other half?

What if we could create structures that could augment living organisms?

What if you could create a personalized microbial community that could scan your skin, repair damaged tissue, and sustain your body?

It's a kind of biotechnology, for example.

Wanderers is a collection named after planets, and for me it's less about fashion than about thinking about the future of our race on Earth and in other planets, tackling a lot of mysteries with scientific insight, and giving us the opportunity to move beyond the age of machines into a new era in which our bodies, the microbial products we grow, and even the architecture, coexist.

I call this material ecology

For this you always have to go back to nature

We all know that 3D printing involves printing layers of material on top of each other.

that it is impossible in nature

Nature grows It adds in sophisticated ways

This silkworm cocoon, for example, creates a very sophisticated structure and undergoes metamorphosis in it.

None of the current additive manufacturing technologies have reached this level of sophistication.

Silkworms do this not with two materials, but with two different concentrations of protein.

One creates the skeleton, and the other acts like a substrate, or glue, that holds the fibers together.

This is done at any scale

The silkworm first conforms to its environment, creating a structure with tension, then spinning a compressible cocoon.

Tension and compression, the two forces of life, appear in one material.

To understand how this complex process works, we attached tiny magnets to the silkworm's spinneret.

By placing silkworms in a box together with a magnetic sensor, we created a three-dimensional cloud-like image made up of dots and visualized the complex structure of the cocoons made by the silkworms.

I've noticed that when silkworms are placed on a flat surface instead of in a box, they spin flat cocoons and still undergo healthy metamorphosis.

So I designed different environments and skeletons and discovered that the cocoon's shape, composition, and structure are directly influenced by the environment.

The silkworm is boiled in its cocoon and dies in the process of unraveling the silk and using it in the textile industry.

We realized that by designing these templates, we could shape the raw silk without killing the silkworms.

(Applause) Silkworms are able to metamorphose in a healthy way and produce these things.

So we extended this process to the scale of buildings.

First, a robot spun a template out of silk and laid it out.

Silkworms prefer dark, cool places, so I used a diagram of the sun's path to figure out how light and heat hit this structure.

Then, we made holes and windows to fix the light and heat, and arranged the silkworms on the skeleton.

Now it's time for silkworms

Order 6,500 silkworms from an online silkworm farm

After four weeks of feeding the silkworms, they were ready to spin silk.

We carefully lined up the silkworms along the bottom edge of the skeleton. They spin silk, pupate, mate, lay eggs, and life repeats itself just like ours, but in a much faster cycle.

Buckminster Fuller said, "There is tension in perfection," and he was right.

The silkworms completed this pavilion, spinning organic silk onto machine-made silk.

Over the course of two to three weeks, 6,500 silkworms spun 6,500 kilometers.

It's an interesting balance of numbers, but it's also the length of the Silk Road.

Silkworms lay 1.5 million eggs in their lifetime

This is enough for 250 pavilions

Let's go back to the two worldviews.

One spins silk from a machine arm, and the other fills in the gaps.

If the goal of design is to bring products and buildings to life and sustain a two-material ecology, designers must integrate these two worldviews.

This brings us to the beginning of the story.

A new era of design has arrived, a new era of creation, which has evolved from nature-inspired design to design-inspired nature.

thank you very much

(Thank you for applause

(applause)

(Guitar playing) I was thinking I missed you for so long In my tired head I just want our love Then my feelings grow stronger And I... I was just thinking, I was just thinking, This boat is sinking Tired of postcards, especially those with cute dogs and angels Tired of calling you, missing you, dreaming of sleeping with you Tired of calling you, missing you, dreaming of sleeping with you Don't get me wrong, I still love you so much In this tired head, I'm just our love But I was just thinking, thinking, I was just thinking I was thinking long distance bills instead of kissing you Still time goes by If I wait for you more my thoughts get stronger thank you

singing is sharing

When you sing, you need to know what you're talking about, and be willing to share it and give a piece of yourself.

I always look forward to these kinds of sharing, so I listen to the stories behind architecture, products, restaurants and cuisine

If your goal is to impress people or get a big round of applause at the end, that's receiving, not giving.

That's what this song is about.

It's a song called "Home."

(Laughter) (Applause) (Playing the piano) Hometown is the early morning bird chirping Hometown is the song that's always in my heart Hometown is the memory of the day I went to school for the first time Hometown is the book I always carry with me A street in a city far away Hometown is where I've been and where I want to visit Hometown I can always relax No matter where I wander I always find the way home No matter how far I go Feathers, home is the flowers by the window Home is everything she told me Home is the picture I never let go Home is the smile on my face when I'm dying Home is the taste of apple pie I met a woman who lived in the same place all my life Home is where I was born and raised She said I met a man sitting looking at the sea Home is where he wants to be there I told her why didn't we meet

She said I've always been looking for my place I can always relax No matter where I wander I always find my way home No matter how far I go I always miss you like this No matter where I am

In my lab, we're building autonomous flying robots like the one you see here.

It doesn't have GPS, unlike the drones you see in stores today.

Without GPS, it would be difficult for a robot like this to locate itself.

In the case of this robot, it scans its surroundings with onboard sensors, cameras, and laser scanners.

It senses things around it and uses triangulation to figure out where it is relative to them.

You can put all that data together and build a map like the one you see behind.

Now that we have a map like this, we can see where the obstacles are, and the robot can fly without colliding.

The next thing I want to show you is a series of experiments that we did in our lab that let this robot fly longer distances.

On the top right is the image captured by the robot's camera.

On the main screen - which I'm showing you at 4x speed - you can see the map building.

Here's a high resolution map of the corridors around the lab.

I'm about to walk into the lab, and you can tell by the mess that it's all —

(Laughter) The most important thing to emphasize here is that these robots can create maps at a resolution as high as five centimeters, so that someone outside a lab or building can throw these robots at them and guess what's going on inside without actually going inside.

There's a problem with robots like this.

The first problem is that it's big.

It's big, so it's heavy

Consumes approximately 200 watts of electricity per kilogram

so i can't work too long

The second problem is that the laser scanners, the cameras, the CPUs in the robots are very expensive.

So the cost of the robot jumps up.

So we asked ourselves, are there inexpensive, lightweight products with sensors and CPUs that consumers can buy at the electronics store?

That's how flying mobile phones were born.

(Laughter) This robot uses a Samsung Galaxy phone, which you can buy off the shelf, and you can download the app from the App Store.

This robot is reading the letters "TED" right now, finding the corners of the "T" and the "E", triangulating and flying autonomously.

The joystick is for when the robot goes out of control, and in that case Giuseppe will stop it.

(Laughter) We're not just building little robots, we're also experimenting with making them do these kinds of violent movements.

This robot moves at a speed of two to three meters per second, and when it changes direction, it performs rapid up-and-down and rolling motions.

The important thing is that these little robots can move quickly and navigate well in challenging environments.

In the next video, I'm going to show you how a bird like an eagle can catch prey in the water with its graceful coordination of wings, eyes and legs, so our robots can also catch fish.

(Laughter) Out of nowhere came a cheese and steak roll sandwich.

(Laughter) This robot moves at about 3 meters per second, which is faster than a human can walk, and it's arm, claws and flight are perfectly timed to achieve this behavior.

In another experiment, we're going to show you how a robot, weighted down by a string that's longer than the width of the frame, successfully crawls through the frame.

To accomplish this, you have to swing the weight by moving up and down and adjusting the altitude.

But I would love to be able to make something smaller, especially inspired by bees.

This is a video played in slow motion, but the bees are very small, and they have very little inertia.

This is a small robot that mimics the behavior of a bee.

The smaller it is, the less inertial force it has, so it's convenient.

So when the inertia is low, -- (robots buzzing around) (Laughter), when the inertia is low, it's more resistant to collisions.

it means it will be stronger

That's why we build little robots like bees.

It weighs only 25 grams

Power consumption is only 6 watts

Can go up to 6 meters per second

A Boeing 787 the size of that would be 10 times faster than the speed of sound.

(Laughter) Let me give you an example.

This is probably the first mid-air collision test, and I'm showing it at 1/20 speed.

The relative velocity (between the robots) is 2 meters per second, which illustrates the basic principle I talked about.

A two-gram carbon fiber cage that protects the airframe keeps the propellers from tangling, shocks are absorbed, and the robot is crash-ready.

Small also means safe

In the lab, we've built robots like this, starting with big robots and moving on to smaller ones.

If you take a histogram of the number of bandages that the lab has ordered so far, you'll see that it's getting smaller and smaller.

because robots are getting safer

Being small has its drawbacks, and nature has evolved ways to compensate for these drawbacks.

It's basically about forming groups and herds.

In our lab, we've also tried a bunch of artificial robots.

This is a fairly difficult technology, because we have to consider the network between robots.

We have to think about how each robot's sensors, communications, and calculations work together. Controlling and managing this network is really troublesome.

We can develop control algorithms by emulating the three principles of (self)organization from nature.

The first idea is for the robot to recognize nearby individuals.

It must be able to recognize neighbors and communicate with each other.

This video shows the basic principle

We have four robots, one of which has been literally hijacked by a human operator.

The robots interact with each other and are aware of nearby individuals, so they follow their movements.

In this example, a single human is leading a following robot.

Not every robot knows where to go

It's just reacting to the position of nearby robots.

(Laughter) The next experiment demonstrates the second principle of organization.

This principle is related to the principle of anonymity

The basic idea here is that the robot doesn't discriminate between neighboring individuals.

When commanded to form a circle, each robot simply responds to the robot next to it, no matter how many robots form the formation, or how many are removed.

They're told to form a circle, but they're only coordinating with the robots next to them, they're not forming a formation under central control.

Bringing these ideas together gives us a third idea, which is to give the robot a mathematical description of the shape of the formation.

Shapes change over time, and as you can see, it starts out as a circle, forms a rectangle, then spreads out into a straight line and then back to an ellipse.

Like swarms in nature, they achieve these things through moment-to-moment coordination.

Why are you studying herds?

There are two applications that we're very interested in.

The first is about agriculture, which is arguably the biggest problem we face in the world.

As we all know, one in seven people in the world is malnourished.

Most of the arable land has already been cleared.

In today's world, many systems are becoming more efficient, but agricultural production is becoming less efficient.

The causes are probably water shortages, crop diseases, climate change, and other reasons.

What can robots do?

In this field, I tried to incorporate a method called precision farming.

The basic idea is to fly a robot through an orchard and build a detailed model of each individual tree.

By creating models of individual trees, like personalized medicine for each patient's genetic makeup, farmers can learn what each tree needs -- in this case, things like water, fertilizers and pesticides.

A robot is flying through an apple orchard. Immediately to the left, you can see two fellow robots doing the same thing.

While making a map of the orchard

Mapping each tree in the orchard.

(boom) let's take a look at that map

In the next video you can see footage from the camera mounted on the robot.

Upper left is normal color image

The left center is an infrared image.

The bottom left is from a thermal camera

In the middle panel, you can see how the trees in the orchard are reconstructed in three dimensions as each sensor passes through the trees.

You can do a lot with this information.

The first, and perhaps most important, is a very simple thing: count the number of fruits on the tree.

This allows farmers to know how many fruits each tree will produce, estimate the yield of the entire orchard, and optimize the production and marketing channels.

The second possibility is to take a tree model, reconstruct the three-dimensional shape, and then extrapolate the crown area from that to get the leaf area per unit of land.

This is called the Leaf Area Index

The Leaf Area Index is a measure of how much photosynthesis each tree is doing, which indicates the health of an individual tree.

Combining the visible and infrared data allows us to calculate indices such as the normalized vegetation index.

In this example, you can see that some crops are doing worse than others.

This is not just in normal visible light, but in a combination of visible light and infrared imagery, making it easier to identify.

And finally, what we're interested in is the early detection of yellowing in plants. This is an orange tree, and the leaves are turning yellow.

By flying a robot up in the sky, this can be easily detected automatically, and alert the farmer that there is something wrong with this area of ​​the orchard.

A system like this is very effective, and we can expect a 10 percent increase in yield, but more importantly, we can use flying robots to reduce resource inputs, like 25 percent less water.

And finally, I'd like to give a round of applause to these guys who are creating the future: Yash Murugankar, Sikan Liu and Giuseppe Roiano, for creating the three demos you saw.

Thank you

(applause)

A broad forehead, disheveled black hair, a morbidly pale expression of deep intelligence and a weary look that can be read from the dark, sunken eyes.

The image of Edgar Allan Poe is not only instantly recognizable, but perfectly consistent with Poe's reputation.

A prisoner strapped under a pendulum with a sharp blade Crow refusing to leave his master's chamber Paw's chillingly inventive gothic horror has influenced literature through the ages.

But is that fact alone what makes Edgar Allan Poe one of the great American writers?

Horror, after all, was a popular genre at the time, and many writers wrote about it.

But Poe excelled because he was obsessed with form and style.

As a literary critic, Poe found two golden rules for the form of short stories: they should be short enough to be read in one go, and each word should have a purpose.

By mastering this cardinal rule, Poe captured the reader's attention and responded by providing an intense and bizarre experience: what Poe called "uniformity of effect."

It's often horrifying, but the effect is far more than terrifying.

Poe's work uses violence and terror to explore the paradoxes and mysteries of love, suffering and guilt, while resisting simplistic explanations and clear moral arguments.

While alluding to an element of mystery, the true darkness the story explores is the human mind and its tendency to self-destruct.

In "The Tell-tale Heart," he attempts to commit a gruesome murder, but the killer also shows pity for the victim, but that empathy soon reverts to possessing the victim.

In the novel Ligeia, the eponymous protagonist rose from the dead through the corpse of her husband's second wife, or at least the opium-addicted narrator thinks so.

When the protagonist of "William Wilson" got into a violent confrontation with the man he thought was following him, he might just be staring at himself in the mirror.

Through the pioneering technique of an unreliable narrator, Poe encouraged the active participation of the reader, who must decide when the narrator was wrong or lying about the event.

Poe is best known for his short horror stories, but he's actually one of the most colorful and experimental novelists of the 19th century.

Poe created the detective novels we know and love, followed by The Murders in the Rue Morgue, followed by The Mystery of Marie-Roger and The Stolen Letter.

Poe wrote satires of society and literary trends, sometimes deceiving people with what seemed like science fiction.

They include the story of a balloon trip to the moon and the story of putting a dying patient in a trance by hypnosis, so you can tell the story from the other side.

Poe also wrote an Antarctic adventure novel and a paper on astrophysics, all while working as an editor, producing hundreds of pages of book reviews and literary theories.

No assessment of Poe's career would be complete without telling him his poetry, which is both unsettling and hypnotic.

Poe's most famous poem is a lament, which he called "a gloomy and endless mourning."

Despite being a successful novelist, he lived in poverty, and his private life was often as bleak as his novels.

I was tormented by my mother and wife, who died of tuberculosis at the age of 24.

Poe struggled with alcoholism and was frequently antagonized by other popular authors.

Most of his reputation came from posthumous - very loosely - adapted works.

Nonetheless, if you can see just how much fun and excitement his work has brought generations of readers and writers alike, it might put a smile on that famously brooding face.

Do you think the world will be better next year?

What about 10 years from now?

In 15 years, will we be able to end hunger, achieve gender equality and stop climate change?

Governments around the world claim it's possible

Over the past few days, world leaders gathered at the United Nations Headquarters in New York to adopt new global development goals for 2030.

It's something like this, this goal is the result of a lot of consultation.

This is what we human beings should ideally look like.

This is the plan, but is it possible?

Is this vision for a better world really achievable?

I'm here today because I've done the math, and surprisingly, the answer to that question is "it's possible."

It's just not possible right now

Now, the idea that the world will be better may seem a little unrealistic.

I watch the news every day and it seems like the world is going backwards instead of forwards.

Let's be frank, it's easy to be suspicious of grand statements made by the United Nations.

But I want you to put that suspicion on hold for a moment.

In 2001, the United Nations adopted another goal, the Millennium Development Goals.

The main aim is to halve the number of people living in poverty by 2015.

The baseline for this goal was 1990, when 36 percent of the world's population lived in poverty, with the goal of 18 percent by 2015.

Have we reached our goal?

no on the contrary

I have exceeded my goal

The global poverty rate will drop to 12 percent this year.

But it's still not enough, there are still many problems in the world.

But the pessimists who say, "The world won't get better," and the ominous prophets are wrong.

So what is the reason for this success?

much of it is due to economic growth

Countries that have seen significant declines in poverty rates include China and India, where economies have grown rapidly in recent years.

Can we repeat the same success?

Can economic growth achieve this international goal?

To answer this question, we need to assess the current world in terms of international goals and find out how much work remains to be done.

But it won't be easy, because the global goals are not only ambitious, they are also very complex.

17 goals with 169 targets and literally hundreds of indicators.

And goals can be very specific, like "no hunger," but they can also be much more vague, like "realize peaceful and inclusive societies."

So I'd like to use a tool called the "Social Progress Index" to help with the assessment.

This metric will allow us to measure all the goals of the global goals, combine them into a single number, measure them, and track progress over time.

The Social Progress Index basically asks three essential questions about society.

First, do all people have the essentials for survival: food, water, shelter and security?

Secondly, are all people provided with education, information, health or a sustainable environment as the basis for a better life?

And finally, are opportunities for a better life guaranteed to all through rights, freedom of choice, freedom from discrimination and access to the world's most advanced knowledge?

The Social Progress Index takes 52 indicators and adds them all together to give you an overall score on a scale of 0 to 100.

What we've learned from this is that there's a lot of variation in outcomes in today's world.

The best performer, Norway, has a score of 88.

The worst-performing Central African Republic scored 31

If we aggregate all the countries and weight them according to their population differences, the global average score is 61.

Specifically, on average, humans live at roughly the same level of social progress that Cuba and Kazakhstan are living today.

This 61/100 is where we are now.

So how do we reach our international goals?

Yes, the goal is pretty ambitious, but it's not as much as "turn the world into Norway in 15 years."

Looking at the numbers, and guessing, a score of around 75 would be considered a major step forward for humanity, and we'd be able to see that we've achieved the international goal.

This is our goal, 75/100.

Can it be achieved?

The Social Progress Index helps us predict that, because, as you may have noticed, it doesn't include economic indicators. Its model doesn't include either GDP or economic growth.

It helps us understand the relationship between economic growth and social progress.

Let me show you in this diagram

The vertical axis shows social progress, what the international goals are trying to achieve.

it's better up there

And the horizontal axis is GDP per capita.

the one on the right is richer

In this diagram, we're going to put all the countries in the world as dots, and then draw a regression line on top of that to show the average relationship.

What this tells us is that the richer we are, the more advanced society tends to be.

But the richer we get, the less social progress we make relative to the increase in GDP.

Now we can use this information to make predictions.

This is the world as of 2015

It has a social progress index of 61 and a per capita GDP of $14,000.

And don't forget, we're aiming for the global goal of 75.

The current situation is $14,000 in GDP per capita.

So how rich will we be in 2030?

this is what you need to know next

The best forecast we know of is from the U.S. Department of Agriculture, which says that over the next 15 years, the global economy will grow by an average of 3.1 percent.

The question here is, how far will society progress when we get that rich?

I asked economists at the accounting firm Deloitte, and after looking at and processing a huge number of numbers, they came up with the answer, "When the average global wealth goes from $14,000 to $23,000 a year, the Social Progress Index increases from 61 to 62.4."

(Laughter) Only 62.4, just a small increase.

this feels a little weird

The fight against poverty seems to benefit from economic growth, but it seems to be less effective when it comes to achieving international goals.

What is going on?

There are two reasons in my opinion.

One is, in a sense, we are victims of our own success.

The days of easy profit from economic growth are over, and we're headed for more difficult times.

And, of course, economic growth comes with costs as well as benefits.

There are costs to the environment and costs from emerging health problems like obesity.

this is bad news

We cannot reach our international goals by simply becoming rich.

Is it correct to be pessimistic?

maybe not

Because the Social Progress Index also looks very good.

Let's go back to the regression line

This shows the average relationship between GDP and social progress, and it's the basis of our previous prediction.

But, as you've seen, there's actually a lot of noise around the trend line.

And what's clear from that is that GDP is not destined.

Some countries are lagging behind in social progress relative to their prosperity.

Russia has a lot of natural resources, but it also has a lot of social problems.

China's economy is booming, but it hasn't made much progress on human rights or environmental issues.

India has a space program, but millions of people don't even have a toilet.

On the other hand, some countries are much more socially advanced than their GDP.

Costa Rica prioritizes education, health and environmental sustainability, resulting in a modest GDP but a very high level of social progress.

Costa Rica is not alone

From a poor country like Rwanda to a rich country like New Zealand, we can see that even a modest GDP can achieve great social progress.

This is very important, and you can see two things from this.

First, we already have solutions to many of the problems that the global goals seek to solve.

And we also know that we are not slaves to GDP.

What matters is what you choose. If you put people's well-being first, you can make more progress than GDP predicts.

How much? Will it meet the international target?

Let's check the numbers

What we already know is that the world's social progress score is currently 61, and the target score is 75.

If we rely solely on economic growth, we can achieve 62.4.

So let's assume that countries that are currently lagging behind in terms of social progress, like Russia, China, and India, have improved to average.

How much progress will society make?

score will be 65

This is a little better, but there's still a long way to go

So let's be a little more optimistic and say, what if all nations threw a little bit of happiness around their wealth?

then we'll reach 67

Think more boldly

What if all the countries in the world aspired to be like Costa Rica? What if we used our wealth for the welfare of our people and prioritized human well-being?

At that point, we're almost at 73, a little closer to the international goal.

Will we meet our international goals?

If it's the same as before, it's definitely impossible

Even with massive economic growth, if it only feeds the ultra-luxury cruisers and the ultra-rich and leaves the rest behind, it won't hit the mark.

Achieving international goals requires a different approach.

We need to prioritize social progress and evaluate solutions around the world.

I see this global goal as a historic opportunity, because world leaders are committed to achieving it.

Let's not dismiss this goal or be pessimistic. Let's make leaders keep their promises.

To keep their promises, hold them accountable and track their progress for the next 15 years.

And finally, I'm going to show you how to do that: the Citizen's Report Card.

Citizen report cards bring all the data together in a simple framework that we've grown accustomed to since school days, and hold them accountable.

On this report card, we'll grade our performance on the global goals from A to F, where F is humanity at its worst, and A is humanity at its best.

Right now, our global grade is a C-minus.

Because international goals are all about getting A's, we're going to update our citizens' report cards for the world and nations every year, and have leaders explain to them how they can achieve these goals and keep their promises.

To achieve the global goals, we and our leaders have to change our ways, and that requires us to push for change.

So stop maintaining the status quo

let's find a different way

And let's choose the world we want

thank you

(Applause) (Bruno Giussani) Thank you, Michael.

I have just one question. The Millennium Development Goals were set 15 years ago and were supposed to apply to all countries, but they were actually kind of a scorecard for emerging economies.

On the other hand, it's clear that this new international goal is universal.

This goal calls on all countries to take action and make measurable progress.

Now, how can you, as a citizen, use this report card to create pressure to act?

(Michael Green) This is a really important point. The priorities have changed so much that it's not just about poor countries or just poverty anymore.

relevant to all countries

All countries will face the challenge of meeting international goals.

It's hard for you to tell, but even Switzerland needs to work.

That's why in 2016 we're creating a report card for every country in the world.

That way you can really see the progress.

Rich countries will not be all A

I think that's where the focus becomes clear for the first time, and where people want action and progress.

(Bruno) Thank you very much.

(applause)

A stout miller, drunk to the point of falling off his horse, ramblings about the wild wife of a bigoted old carpenter and his mistress, a student.

In order to make time for just the two of them, the mistresses come up with various schemes, pretending to be insane, and lying when Noah's flood comes, and even exposing their buttocks to others.

The church clerk, too, is lustful for the carpenter's wife, and every night he comes to her window and sings.

A disgusted woman tries to drive him away, sticks her butt out the window and kisses him.

It didn't seem to work, so the student decided to fart in the same outfit, but this time he was waiting with a red-hot poker—

It may sound like a sleazy comedy, but this is part of "The Canterbury Tales," one of the most acclaimed stories in the history of English literature, where the lofty and the base mix.

The work consists of 24 stories, each told by one of Chaucer's vibrant characters.

The narrators include the familiar knights, scholars, and nuns of medieval tales, as well as the lesser-known butlers and caterers.

The story is written in Middle English, which looks very different from modern English.

It was used from the 12th to the 15th century, and evolved from Old English as contact with Romance languages ​​increased after the Norman Conquest of 1066.

Much of the Middle English alphabet has remained the same, but some letters have become obsolete, such as yog (ȝ), which represented the sounds y/j/gh.

The story's chatty characters meet at the Tabard Inn in Southwark.

They were all pilgrims of Canterbury on their way to the shrine of the martyred Archbishop St. Thomas Becket.

The inquisitive and gossip-loving innkeeper offers a feast to whoever tells the funniest story.

They were people who would never have been involved without the pilgrimage.

This is because medieval society followed a feudal system, which separated the clergy and aristocrats from the working class, the peasants and serfs.

In Chaucer's time, professional classes such as merchants and intellectuals also emerged.

Chaucer spent most of his life as a government official during the Hundred Years' War, traveling between Italy, France and his native England.

This may have influenced his work on a wider scale, and in stories, any social class is subject to ridicule.

Chaucer uses a peculiar narrative for each character: the vulgar banter of the cook, the somber narration of the priest, the lofty ideals of the squire—and the worldview of such.

The variety of dialects, story genres, and metaphors make this work a vivid record of the many forms of entertainment that people in the Middle Ages had.

For example, tales of knights are recurring courtly love affairs, chivalry, destiny, and romance, while tales of working-class narrators are often comedic, full of obscenities, sexual deviations, and slapstick comedy.

Because of this variety, everyone can find something they like, which is why the book continues to be read by so many people in Middle English and modern translations.

The story is 17,000 lines long, but it's not complete.In the introduction, 29 pilgrims are introduced, each of whom is supposed to tell four stories, and the innkeeper never picks a winner.

Maybe Chaucer was so engrossed in his own extravagant creation that he put off picking a winner, or maybe he liked all the characters so much he couldn't choose.

Whatever the reason, it's up to the reader to decide whose story is the best.

Trees with languid branches, rusty gates, chipped tombstones, lonely worshipers, and cemeteries are images that come to mind.

But not so long ago, many burial grounds were busy places, with flowering gardens and crowds of people walking among the gravestones.

How did the cemetery become the place it is today?

Some of the cemeteries are centuries old, including Wadi al-Salaam, one of the largest in the world, where five million dead people are buried.

But many of the places known as cemeteries are recent establishments.

After all, we haven't buried bodies for a long time in human history.

In ancient times, there were many other ways to say goodbye to a dying loved one.

Sometimes the corpse was placed in a cave, sometimes in a tree or on top of a mountain.

They were also drowned in lakes, buried at sea, ceremonially eaten, and cremated.

All those customs, even though they might seem strange today, were ways of honoring the dead.

On the other hand, the first corpses were buried about 120,000 years ago, probably in a way that was only for sinners, and not in the usual way of honoring the dead.

But the first burial proved to have some advantages over other methods: burial protected the corpse from carnivorous animals, the elements, and prevented me from watching my loved one's corpse decompose.

These benefits seem to have changed the way ancient people thought about where to bury their dead, and corpses began to be buried more often.

Daily necessities and ceremonial objects can be found in burial sites, and it is believed that there is an afterlife where the dead need such tools.

The practice of communal burial originated in North Africa and West Asia, about 10,000 to 15,000 years ago, around the same time that the first customs of permanent residence began in that region.

The place where the bodies were buried was eventually established as a place to mourn the dead.

The Scythians, a nomadic equestrian people, built burial mounds called kurgans throughout the steppes.

The Etruscans built vast cemeteries in which tombstones were arranged to create a grid of passageways.

In Rome, underground cemeteries, known as catacombs, were used to store urns containing cremated remains, as well as the intact remains themselves.

The term cemetery, or "sleeping room," was first used when the ancient Greeks built tombstones on the outskirts of Greek cities.

In medieval European cities, the rare airy plazas within the precincts of Christian churches were offered as resting places for the dead, and markets and fairs were also held there.

Cowherds even let their cows graze, believing that it would make the milk sweeter Occasionally, cowherds would even make their cows graze, believing that it would make the milk sweeter

As cities grew with the Industrial Revolution, the churchyards in the city became too small and were replaced by large cemeteries in the suburbs.

Cemeteries, such as the 450,000-square-meter Pere Lachaise Cemetery in Paris and the 300,000-square-meter Mount Oban Cemetery in Cambridge, Massachusetts, were gardens full of beautifully planted flowers and trees, carved stones and ornate tombs.

Building identifiable tombs used to be a luxury and privilege of the wealthy and powerful, but building an identifiable tomb used to be a luxury and privilege of the wealthy and powerful, but it has become affordable for the middle and working class.

People visited cemeteries not only for funerals, but for anniversaries, holidays, or just for picnics in the early afternoon.

By the end of the 19th century, as parks and botanical gardens began to pop up, visits to cemeteries began to decline.

Today, many of the old cemeteries are deserted.

Cemetery tours, concerts, and other events attract people Some cemeteries attract people, such as cemetery tours and concerts

But as we rejuvenate old cemeteries, people are rethinking the future of burial.

Cities like London, New York, Hong Kong are running out of burial space.

Even where space is still available, cemeteries are permanently occupied land that cannot be used for agriculture or for new uses.

Traditional burials use a lot of harmful chemicals like metals, gemstones and concrete Traditional burials use a lot of harmful chemicals that pollute soil and groundwater like metals, gemstones and concrete A lot of harmful chemicals that pollute soil and groundwater

New burial methods are being explored as awareness of environmental impact increases

More and more bodies are being buried by cremation and related means.

Along with those traditional methods, we can now also use human remains to launch them into space, to fertilize trees, to make them into gemstones, to use them as fireworks or as tattoo ink.

In the future, there may be no more burials and only such means of choice.

Cemeteries are thought to be the best places to remember the deceased, but they are just one way in which the ways of remembering and honoring the deceased continue to evolve.

we all go to the doctor

We go to doctors in the belief that the tests they order and the drugs they prescribe are evidence-based, in the blind belief that medicine will save us.

But the reality is that it's not necessarily true for everyone.

What if 20th century medicine was based only on half the population?

I'm an ER doctor

I've been trained to handle medical emergencies.

save lives how cool

Well, we have a lot of patients with runny noses and bumped toes, but no matter who walks into the ER, we do the same tests and prescribe the same prescriptions, without even thinking about the patient's sex or gender.

Why?

We never learned that there is a difference between men and women.

According to a recent federal audit study, 80% of drugs withdrawn from the market are due to side effects in women.

think about it

Why weren't we aware of the side effects for women until the drug hit the market?

do you know? A drug takes years after an idea is born, to be tested in the lab, tested in cells, tested in animals, then tested in humans, and finally passed through the regulatory approval process so that doctors can prescribe it to everyone.

It goes without saying that this process costs millions and billions of dollars.

So why do half the population only realize that they have unacceptable side effects after they pass approval?

What's happening?

It turned out that it was caused by the cells used in that lab. They were male cells, and the animals used in the animal experiments were also males. The trials were almost exclusively male.

How did the male model become a framework for medical research?

Let's take a look at a real-life example that's made headlines in the media: the sleeping pill Ambien.

Ambien hit the market more than 20 years ago, and since then, hundreds of millions of prescriptions have been written primarily for women, because sleep disorders affect women more than men.

But last year, the U.S. Food and Drug Administration recommended that only women cut their drug dosage in half, because it was found that women metabolize drugs more slowly than men, meaning that when they wake up in the morning, they have more of the drug left in their bodies.

Afterwards, you drive while drowsy, which puts you at risk of a car accident.

As an emergency physician, I can't help but wonder how many of my patients I've seen over the years would have been spared a car accident if this kind of analysis had been done and followed 20 years ago when this drug first came out.

How much else is there that needs to be analyzed by gender?

Is there anything else I'm missing

World War II changed many things, one of which was to ensure that people were not victimized by conducting medical experiments without informed consent.

So more necessary guidelines and rules were put in place, some of which wanted to protect women of childbearing age from participating in any kind of medical experimentation.

I was worried about what would happen to the fetus during the test.

Who is responsible?

Also, scientists at the time thought, "We found a good excuse for the fact that men's bodies are fairly uniform."

There's no fluctuating hormone levels that would confound the data in a male-only experiment.

it makes it easier and cheaper

Of course, at the time, there was a general assumption that the male and female bodies were identical in every way other than the reproductive organs and sex hormones.

So it was decided, "Medical experiments are performed on men, and the results are later applied to women."

What does this mean for women's health?

Women's health became associated with reproduction: breasts, ovaries, uterus, pregnancy, etc.

It's now the term "bikini medicine."

It remained so until about the 1980s, when the notion was challenged by the medical community and public health policy makers, when the exclusion of women from all medical research, apart from reproductive issues, turned out to be rather harmful, and virtually nothing was known about the unique needs of female patients.

Since then, an overwhelming amount of evidence has come to light that men and women are different in every way.

You know that saying in medicine, "Children are not just little adults."

It reminds me of the fact that children actually have different physiology than adults.

And that's how the expertise of pediatric medicine came to be known.

We are currently conducting research on children to improve their lives.

I found that the same could be said for women.

Women aren't just men with breasts and vaginas.

Women have a unique structure and physiology that deserves to be studied with the same fervor as men.

Take the cardiovascular system for example

This area of ​​medicine has been the most intensely researched in trying to figure out why men and women have heart attacks that are so different.

Heart disease is the leading cause of death for both men and women, but women are more likely than men to die of a heart attack within a year.

A man complains that his chest is crushed - it's like an elephant sitting on his chest.

We call this "typical"

Women have chest pain too.

They say, "It's kind of weird." "I don't feel like I'm getting enough air."

For a reason, we call it "atypical," even though, as I said, women make up half the population.

On what grounds can this difference be explained?

If you look at the anatomy of the human body, the blood vessels around the heart are smaller in women than in men, and the pathogenesis of vascular disease in women differs from that in men.

Tests used to determine whether you're at risk of having a heart attack were originally designed, tested, and perfected for men, and were inadequate to measure risk for women.

And in terms of drugs, it's about the drug that we normally use, aspirin.

We prescribe aspirin to healthy men to prevent heart attacks, but did you know that prescribing aspirin to healthy women is actually harmful?

this is just the tip of the iceberg

Emergency medicine is a time-sensitive job

How many important gender gaps are there that we can take advantage of in life-saving medicine like cancer and stroke?

Also, why do some people get head colds more often than others? Why do painkillers prescribed for injuries work for some people but not for others?

The Institute of Medicine has announced that every cell has a gender.

what does that mean?

biological sex is determined by DNA

Gender is the sex that a person wishes to represent in society.

As you look at the number of transgender people, these two genders don't necessarily match.

But it's important to realize that from the moment of conception, every cell in the body has a unique DNA: skin, hair, heart, lungs, that unique DNA extends to the chromosomes that determine sex.

Here's a picture of these sex-determining chromosomes, XY for males and XX for females -- and it's simply determined whether you're born with ovaries or testes, and it's been thought that the sex hormones produced by these organs are what make the difference between the sexes.

But now we know that theory is wrong, or at least it's not enough.

Thankfully, scientists like Dr. Page at the Whitehead Institute are working on the Y chromosome, as is Dr. Yang at UCLA. What they found is evidence that the sex-determining chromosomes in every cell of our body stay active throughout our lives.

This new knowledge has completely changed the way we understand disease. It's up to scientists to continue discovering this evidence, but it's up to physicians on the ground to translate this data into clinical practice. Do it now.

To do that, I co-founded a national organization called the 'Sex and Gender Women's Health Collaborative' to collect all this data so that it can be used for education and patient care.

We're also inviting medical educators to join us.

this is a big job

It's transforming medical education from its inception.

i believe in them

They see value in adding a gender perspective to their current curriculum.

It's time to get the health care providers of tomorrow right.

Also, regionally, I'm co-founder of the Sex and Gender Emergency Medical Service, which is located here at Brown University, within the Department of Emergency Medicine. We conduct research that reveals gender differences in emergencies such as heart disease, stroke, sepsis, and substance abuse, but we also believe that education is paramount.

We are creating a 360 degree education

We have programs for doctors, nurses, students, and patients.

We can't just leave it up to medical leaders.

We all have a role in making change

But let me tell you, this is not easy.

it's actually difficult

This is fundamentally changing the way we think about medicine, health and research.

It will change our relationship with medicine.

But you can't turn back

I've just learned that conventional medicine is wrong.

Martin Luther King Jr. said, "Change does not come in the wheel of inevitability, it comes in constant struggle."

Awareness is the first step to change

It's not just about improving women's health care.

It's about personalized medicine for everyone.

This awareness has the power to transform healthcare for both men and women.

Now ask your doctor, "Is the treatment I am receiving specific to my sex or gender?"

The answer may not come out yet

But the dialogue has begun, and we can all learn together.

Please remember that your sex and gender matter to me and my colleagues in this field.

thank you

(applause)

good morning

Let's take a moment to look at Leonardo da Vinci, the all-around genius

We are all familiar with his wonderful work: his drawings, his paintings, his inventions, his writings.

but i don't know his face

Thousands of books have been written about him, but there are still unresolved myths about his appearance.

Even this well-known portrait is not accepted by historians

What do you think?

Is this Leonardo's face? Or not?

let's find out

Leonardo painted everything around

People, anatomy, plants, animals, landscapes, buildings, water, everything

but no face?

it was unbelievable

His contemporaries, as you can see, painted the face from the front or from the side.

Leonardo, who was a passionate painter, must have painted self-portraits from time to time.

let's find it

If you scan all of his work and look for self-portraits, his face should be facing you.

So I went through over 700 of his paintings, looking for portraits of men.

There are about 120 of them and you can see them here

Which of these is a self-portrait?

The self-portrait must be drawn looking at yourself, either from the front or from an angle

Then remove all the side faces

It should also be well drawn

So I'll leave out vague pictures and overly stylized ones

And according to his contemporaries, he was very handsome, even handsome.

So I also remove the ugly face and the caricature.

(Laughter) And guess what, I'm only left with three pictures that fit.

this is so

And of course, there's that old man, and then there's the famous Vitruvian Man.

And finally Leonardo's only male portrait "Portrait of a Musician" remains.

Before I go into these examinations, I'd like to explain why I have the right to talk about this.

I've done over 1100 portraits of myself on newspapers for 300--excuse me, 30 years.

(Laughter) Anyway, 1,100 of them.

So I know something about drawing faces and analyzing them.

ok, so let's take a look at these three

If you look closely at these facial details, you'll see that they share the same broad forehead, level eyebrows, long nose, curved lips, and small, well-developed chin.

I couldn't believe my eyes when I first saw this

there's no reason these pictures should look like each other

I just looked for a picture that has the characteristics of a self-portrait.

Is the order correct?

The young man should have been drawn first

And if you look at the dates of these paintings, you'll find that's exactly the case.

drawn in the correct order

How old was Leonardo then? does it match the picture?

It fits. At this time, he must have been 33, 38, 63 years old.

So here are three paintings that could be the same person, the same age as Leonardo.

But how do you know it's Leonardo and not someone else?

I need collation materials

And here's the widely accepted photo of Leonardo himself

This is a statue of David made by Berrocchio Studio, and is said to be modeled after 15-year-old Leonardo.

And if you compare the face of this bronze statue with the portrait of a musician, you can see that the features are very similar.

The statue is the reference material, which connects these three paintings with Leonardo's character.

Ladies and gentlemen, this story has not been published yet.

You here at TED deserve to be the first to know.

The idol of idols has a face for the first time

Here - Leonardo da Vinci

(applause)

As a singer-songwriter, I'm often asked about my musical influences, which I call my sonic pedigree.

The simple answer is that I grew up listening to jazz and hip-hop, the Ethiopian blood that runs through me, and the 80s pop that I heard on the radio when I was growing up.

But beyond that genre concept, think about it: What impact do the sounds we hear every day have on our composition?

I believe that everyday soundscapes can provide unexpected inspiration for songwriting. I'd like to delve a little deeper into this idea and talk about three themes: nature, language, and silence -- and the third, rather than silence, the impossibility of complete silence.

And I hope that you will realize that the world we live in already has musical expression, and that each of us, knowingly or unknowingly, plays an active role in it.

So let's talk about nature, but first, let's listen to an opera singer practicing her voice.

please

(Start singing) (End singing) You have a beautiful voice

Caught!

Actually, I'm not a modern opera singer.

It's actually a bird's song, the speed of a woodlark's song slowed down until the human ear mistakes it for a human voice.

It's part of "The Music of the Unknown Birds," by Peter Soke, recorded in Hungary in 1987. The piece uses a variety of slow-played bird calls to reveal hidden beauty.

Listen at full speed

(Birds singing) Let's listen to the two songs in succession so that we can compare them side by side in our minds.

(singing voice slow version and full speed version) (End) That's amazing.

Bird voices may have inspired the technique of opera singing.

Humans intuitively know that birds are musical teachers.

In Ethiopia, birds are considered an integral part of the origin of music.

Here's a story about a young man born 1,500 years ago in the Axum Empire, where Axum was once a center of commerce.

The young man's name is Jared

When Jared was seven years old, his father died, and his mother sent him to live with his uncle, a priest of one of the oldest churches in the world, the Ethiopian Orthodox Church.

The Ethiopian Orthodox Church traditionally placed great emphasis on learning and education, so Jared was forced to study to death.One day while he was studying under a tree, three birds came to him.

Each bird becomes a teacher of Jared

I taught them music, or rather, scales.

Although Jared was later known to the world as a saint, the five hymns and hymns he composed using this scale were used in worship and ceremonies.

Jared used this scale in his compositions, and also devised a unique Ethiopian notation system.

This scale evolved into a pentatonic mode known as kiñit, a style still frequently used and evolving in modern Ethiopia.

Now, this story that I love so much turns out to be true in many ways.

Saint Jared is a real historical figure, and the natural world is our musical teacher.

The examples are endless: the pygmies of the Congo tune their instruments to the sounds of forest birds.

According to natural soundscape expert and musician Bernie Krauss, in a healthy environment, the sounds of animals and insects make up the low, middle, and high frequencies, just like a symphony.

There are countless pieces of music inspired by birds and forest sounds.

Yes, the natural world can be the teacher of human culture.

Now let's take a look at the world of human language.

Inflection is important in any language to some degree.

(Raising the ending) It's going to be a question, right?

(Laughter) As an Ethiopian-American, I grew up listening to Amharic.

It's my parents' mother tongue, the first language I learned, and one of the major languages ​​of Ethiopia.

It's a language that really has a lot to offer: the depth of its poeticity, the duality of its expressions, the surface and the back, the proverbs that describe human wisdom and folly with humor.

Not only that, but it's also a language with a strong sense of melody and pitch.

This is most evident in what we might call emphatic expressions, which are expressions that clarify or emphasize something or that pop out when you're surprised.

For example, the word "indey"

If there are people from Ethiopia among them, there will be people who are sullen, so depending on the situation, this word may include "no way!"

"Why?" "Impossible!"

It means that

I loved this word when I was a kid, and I think it's because of the intonation it has.

because there is a melody

To the extent that you can see the shape of the sound when it pops out of someone's mouth

"indey" falls and rises again

As a musician and composer, when I hear that word, something comes to my mind, and it goes something like this.

(singing and playing) (music ends) Others like "Exactly" or "Lickih nehu" meaning "correct"

means affirmation or agreement

"Lickih nehu"

This is what runs through my head when I hear this expression

(Singing and playing) (End of music) What I did in both of the pieces of music I just listened to was extracting the melody of words, turning them into musical parts, and composing pieces.

I like to think of baselines, so it ended up being both.

Now, it's based on Jason Moran and others' works that intertwine music and language, and it's something that I've actually been thinking about ever since I was little. When my parents talk to themselves and to us kids, it's like music.

I learned that thanks to my parents and the Amharic language, we were so immersed in musical expression that every word and every sentence we uttered and received was a musical expression.

The words I speak now can also be heard as music

So, finally, America in the 1950s, one of the most original pieces of 20th century avant-garde music, John Cage's 4:33, this song doesn't care about which instrument or combination.

A performer or a group, with a stopwatch, walks up to the stage and opens the sheet music.

There are no notes in this sheet music, and not a single note played for 4 minutes and 33 seconds.

This work arouses both indignation and joy at once, but it tells us that even if the strings aren't plucked with our fingers, and the piano keys aren't tapped with our fingers, it's still music.

What is the music of this moment?

It's the sound of someone sneezing behind you.

(Laughter) Everyday soundscapes from the audience: coughs, sighs, rustles, whispers, sneezes, and even the wood in the room, the floors and walls expands and contracts as the temperature rises and falls, creaks and snarls, pipes make metallic noises and add to the soundscape.

The piece was, and still is, controversial, but there is no such thing as total silence, and that's what John Cage said.

I can hear and feel my heart beat even in the quietest of environments.

The world is full of musical expressions and alive

we are already immersed in

I myself had this John Cage moment a few months ago when I was standing in front of the stove cooking lentils.

It was late at night, and I had to stir, so I took the lid off the pot and put it on the counter right next to it, and the lid rocked back and forth and made this noise.

(sound of metal lid clattering) (sound ends) I was startled and froze in place.

“A pot lid can produce such a strange and cool paste.”

So, as soon as the food was ready and finished, I went straight to the studio in my backyard and made this song.

(music with the sound of pot lids and singing) (music ends) Now, John Cage's goal wasn't to compose with sonic textures in the soundscape.

However, in our everyday world, we create music without doing anything, and in this tolerant and fertile world, we are already immersed in music.

Charles Lim, composer, musicologist, surgeon, and authority on human hearing, is a professor at Johns Hopkins University who studies the relationship between music and the brain.

He theorizes that the human auditory organ may have developed for listening to music, because it's too complex to be an organ for language alone.

If this is true, then music is an innate necessity for the human species, and we find music everywhere, there is no such thing as a sonic desert, and we live forever in a musical oasis.

The soundtrack is already playing, though you can add some sounds.

I'm not saying don't learn music

I want you to learn music, follow your sonic lineage, and enjoy it.

But there's also a sonic lineage that we all have in common.

The next time you're thinking about the rhythm of percussion, the answer might be the whine of car tires as you drive past the irregular seams of the highway, or the strange noise that the burner on the top right of your stove makes when it lights up.

When you're thinking about the melody of a song, the answer is the orchestra of birds at sunset and dawn, the lively inflections of spoken language.

We're both listeners and composers, and we can use music that comes naturally to us.

And when we create, nature, language and soundscapes provide us with endless inspiration. All we have to do is listen.

thank you

(applause)

Reverend Daniel Berrigan said, "Writing about prisoners is a bit like writing about the dead."

I think we mean treating prisoners like ghosts.

I can't see them, I can't hear their voices

It's easy to just ignore them, even easier when the government has covered it up for a long time.

As a journalist, I think stories like what those in power do when no one is watching are exactly the stories we need to tell.

So I set out to investigate the best classified experimental prison block in the United States, a "quasi-terrorist prison."

The government calls these prisons CMUs (Communication Management Units).

Prisoners and guards call CMU a "mini Guantánamo"

itself isolated like an island

But unlike Guantanamo, CMU is inside the country, like an island inside a large federal prison.

There are two CMUs

One is in Terre Haute Prison in Indiana and the other is here in Marion Prison in Illinois.

Neither of them have gone through a formal assessment process, even though assessment is a statutory duty when prisons open.

All inmates at CMU have been convicted.

Some of the complaints are questionable, others involve threats and assault charges.

I'm not here to discuss whether the prisoners are guilty or innocent.

I stand here because of the words of Supreme Court Justice Thurgood Marshall: "The prison and the gates are closed, but the prisoner is not closed to humanity."

All the prisoners I interviewed told me that there are three lights in the darkness of prison: phone calls, letters and family visits.

The CMU isn't a solitary confinement, but it's very restrictive on those three things, and it's more than the toughest prison in the United States.

CMU prisoners talk less than 45 minutes a month compared to 300 minutes a month for other prisons.

Letters at CMU should be no more than 6 sheets of writing paper.

Visiting hours are no more than four hours a month, and by the way, even someone like Eric Rudolph, the Olympic Park bomber, has a maximum of 35 hours a month.

On top of that, CMU visits don't allow physical contact, not even family hugs.

As one CMU prisoner said, "There's no torture here, except the mental aspect."

Government never publishes prisoners in CMU

But after going through court records, public records, and interviewing current and former prisoners, a sort of window has opened to give us a glimpse inside the CMU.

Currently, the CMU houses an estimated 60 to 70 people, the vast majority of whom are Muslim men.

And that includes people like Dr. Rafir Dufir, who violated economic sanctions and supplied medical supplies to Iraqi children on the ground.

Some of the CMU prisoners are like Yasin Aleph.

Aleph and his family are refugees who fled to New York from Hussein's Iraq.

Aleph was arrested as part of an FBI sting operation in 2004.

Aleph, one of the leaders of Islam, was asked to witness a loan, which is a tradition in Islamic societies.

It turns out that one of the people involved in the loan tried to get someone who was undercover to participate in the loan.

What Aleph didn't know

But because of that, Aleph was convicted of providing aid to a terrorist group.

The CMU also houses non-Muslim prisoners.

The guards call them "balancers," meaning someone who balances racial bias, so they can't be sued for racism.

Balancers also include animal rights activists and environmentalists, like Danielle McGowan.

McGowan has been found guilty of participating in two arson attacks on the Global Liberation Front in what it purports to be an environmental effort.

During the sentencing process, McGowan worried about where he would be held, in a secret prison rumored to be a terrorist camp.

A judge dismissed all his fears and ruled out the existence of such a prison.

But maybe that's because the government hasn't explained it well enough. Why are you in the CMU? Who decides to send it to CMU?

During the transfer, McGowan was told that McGowan was a "domestic terrorist," a term the FBI uses repeatedly when referring to environmental activists.

Now, keep in mind that of the 400 prisoners in the United States classified as terrorists, only a handful are sent to the CMU.

In McGowan's case, he was initially held in a low-security prison, where he had no communication breaches.

Why was he transferred to CMU?

Like other CMU inmates, McGowan repeatedly asked for an answer, a hearing, an opportunity to file a lawsuit.

Let's look at another prisoner's example of how such a request might be considered.

“Request for transfer” “Request denied”

At one point, the prison warden himself recommended that McGowan be transferred to a non-CMU prison for good conduct.

After that, I learned the truth about McGowan's sending to CMU.

Counter-Terrorism Office memos document McGowan's "anti-government".

While in prison, McGowan continued to write about environmental issues, saying that activists should reflect on their mistakes and listen to each other.

In all fairness, if you've spent any time in Washington, D.C., you know how radically anti-government this is.

(Laughter) In fact, I asked to see McGowan in CMU.

Approved to meet

I was shocked by this

One reason, as I've said before on the TED stage, was that I knew the FBI was monitoring my press work.

Second, I was the first and only journalist to visit CMU.

I also learned that through the Federal Prison Service, the Counterterrorism Office is monitoring what I say about the CMU, including this talk.

But why was my visit granted?

A few days before I went to jail, I found out why.

I was granted a visit as a friend, not as a reporter.

Reporters are off limits to CMU

McGowan was told by CMU officials that if I asked questions or published the conversation, McGowan would be punished for my reporting.

When I went to see him, the guard reminded me that he knew me and my profession.

And I was told that if I attempted an interview, the visit would end.

The Bureau of Prisons describes CMUs as "self-contained housing units."

But to me, it looks like a George Orwellian depiction of a black hole.

When you visit CMU, you go through all possible security checks.

But the hallway to the visiting room is quiet.

Because at the CMU, when one prisoner visits, all the other cells are locked.

I was invited into a small room, with my arms outstretched, my hands touching the walls.

There was a grapefruit-sized sphere on the ceiling for the counter-terrorism headquarters in West Virginia to monitor the meeting live.

Headquarters requested that visits to CMU detainees be in English, which is an added challenge for many of the Muslim families.

There was bulletproof frosted glass, and behind that glass was Daniel McGowan.

We had conversations on handsets on the walls, we talked about books and movies.

We did our best to find funny stories.

To keep himself entertained during his time in CMU, McGowan was spreading rumors that I was actually the head of the Twilight Fan Club in Washington, DC.

(Laughter) But in a way, it's kind of funny, isn't it? What if the FBI thinks "Bella and Edward" is a terrorist code name?

(Laughter) During those visits, McGowan's most lengthy talk was about his niece, Lily, and his wife, Jenny, and how not being able to hug them or even hold their hands was excruciating torture.

After our visit, McGowan was transferred to a non-CMU prison and then reverted back to CMU without warning.

Earlier, I posted the leaked CMU documents on my website, and the Counter Terrorism Office said McGowan called his wife and asked her to write a letter to the Counter Terrorism Office.

McGowan wanted to know what the government thought of him, and that's why he was sent back to CMU.

He was finally released after serving his sentence, but his life took on a more Kafka-esque look.

He wrote for the Huffington Post with the headline "Court Records Prove - Political Speech Why I Was Sent to CMU."

The next day he was detained again for his political speech.

Lawyers quickly filed bail, but the message was clear: don't talk about CMU.

Now, nine years after the Bush administration opened the CMU, the government is trying to codify how and why the CMU was created.

According to the Federal Prison Service, the CMU is a facility that houses "high ideological" prisoners.

It's just a fancy way of saying that the CMU is a political prison for political prisoners.

Reasons for being sent to CMU are race, religion, and political beliefs.

If you think this rating is too harsh, take a look at the government's own documents.

When a letter to McGowan was rejected by the CMU, the reason given to the sender was, "Because it was addressed to a political prisoner."

Another prisoner and animal rights activist, Andy Stepanian, was transferred to CMU because of his anti-government and anti-corporate views.

It's hard to believe that something like this could happen, but it's happening right now, and it's happening in the United States.

But what few people know is that the United States has a dark history, a history of unfairly punishing people for their political beliefs.

In the 1960s, before the CMU was installed in Marion, Marion had an infamous surveillance cell.

Prisoners were held in solitary confinement for 22 hours a day.

The prison warden said the facility was intended to "deter revolutionary movements."

In the 1980s, another experimental prison called the Lexington High Security Unit housed women involved in the Weather Underground, the Black Revelation, and the Puerto Rican independence struggle.

In that cell, communication was severely restricted, sleep deprivation was in place, and night lights were on for so-called "ideological conversion."

These prisons were eventually closed because of the movement of religious groups and human rights groups like Amnesty International.

Today, civil rights lawyers and the Center for the Protection of Human Rights (CCR) jointly file a lawsuit against the CMU, accusing prisoners of depriving them of their proper legal rights and of retaliatory punishment for political and religious speech that should be protected by human rights.

Without this lawsuit, many of these documents would never have come to light.

The organization that filed the lawsuit and I would like to share with you today that we have a duty to testify about the treatment of prisoners.

Their treatment reflects values ​​outside the prison walls.

This story is not just about prisoners

it's about us

Our awareness of human rights is being questioned

It's a matter of choosing not to repeat the mistakes of the past.

If we don't listen to what Priest Berrigan called the tale of the dead, it will quickly become our story.

thank you

(Applause) (End of applause) Tom Riley: Let me ask you some questions.

The Bill of Rights, the U.S. Constitution, freedom of speech, due process, and 25 other laws and rights that I learned in high school seem to be being violated.

How could this happen?

Will Potter: That's the number one question in all my work, and the short answer is that people don't know.

In my view, the resolution of this situation, and all rights violations, hinges on two things.

First, the realization that it's happening, and second, how and the effectiveness of actually transforming it.

The prisoners I've talked to today have the unfortunate misfortune, first, that people don't know what's going on, and second, that they've already been disenfranchised and don't have access to a lawyer, and they're not native English speakers.

In a case like this, sometimes you have a competent advocate like I said, but there's no public awareness of what's really going on.

Riley: Doesn't the prison guarantee the right to be considered by the council and the means to apply for consideration?

Potter: In American society, when someone is convicted, there is a tendency to assume that whatever happens to that person is legally justifiable, whether the accusation is legitimate or a hoax.

That's why I think that's the kind of explanation that's both dangerous and harmful.

Riley: All the documents on the screen, word for word, are real and not altered in any way, right?

Potter: That's right. It's all uploaded to my site.

You can find the source at willpotter.com/CMU.

you can see the full version

I rely heavily on primary source documents or primary interviews with former and current prisoners and people who deal with the situation I'm talking about today on a daily basis.

And like I said, I once had the same experience.

Riley: You're doing a job that takes courage.

Potter: Thank you very much. Thank you everyone.

(applause)

Now this is a small village called Yella near Lista.

This village is at the southernmost tip of Norway

On January 2nd, 2015, an old man from this village went to see if anything had washed up on the beach from the last storm.

In a patch of grass by the shore, the old man found a wetsuit

It was gray and black and didn't look expensive.

There were two white bones sticking out of the legs of the suit.

It was clearly a human corpse.

In Norway, bodies are usually identified quickly.

Police launched an investigation, examining local disappearance reports, national disappearance reports, and investigating possible related accidents.

nothing found

So we'll do a DNA test and start a missing person investigation abroad via Interpol.

no results

It was like someone no one could find

An unknown life was about to be buried in an unmarked cemetery

But a month later, the Norwegian police were contacted by the Dutch police.

Two months ago, Dutch police found the body of a man wearing the same wetsuit, who they said was unidentifiable.

But I managed to track down the wetsuit's origin, thanks to a radio frequency identification chip sewn into the suit.

It turns out that both suits were purchased by the same person at the same time, on October 7, 2014, in the city of Calais, on the French side of the English Channel.

But all I know is this

payment was cash

No surveillance camera footage in the store

An unsolved case

When I heard this story, my fellow photographer Tom Christiansen and I were like, who the hell are these two guys? I wondered

At the time, I knew very little about curry, but I quickly learned that curry is famous for basically two things.

First, it's the closest place to Britain on the European continent, and second, it's the large number of immigrants and refugees staying in Calais camp who are desperately trying to reach Britain.

Now, there's a compelling assumption about the identities of these two men, and the police thought the same thing.

If someone with well-connected European connections disappeared off the coast of France, they would be identified in no time.

A friend or family member will file a missing person report, the police will search for him, the media will know about him, and posters of him will be hung on the streets.

It's hard to disappear without a trace

But what if a person who fled the Syrian war, including his family, if he survived, didn't know where he was, was staying illegally in these refugee camps, and was among the thousands of people who came and went every day...

In such a situation, if one day you disappear, no one will notice.

The police won't come looking for you if nobody notices your disappearance.

And that's exactly what happened to Shadi Omar Qataf and Mouaz al-Bahki from Syria.

In April 2015, Tom and I went to Calais for the first time. After three months of research, we finally learned how these two young men escaped the Syrian war, were stranded in Calais, bought wetsuits, swam across the English Channel, and drowned while trying to cross the English Channel.

What I'm going to talk about here is the fact that everyone has a name, everyone has a story, everyone is unique.

But it's also about the refugee situation in Europe.

This is the starting point of the investigation

It's curry

There are currently 3,500 to 5,000 people living here. It's a terrible environment.

It's been called Europe's worst refugee camp.

Food is scarce, water is scarce, medical care is inadequate.

Spread of diseases and infections

They're all stranded here to go to exile in England.

You can either hide in the back of a truck going to the ferry or the Eurotunnel, or sneak into a tunnel terminal at night and try to hide inside a train.

Most people go to England because they know the language and find it easier to start their lives over.

They want to work, study and live Their wish is to work, study and live

Many of them are highly educated skilled workers

When you talk to refugees in Calais, you find them lawyers, politicians, engineers, graphic designers, farmers, soldiers.

there are people from all walks of life

But when we talk about refugees and immigrants, it's easy to lose sight of who these people are, because we often talk about statistics.

Now, there are 60 million refugees in the world.

So far this year, about 500,000 people have crossed the Mediterranean to Europe, about 4,000 of them staying in Calais.

But these are just numbers. Numbers don't tell you who they are, where they're from, or why they're there.

Let's pick one up first.

This is Muaz al-Bahki, 22 years old from Syria.

I first learned about him after I went to Calais to find answers to my hypothesis about the bodies of the two men.

After a while, I heard that a Syrian man from Bradford, England, had been desperately looking for a nephew named Moores for months.

Moores' last known disappearance was October 7, 2014.

It was the same day I bought the wetsuit.

So we flew to England, met with his uncle, took a DNA sample of him, and then took samples from Moore's next of kin in Jordan.

Analysis has confirmed that the body found in a wetsuit on a beach in Holland is that of Mouaz al-Bahki.

During the course of this investigation, we learned more about Moores.

He was born in 1991 in Damascus, the capital of Syria.

I grew up in a middle-class family, and my father, in the center of the picture, is a chemical engineer who spent 11 years in prison because he was an opposition party in Syria.

While his father was incarcerated, Moores took responsibility for looking after his three younger sisters.

My sisters said Moores was that kind of person.

Moores was studying at the University of Damascus to become an electrical engineer.

Two years after the Syrian war broke out, the family fled Damascus and moved to neighboring Jordan.

After his father's job search in Jordan became difficult and he was unable to continue his studies, Moores concluded, "Okay, the best thing I can do to support my family is to move away, finish my studies, and find a job."

So Moaz goes to Turkey

I was not admitted to a university in Turkey, and I was not allowed to re-enter the country because I left Jordan as a refugee.

So he decides to go to England where his uncle lives So he decides to go to England where his uncle lives

He manages to make it to Algeria, crosses into Libya on foot, pays a smuggling contractor, takes a boat to Italy, and from there heads to Dunkirk, a town next to Calais on the English Channel.

He tried to cross the English Channel by hiding in the back of a truck, but failed at least a dozen times.

But at some point he must have lost hope.

The last night he was found alive, he stayed in a cheap hotel near the train station in Dunkirk.

My name was on the guest list. It seems that I stayed alone.

The next day, he went to Calais, entered a sporting goods store, minutes before 8:00 at night, and Shadi Qataf was with him.

They both bought wetsuits, and a woman in the store was the last person she knew to see them alive.

We tried to find out where they met, but we couldn't.

But they were both on the same page

We first heard about Shadi after his cousin in Germany read an Arabic translation of an article about the Moors on Facebook.

we contacted this cousin

Shadi was two years older than Moores, and he was also raised in Damascus.

Rather working class

After managing a tire repair shop, he worked for a printing company.

We lived in a large family, but we lost our home to bombings early in the Syrian war.

The family fled to an area called the Yarmouk refugee camp in Damascus.

Yarmouk is said to be the worst settlement on earth Yarmouk is said to be the worst settlement on earth

It's been bombed by the military, it's been besieged, it's been under siege by ISIS, and it's been cut off from supplies for years.

Last year, a United Nations official came to me and said, "Everyone has eaten weeds, and there's not a single weed left."

Of the 150,000 inhabitants, it is estimated that only 18,000 remain in Yarmouk today.

Shadi and her sisters escaped

parents are still stuck

Shadi and one of her sisters then fled to Libya.

That was after Gaddafi's regime fell, but before Libya plunged into full-blown civil war.

And during the last period when Libya had some degree of security, Shadi seems to have taken up scuba diving and spent most of his time in the water.

He was so enamored with the ocean that in late August of 2014, when he decided he couldn't stay in Libya anymore, he hoped that if he went to Italy, he would find a job as a diver.

But the reality was not so sweet

We don't know much about Shadi's journey, because it was a time when it was difficult to get in touch with his family.

By the end of September, he was living on the streets somewhere in France.

On October 7th, he called his cousin in Belgium and explained the situation.

"I'm in Calais right now, but I want you to bring my backpack and PC.

I don't have the money to pay the smuggling contractor to go to England, so I'm going to buy a wet suit and swim across."

My cousin, of course, tried to stop him, but Shadi's phone ran out of battery and never turned on again.

Shardi's body was found almost three months later on the Norwegian coast, 500 miles away, in a wetsuit.

He's in Norway waiting for the day of his funeral, but none of his family will be able to attend.

Many people think that Shadi and Moore's story is about death, but I don't think so.

I think this is a story about two questions that apply to all of us: What is a better life? And what are we going to do to make it happen?

For me, and probably for many of you, a better life means being able to do more of the things that we think are meaningful, whether it's spending more time with family and friends, traveling to other countries, or using the money we've earned to buy cool new gadgets and sneakers.

and all within our reach

But for someone trying to escape the battlefield, the answers to those two questions are quite different.

A better life is a safer life

life with dignity

A better life is not having your house bombed and being kidnapped.

A better life means sending your kids to school, going to college, or just getting a job to support yourself and the family you love.

A better life is about having a little bit of potential for the future, because on the battlefield, the possibilities are almost non-existent, and that's a big motivator.

It's easy for me to imagine that after weeks and months of being scorned as a low-class citizen, living on the streets or in a squalid makeshift camp called "the jungle," which is absurdly discriminatory, almost anyone would feel like they could do anything.

If Shady and Moores had been able to ask the question the moment they stepped into the freezing waters of the English Channel, they would have said, "It's worth the risk."

It's a daredevil act, but this is what it means to live as a refugee in the West in 2015 AD.

thank you

(Applause) Bruno Giussani: Thank you, Anders.

This is Tom Christiansen, and most of the pictures you've seen were taken by Tom and written by both of us.

Tom, you two went to curry recently.

It was my third time going to curry.

That was after the article was published.

Any change? how was it?

Tom Christiansen: When I first went to Calais, there were about 1,500 refugees.

They were all struggling, but they were positive and hopeful.

But last time, the camps had spread, and I think there were 4,000 or 5,000 refugees.

And the longer they stayed, the more NGOs came, and the smaller schools were opening.

But the problem is that the refugees are staying longer, and the French government's tightened border closures have created a huge "jungle" that has spread despair and resignation among the refugees.

Bruno: Any plans to visit the camp again? Do you want to continue reporting?

Tom: of course

Bruno: Anders, I'm a former journalist. What surprised me was that the publishers were cutting budgets and they were in crisis, and Dougbladet was funding this story.

Anders Fielberg: It was difficult at first because we didn't know what we would discover.

But once it became possible that the first person might be identified, I felt like I could do as much as I wanted.

Bruno: That's your responsibility as an editor.

By the way, this article has already been translated and published in several European languages, and will continue to be translated.

I would love to read your updates Thank you Anders Thank you Tom

(applause)

A few years ago, I worked with my colleague Emmanuel Charpentier to develop a new technique for editing genomes.

With a technology called CRISPR-Cas9

Scientists were able to modify the DNA in cells Scientists were able to modify the DNA in cells to cure genetic diseases

Interesting as it may seem, CRISPR technology was born in the course of basic research into how bacteria fight viral infections.

Bacteria have to deal with an environment with viruses, and a viral infection is like a ticking time bomb: the bacteria have minutes to defuse before detonating.

So many bacteria have a kind of adaptive immune system called CRISPR inside their cells that detects and destroys foreign invading viral DNA.

A component of the CRISPR system is the Cas9 protein, which uniquely detects, cuts, and destroys viral DNA.

Through our research, we've uncovered the workings of the Cas9 protein, which is now available as a technology for genome engineering, allowing scientists to discover possibilities that were previously impossible by deleting and inserting specific pieces of DNA into cells with astonishing precision.

CRISPR technology is used to modify DNA in cells of mice, monkeys and other organisms.

Chinese scientists recently showed that they can use this CRISPR technology to modify even the genes of human embryos.

Philadelphia scientists have shown that integrated HIV DNA can be removed from human cells infected with the HIV virus.

There are all sorts of ethical issues to think about when genome editing becomes possible like this, because the technology can be used not only in adult cells, but also in the embryos of organisms, including humans.

So my colleagues and I are calling for a global discussion about the technology we've co-developed, and we're trying to think about the ethical and social implications of this technology.

And that's why I'm going to talk about what CRISPR technology is, what it can do, where we are today, and why I think we should think twice before we put it into practice.

When a virus infects a cell, it injects its DNA.

And inside the bacterium, the CRISPR system takes the DNA out of the virus and inserts the piece into the bacterial chromosome, the bacterial DNA.

CRISPR is a locus into which viral DNA fragments are inserted.

It is an abbreviation that means "a repeating group of short palindromic sequences with regular spacers".

(Laughter) It's hard to say. That's why we call it CRISPR.

This is how cells record the virus they infect over time.

The important thing is that the information in the DNA fragments is passed on to subsequent cells, so that they can protect cells from viruses, not just for one generation, but for many generations.

This is how infections are recorded, and my colleague Blake Winhaft says that the CRISPR locus is a genetic vaccine in cells.

When a piece of DNA is inserted into the bacterial chromosome, the cell transcribes it into a molecule called RNA, shown in orange in the diagram, which is the exact replication of the viral DNA.

RNA is like DNA's chemical cousin, interacting with DNA molecules that match its sequence.

The RNA fragment that is replicated from the CRISPR locus binds to a protein called Cas9, shown in white in the diagram, and they form a supervisory complex within the cell.

It scans every nook and cranny of the DNA that has entered the cell, searching for sites that match the RNA sequence within the complex.

Once the site is detected -- the blue molecule you see is DNA -- this complex binds to the DNA, and then Cas9 cuts the viral DNA.

cut very precisely

So the sentinel Cas9 RNA complex can be thought of as a pair of scissors that can cut DNA. Cas9 cuts the double strand of helical DNA.

Importantly, the complex is programmable, so it can be programmed to recognize a specific DNA sequence and cut the DNA at that site.

What I'm trying to tell you is that you can apply this mechanism to genome engineering, where you can precisely alter the DNA of a cell at the site of the cut.

It's like using a word processor to correct typos in a document.

The reason we're excited about the CRISPR system in genome engineering is that cells can detect damaged DNA and repair it.

Plant and animal cells detect DNA double-strand breaks and repair the breaks. One mechanism is to make small modifications to both ends of the DNA break and join them together, and another mechanism is to insert a new piece of DNA at the break.

If you can make a DNA double-strand break at a precise place, if you can make a DNA double-strand break at a precise place, you can encourage the cell to repair the break, allowing the gene to be disrupted and new genetic information to be incorporated.

If DNA CRISPR technology could be programmed to cut DNA at or near the site of, say, a mutation that causes cystic fibrosis, it could encourage the cell to repair the mutant.

Genome engineering isn't a new technology, it's been developed since the 1970s.

It is now possible to read, copy, and manipulate DNA sequences.It is now possible to read, copy, and manipulate DNA sequences.It is now possible to read, copy, and manipulate DNA sequences.

While these technologies hold promise, they are either inefficient or very difficult to use, and as a result many scientists never use them in research, let alone in clinical applications.

That's why relatively simple CRISPR techniques are so attractive.

Old genome engineering technology is like a PC that needs to be rewired every time you install new software, but CRISPR technology is like software for the genome, which you can easily program using pieces of RNA.

Breaking DNA double-strands can induce repair, which is why it has incredible power, such as normalizing the mutations that cause sickle cell anemia and Huntington's disease.

In fact, I think the first use of CRISPR technology will be in blood, because it's easier for these tools to reach inside cells than in solid tissue.

There are now repeated experiments using laboratory animals such as rats to study human disease.

This technology allows us to make changes with such precision that we can study how these DNA changes affect a single tissue or an entire organism.

For example, in this example, we used CRISPR technology to make subtle changes to the DNA of the gene that darkens mouse hair, knocking out its function.

These white mice differ from their colored litter siblings because they've made a slight change to one of the genes in their genome, but they're otherwise perfectly normal.

When we sequenced the mouse's DNA, we found that the changes were made at exactly the sites where CRISPR technology was used to induce changes in the DNA.

We're also doing experiments on other animals, and they're helping us to model human disease, for example, monkeys.

We found that in this way we could use this technique to understand the applicability of this technology to specific tissues, for example, how to introduce CRISPR tools into cells.

I also want to better understand how to control the repair of DNA after breaks, how to control and limit its effects on non-targeted sites and prevent unintended consequences.

I think we'll see clinical application of this technology -- in adults, of course -- within 10 years.

There's a good chance that we'll be able to do clinical trials in this period of time, and we might even get approved for treatment, which is really exciting to think about.

As the excitement about this technology grows, there's a lot of interest from start-ups looking to commercialize CRISPR technology, and from many of the venture capitalists investing in these companies.

And let's not forget that CRISPR technology allows us to enhance the functioning of our bodies.

Imagine that by manipulating human genes, we might be able to make our bones stronger, or make us less prone to heart disease, or even give us the traits we want, like change our eye color or grow taller.

You can also do "human design" if you want.

So far, we know very little about the genetic information about which genes enhance which traits.

What I want you to know is that once you have that knowledge, you can use CRISPR technology to create that kind of change.

This also raises a number of ethical issues that need to be carefully considered, which is why my colleagues and I are putting on a global wait before clinically applying CRISPR technology to human embryos, in order to take the time to consider the ramifications of doing so in humans.

In fact, such a hiatus has important precedents dating back to the 1970s, when scientists banded together to hold off the use of molecular cloning until it had been thoroughly tested for safety and proven effective.

So although we don't have genome-engineered humans yet, it's not just science fiction anymore.

There are animals and plants that have had their genomes engineered.

This puts us under great responsibility to consider not only the intended consequences, but also the unintended consequences, of scientific breakthroughs.

thank you

(Applause) Bruno Giussani: Jennifer, as you point out, it's a technology that can have a significant impact.

I think it's a very responsible move to put a hold on this issue and examine it.

Some of this, of course, is therapeutic, while others are non-therapeutic, but those seem to be the ones that get the most media attention.

And the latest issue of The Economist is talking about "editing people."

They're all about genetic enhancement, they're not talking about therapy.

What was the reaction of my colleagues when I suggested at a conference in March that we should put the technology on hold and give it more thought?

Jennifer: I think my colleagues were happy to have the opportunity to discuss this issue openly.

It's interesting because when you talk to your fellow scientists and other people, when you talk to your fellow scientists and other people, you find that there are different points of view.

It's a topic that clearly needs more thought and discussion.

Bruno: Jennifer and others are calling for a big conference in December with the National Academy of Sciences and other organizations. What are your expectations?

Jennifer: I'm looking forward to interacting with a diverse group of individuals and people of interest who are trying to figure out how to use this technology responsibly.

We're probably not going to come to a consensus, but we should at least understand what the potential problems are if we keep pushing.

Bruno: George Church and others at Harvard Medical School, your colleagues say, "The ethical issue is basically just a safety issue."

"Test after test in animals and in the lab, and only when you're sure it's safe enough will you do it with humans," he said.

They seem to take the position that we should seize the opportunity to advance research.

Is there a possibility that this will divide the academic community?

So, will there be a situation where one scientist refrains from doing research because of ethical concerns, and another scientist does it because of lax or non-existent government regulation?

Jennifer: With any new technology, especially with this kind of technology, there's going to be a lot of different views, and I think that's how it is.

Ultimately, I think this technology will be used in human genome engineering, but I think it would be irresponsible if we didn't discuss the risks and other things that come with it before moving on.

Bruno: There are a lot of areas of technology and science that have exploded like CRISPR technology.

For example, artificial intelligence, autonomous robots, etc.

And yet, no one -- except for the autonomous war robots -- is willing to wait and have a discussion.

Do you see this discussion as a blueprint for other areas?

Jennifer: I think it's hard for scientists to move out of the lab.

I'm a little restless

But being involved in these early days creates a sense of responsibility among my colleagues and myself.

And so I hope that there will be discussions about other technologies, and I hope that the potential impact of new technologies on fields other than biology will be considered as well.

Bruno: Thank you for speaking at TED.

Jennifer: Thank you

(applause)

First of all, go to a place where you can be happy.

Yes, a place where you can be happy Even if it's pretending, there's still one

(laughs) It feels good, doesn't it?

good

Now, I want you to answer the following questions in your heart.

Are there fluorescent lights in there?

What about plastic tables?

What about polyester floors?

What about mobile phones?

Isn't there?

When it comes to happy places, we all think of places like nature, outdoors, by the sea or by the fireside.

That's where we read, we eat, we knit.

Surrounded by natural light and organic elements

Natural things make everyone happy

Happiness is what I live for and what I pursue

Maybe that's why they're redesigning everything to feel more natural.

So let's start there. Design should be natural.

mobile phone is different

You may think you're a smartphone addict, but you're really not.

We don't depend on devices, we depend on the information that flows through them.

I wonder how long you guys can be happy in your "happy place" without outside information.

I'm interested in how people access and experience information.

We're transitioning from the static information age of books and libraries and bus stops to the digital information age to the fluid information age, where kids will have instant access to everything from quantum physics to medieval viticulture to gender theory to weather forecasts, just like flipping a light on.

Humans also like simple tools

But smartphones aren't that simple

A fork is a simple tool

(Laughter) And the truth is, in the same way that I don't like my phone, I don't like things that are made of plastic.

I think there are better ways than through the screen world.

It's not that I don't like screens, but how much time I spend hunched over screens -- I don't think anyone thinks it's a good thing.

Fortunately, tech giants seem to agree.

They're actually making huge investments in touch, in speech, in gestures, in sensors, imbuing trivial objects like cups with the magic of the internet, potentially turning this digital cloud into something you can touch and move.

Parents who worry about how much time their kids spend staring at screens need physical digital toys and family-friendly app stores that teach kids how to read.

And I think it's actually happening already.

Reality is richer than the screen world

e.g. I like books

To me, it's a time machine, because it captures atoms and molecules in space and transports them from the moment they're created to the moment I experience them.

But let's be honest, the content is the same on your smartphone.

So what exactly makes the experience richer than the screen?

I mean scientifically

Of course we need screens

You need a big screen to show a movie

But there's more you can do than this projector.

Your smartphone is not your gateway to the internet.

(Laughter) We can create physical objects, using physics and pixels, to integrate the internet with the real world.

let me show you some examples

A little while ago, we explored what the screenless internet would look like with a design company called Berg.

And he showed me all the ways that light could be a simple sensor or a physical thing that could bring the Internet to life as a tangible thing.

like this awesome youtube player

And this was the epiphany for me

Then I worked with a Japanese agency called AQ on a mental health research project.

We wanted to create an object that captures subjective data about mood swings that are essential for diagnosis.

This captures the touch of a person, and it will push hard when angry and stroke when calm.

It's like a recording device for pictograms

You can look back later and add your status online.

For the most part, I wanted to create something that was both familiar and beautiful, something that would fit in your pocket and become a favorite.

These binoculars were a birthday present for the Sydney Opera House on its 40th anniversary.

My friend Telart from Boston brought me a set of sightseeing binoculars, which I think you'll find in the Empire State Building.

and put it under the stairs

The role given to this object is pretty self-explanatory: it's a gateway to iconic world heritage sites around the world.

You can see the Palace of Versailles and the Antarctic base.

It's the 1955 version of virtual reality, if you will.

(Laughter) At our office, we hacky sack URL exchanges.

It's as simple as an Opal card

We have a website on a small chip. Your website will appear on your mobile phone

about 10 cents

Tree Hugger is an ongoing project in Sydney with Grumpy Sailor and Finch.

I can't wait to see what happens, when we take out our phones and place these pieces on the trees, children will have the opportunity to be guided by magic wands on a visit to the Enchanted Forest, where they will be able to ask questions of the digital fairies, and they will be asked questions as well.

As you can see, I'm on a cardboard stage.

(Laughter) But I can't contain my excitement as I bring my child back to a screenless world, with all the magic of the internet at my fingertips.

I'm hoping to have something like this at the end of the year.

let's summarize here

people prefer natural solutions

people love information

people need simple tools

The design of the future must hold onto this principle, not just the Internet.

I am confused by the information society.

more confused than excited

Actually I am the same

This is an unprecedented time in human history.

We made this world, not artificial intelligence.

For now

(Laughter) Designers, architects, artists, engineers.

If we take it seriously, I think we can create a truly happy place filled with the information we love, yet natural and simple, as easy as turning on a lightbulb.

It's like clocks, websites, widgets, something that everyone loves and needs, but it's like a cork, a light, a hacky sack.

thank you

(applause)

Interpretation: The piano “p” is my favorite musical symbol.

It means to play softly

When I'm playing an instrument and there's a "p" in the score, I play it softly.

If there are two “p”s, it is weaker

4 is extremely weak

This is my "p" tree. What this painting shows is that no matter how many thousands of "p"s you have, you'll never be completely silent.

That's my current definition of "silence." Silence is a very faint sound.

I want to talk a little bit about the history of American Sign Language (ASL) and about myself.

French sign language was brought to America in the early 1800s, and over time it mixed with local sign languages ​​and evolved into what is now known as ASL.

ASL has a history of about 200 years.

I was born deaf I was told that sound was not part of my life

I believed so

But now I know that's not the case

Sound is such a big part of my life, and I care about it every day.

For a deaf person, living in a world of sound is like living in a foreign land, undoubtedly living according to the rules, customs, behaviors and norms of that land.

So how do I make sense of sound?

I observe how people react to sounds.

They all amplify the sound, just like speakers.

I see the reaction and reproduce it

At the same time, I've realized that I'm making noise, and I've seen how people react.

I found out, for example,

"Don't slam the door"

"Don't make too much noise when eating potato chips"

(Laughter) "I don't burp. When I eat, I try not to rub the plates."

This is called "sound etiquette"

Maybe I'm thinking about this more than anyone who can hear

pay close attention to the sound

I'm fidgeting and waiting, waiting to see what happens next.

The result is this picture

TBD "Determined in the future"

TBC "Continued next"

TBA "Notify me later"

You'll notice the staves, there are no musical notes on these lines.

That's because this line already contains sound through subtle smudges and smudges.

In a silent culture, movement equals sound.

This is the sign that represents the "five line" in ASL.

A typical staff is made up of 5 lines

But I find it unnatural to sign with my thumbs up like this.

So in the picture, I only draw four lines on the paper.

In 2008, I had the opportunity to participate in a creative residency program in Berlin, Germany.

Until then, I was working as a painter.

During that summer, I visited various museums and galleries, and as I wandered around, I realized that there was no visual art.

At that time, "sound" was beginning to become popular, and I had this impression.

There are no visual works, only auditory works

"Sound" has entered the realm of my art.

Is it what keeps me away from art?

I didn't think that was the case

i know the sound

Because you know it, you don't even have to experience it through your ears.

Sound can be felt through the sense of touch, or it can be experienced as a visual experience or as a concept.

So I decided to re-acquire sound and incorporate it into my art.

Throw away and forget everything you've been taught about sound

I started creating new works

When I released this in the art world, I was blown away by the amount of support and attention it received.

I've realized that sound is like money, power, and control, so sound is a social value.

Somewhere in my head, I always thought that sound is someone else's business, it belongs to those who can hear.

Sound is so powerful that it either takes power away from me and my work, or it gives power to me.

I chose to get power

Spoken language has a big culture

It's as if I don't have a social voice just because I don't use my actual voice to communicate.

So I need to work with someone who can support me and be my voice on an equal footing.

That's how you stay connected to society.

That's why I work with so many interpreters in schools, workplaces, and organizations.

Their voice becomes my voice, my identity.

You will be heard

their voices have social value

Ironically, it's only through the voice of an interpreter that I have temporary social value, which is like taking on a high-interest debt.

I feel like if I don't continue with this debt, I'll be forgotten and I won't have any social value.

So I explore the world of music with my new art medium, sound.

I was amazed at the similarities between music and ASL.

For example, the "sound" in music cannot be fully captured or represented on paper.

The same applies to "concepts" in ASL.

Both are highly spatial and inflectional, meaning that subtle changes in both sign language and sound can affect the overall meaning.

To give you a better understanding of how ASL works, let's compare it to a piano.

Picture the piano in your mind

ASL can be decomposed into various grammatical elements

Imagine that you're playing the piano by assigning a different element to each finger. Think of it as facial expressions, body movements, speed, hand shape, etc., assigned to the fingers playing the piano.

ASL, on the other hand, is like a chord, because you have to move all ten fingers at the same time to articulate a concept or an idea.

If just one key changed a chord, it would mean something completely different.

The same is true for tones, timbres, and volumes in music.

In ASL, you can use these grammatical elements to express different concepts.

Let's take "see" as an example.

This is "see"

I'm watching you

staring at you

(Laughter) (Laughter) Oh no

(laughs) good morning

what are you looking at

eh stop it

(Laughter) And then you start thinking, "What if we look at ASL through the lens of music?"

When you express sign language and repeat it over and over again, it becomes something like visual music.

For example, this sign language for "one day": the sun rises and sets.

This is "all day"

If you do this repeatedly and move it slowly, it looks like a short piece of music.

"1 day...mid"

The same goes for "all night"

"All night"

This is "all night" in the picture.

So I came up with three different "nights." "Last night." "Throughout the night."

(Laughter) The third one is much more musical than the other two.

(Laughter) This shows how ASL can represent time, and how you can represent the change in time in terms of distance from the body.

For example, "1H" represents one hand, "2H" represents both hands, the "present" tense is directly in front of the body, "future" is in front of the body, and "past" is in back.

Well the first example is "a long time ago"

Then there's "the past," "once upon a time," and finally, my favorite, a very romantic and dramatic notion, "once upon a time."

(Laughter) This is "normal time," the musical term for 4/4 time.

When I see the word "ordinary beat," the word "at the same time" naturally comes to mind.

Then think of RH as your right hand and LH as your left hand

Cross your hands over your head and chest to create a staff

[Head: RH flash] [Normal beat] [Chest: LH flash] I'm going to show you the sign language handprint for "flash."

Can you do it together?

everybody raise your hands

Do it at the head and chest. Let's do it at the same time.

that's right

This is the International Sign Language for "falling in love."

(Laughter) By the way, International Sign Language is a visible tool that helps us communicate across cultures and sign languages ​​around the world.

Secondly, I would like to do this. Please join us again.

Well this is it

This is "colonization" in ASL

(Laughter) Now for the third, please join us.

once again

This is "Enlightenment" in ASL

Let's do three things together

"Falling in Love", "Colonization" and "Enlightenment"

you guys are good

(Laughter) These three signs are very similar.

It's wonderful to see ASL flourish and flourish, just like music.

But these days, we live in a world that's all about hearing.

But ASL doesn't involve sound, so it has no social value.

We need to think more seriously about what defines social values, and allow ASL to have its own value, even if it doesn't have a sound.

This may be the first step towards a society where everyone is accepted.

And people will understand that you don't have to be deaf to learn ASL and you don't have to be deaf to learn music.

ASL is such a rich asset, and I want you to have the same experience.

I want you to listen, open your eyes, join our culture, and experience the visible language.

Then you might "fall in love" with us

(Thank you for applause

Dennis Carrer Braton: Hi, this is it.

(applause)

Every day we hear harrowing stories of people fleeing across dangerous borders and cold seas in search of safety.

But there's one story that keeps me up at night, the story of Doa.

A 19-year-old Syrian refugee, she worked as a day laborer in Egypt, living a hand-to-hand poverty.

Her father was thinking about a successful business in Syria that had been blown up by the bombing.

The war that drove them to Egypt entered its fourth year and was still going on.

A community that once welcomed them has become increasingly frustrated with them.

One day, a man on a motorcycle tried to kidnap Doa.

Once an ambitious student who only thought about her future, she was now terrified all the time.

But she was hopeful because she was in love with Bassem, another Syrian refugee.

Bassem, who was also suffering in Egypt, said to Doa, "Let's go to Europe, seek protection and security.

I can work and you can study - a new life is promised."

And he asked Doerr's father for permission to marry him.

But they knew that to get to Europe, they would have to risk their lives across the Mediterranean and give themselves over to smugglers known for their cruelty.

Doa was afraid of water

It's always been that way, she couldn't swim

In August of that year, 2,000 people had already died trying to cross the Mediterranean.

She begged her parents to let her go, and after much debate, they agreed.

It was Saturday morning when I got the call, and when the bus took me to the beach, there were hundreds of people there.

They were taken by boat to an old fishing boat, and 500 people were stuffed into the boat, 300 on the lower bunk, 500 on the upper bunk.

There were 100 children, Syrians, Palestinians, Africans, Muslims, Christians, including little Sandra, six years old, and Martha, one and a half years old.

A lot of families were on board and they were crammed shoulder-to-shoulder and tight.

Doaa sat with her legs clasped against her chest, and Bassem was holding her hand.

On their second day out at sea, they were sick with anxiety and nauseous from the rough seas.

Day 3 Doa had a bad feeling

She said to Bassem, "I feel like I can't get there.

I feel like this ship is sinking."

Bassem said to her, "I want you to be patient.

We're going to Sweden, we're going to get married, the future awaits."

On the fourth day, the passengers began to become increasingly agitated.

They asked the captain, "When are you arriving?"

The captain yelled at him to shut up and threw out a terrible word.

He said, "We'll be on the Italian coast in 16 hours."

The passengers were weak and exhausted.

Then a boat approached, and there were 10 people in a small boat.

Parents were terrified of their children and they refused to disembark en masse.

The boat left in anger, returned half an hour later, and deliberately crashed into the side of Doer's boat and began punching a hole in it, just below where Doer and Bassem were sitting.

Doa heard them yell, "Let the fish eat you!"

They started laughing as the ship capsized and sank.

The fates of the 300 people on the lower berth were headed for ruin.

As the ship sank, Doahr clung to the side, trembling in horror as the propeller ripped a small child to shreds.

Bassem said to her, "Let go, or you'll get caught in the propeller and die."

remember she can't swim

She let go and started flapping her limbs as if she were swimming.

Miraculously, Bassem found a float.

It's a typical children's float, for playing in a pool or in calm waters.

Doa climbed onto the float and lowered his limbs out of the float.

Bassem was a good swimmer, so he took her hand and tread water.

There were many corpses floating around.

The first 100 or so survivors gathered together and prayed for help.

But after a day had passed and no one showed up, some had given up hope.Doer and Bassem saw people in the distance who had taken off their life jackets and were drowning in the water.

A man approached them with a young child on his shoulders, nine-month-old Malek.

The man was holding on to a gas canister that acted as a float, and he said to them, "I don't think I'll survive.

I can't do it anymore, I'm exhausted

The man entrusted young Malek to Bassem and Doa, and they put him on a float.

So we're three, Doa, Bassem, and little Marek.

Let me pause here and ask a question: Why would a refugee like Doerr take such a risk?

Millions of refugees have been forced from their homelands and live in precarious lives.

They are living in different countries fleeing four years of war.

I can't go back even if I want to

Their homes, their jobs, their towns, their cities were completely destroyed.

This is a city designated as a UNESCO World Heritage Site, Homs, Syria.

People fled to neighboring countries and we built refugee camps in the desert.

Hundreds of thousands of people live in camps like this, and millions more live in towns and cities.

That's why communities in neighboring countries that were once so warmly welcoming are frustrated.

We simply don't have enough schools, we don't have enough water systems, we don't have enough sewers.

Even wealthy European countries will not be able to handle such an influx of refugees without significant investment.

The Syrian war has forced nearly 4 million people out of its borders, but more than 7 million are at large at risk inside the country.

That means more than half of Syria's population has been forced to flee the country.

I'm going back to neighboring countries that are hosting very large numbers of refugees.

They feel rich countries offer little help.

Days turn into months and stretch into years

A refugee's stay should be temporary.

Let's go back to Doa and Bassem floating in the sea.

By the second day, Bassem became very weak.

Now it was Doa's turn to tell Bassem, "Don't give up hope and the future, we'll be all right."

He said to her, "I'm sorry it happened

I love you more than anyone else."

Then he let go and disappeared into the water, and Doa saw his future lover drown before his eyes.

Later that day, a mother approached with her one-and-a-half-year-old daughter, Martha.

The first picture I showed you was a little girl in a life jacket.

Her sister, Sandra, was drowning, and her mother knew she had to use whatever strength she had left to save her daughter.

The mother said to Doerr, "I want this child, please.

Please take me, I won't survive."

and the mother left and drowned

Doaa, a 19-year-old refugee -- who can't swim because she's afraid of water -- saved the lives of two young children.

The children were thirsty, hungry and frustrated, and she would soothe them as best she could, singing songs and reading the Quran.

The corpses around them were swollen with water and turned black.

the sun shines during the day

At night the cold moon shines and the fog rolls in

it was a very scary situation

And on the fourth day at sea, this is what Doa and her two children would have looked like on their float.

On the fourth day, a woman approached me and entrusted me with another child, a little boy, four years old.

Doaa took the boy in his care, and as his mother was sinking, he said to the crying child, "Mom went to find water and food."

But the boy's heart soon stopped, and Doaa had to return the boy to the sea.

Later that day, she looked up in hope and saw two planes flying by.

She waved her arms to be found, but the plane had gone.

But that afternoon, as the sun was setting, she saw a commercial vessel.

I prayed, "Please God, they help me."

She waved and felt like she was screaming for two hours.

And when it got dark, the searchlights finally found her, and they threw down a rope and were surprised to see a woman with two children.

They got them on board, gave them oxygen tanks and blankets, and a Greek helicopter picked them up and took them to Crete.

But Doa looked down and asked, "What happened to Marek?"

There we were told that this young child would not live; he died in the ship's infirmary.

But Doerr certainly remembered this baby girl smiling when she was rescued by the lifeboat.

Only 11 survived the wreck of a ship with 500 people on board.

There was never an international inquiry into the details of the accident.

The media reports about mass murders at sea and horrific tragedies, but it's only one day.

And then the news moves on to the next topic.

Meanwhile, in a children's hospital in Crete, little Martha was dying.

I'm severely dehydrated and my kidneys are failing.

Blood sugar was dangerously low

The doctors did everything they could in medicine, and the Greek nurses never left their side, hugging and singing to them.

A colleague of mine also visited and said kind words in Arabic.

Amazingly, young Martha survived.

Before long, the Greek press broke the news of a miracle baby who had survived four days at sea without eating and drinking, and people from all over the country wanted to adopt Martha.

At the time, Doerr was in another hospital in Crete, thin and dehydrated.

As soon as she was discharged from the hospital, an Egyptian family welcomed her.

Soon Doerr's story spread so quickly that his phone number was on Facebook.

I started getting messages

"Doa, do you know what happened to my brother?

what about your sister? What about your parents? friend is? did they survive? ”

And one of the messages said, "You saved my little niece Martha."

there was this photo

It was from Martha's uncle, himself a Syrian refugee who had fled to Sweden, and Martha's sister was with him.

We hope that Martha will be reunited with her uncle in Sweden soon, but until then she is being cared for in a wonderful orphanage in Athens.

What about Doa? Her story also spread a lot

The media reported that this slender woman, not knowing how to survive, saved another life in dire conditions at sea.

One of Greece's highest authorities, the Academy of Athens, honored her for her bravery. She deserves to be admired and deserve a second life.

but she still wants to go to sweden

I want to reunite with my family there

She wants to take her parents and younger siblings out of Egypt, and I'm sure she'll succeed.

She wants to be a lawyer, a politician, someone who can help fight injustice.

she is a rare survivor

But you have to ask, what if you didn't have to take that risk?

Why did she have to go through such a painful experience?

Why was there no way for her to legally study in Europe?

Why couldn't Martha fly to Sweden?

Why couldn't Bassem find a job?

Why aren't there large-scale relocation programs for Syrian refugees? A victim of the worst war of the century?

It was done for Vietnamese refugees in the 1970s, so why not now?

Why is there so little investment in neighboring countries with so many refugees?

And the fundamental question - why is it that so many people are drawn to the European coast - so little effort is being made to stop the wars, persecution and poverty?

Until these issues are resolved, people will continue to go out to sea seeking protection and security.

What happens next?

It's largely up to Europe's choice.

I understand people's fears

People fear for their safety and economic and cultural changes

But is that more important than saving lives?

Because there's a fundamental problem here that overrules all other problems, a problem of our common humanity.

No one fleeing war or persecution should die trying to cross the sea to safety.

(Applause) One thing's for sure, if they could live where they belonged, no refugee would cross the sea on a dangerous boat.

No immigrant would undertake such a perilous journey if they had enough food for themselves and their children.

If there was a legal way to immigrate, you wouldn't be handing over all your money to a notorious smuggler.

For little Martha and Doa and for Bassem And for those of the 500 who drowned Can their deaths not be in vain?

Can we draw on what has already happened to take a stand for a world where every life matters?

thank you

(applause)

I'm a professional poker player, and today I'd like to share with you three decisions that poker games have taught me that I can apply to my everyday life.

The first is about luck.

Just like poker, life is about skill and luck, and the things we care about most — health, money, relationships, the outcome of all these things depends not only on good and bad decisions, but also on luck.

For example, even if you take great care of your health, you can still have bad luck, like cancer.

On the other hand, there are people who smoke 20 cigarettes a day and still live longer.

For example, in 2010, I won a really big tournament called the European Poker Tour.

It was less than a year into poker, and I knew I must be talented.

I thought I was great, so not only did I not study the game properly, but I started taking big bets, playing the biggest tournaments I could and playing against the best players in the world.

And my income graph went from great to disappointing, and after a worryingly long period of decline, I finally realized that I had overestimated my power and had a good second thought.

This is reminiscent of what we saw with cryptocurrencies in 2017, where the only thing that was going up faster than the market was a number of self-proclaimed "senior investment specialists" that appeared out of nowhere.

I'm not saying it's impossible to gain a strategic advantage, but it's easy to fall into the illusion that you're a genius when the market is so high that even the worst strategies are profitable.

So when you're successful, it's important to pause for a moment and think about how much of it is your skill, because our egos tend to downplay the luck factor when we're winning.

The second thing poker has taught me is that it's important to think in terms of numbers.

When you're competing, you can't just say, "I'm going to be bluffing anyway."

You're going to lose a lot of money. Poker is a game of probability and precision, and you have to train yourself to think in numbers.

When I find myself thinking vaguely about something important, like, "You'll never forget what you said in a TED Talk," I try to estimate it numerically.

[25% who lose track] This is very useful in the planning stage.

Anything can happen here today or at some point in the future, so it's good to express that as a probability.

[Power outage 0.002% Living to 100% 22% Space travel 0.1% Running out of time 25% Hangover 15% Losing name tag 80%] I try to use numbers when I speak.

When asked, "Hey, can you come tonight?"

Instead of saying, "Maybe," they'll give you a best estimate, like, "60%."

It might sound strange, but I did a poll on Twitter to see how people understood "maybe," and here's the distribution of responses.

it must be amazing

This makes no sense in terms of conveying information.

If you find yourself using vague words like "maybe" or "sometimes," try using numbers instead. Numbers tell you what you're really thinking.

The third thing I want to talk about today is intuition.

How often do you see inspirational memes like this on Facebook?

[Trust your intuition, don't overthink it, your intuition is always right] Isn't that great?

Wonderful "Believe in your soul!"